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Hover-flies (Diptera—Syrphidae) documented from the Northwest Frontier of the Indian sub-continent : a circumstantial history and inclusive bibliography

KUMAR GHORPADÉ
Scientist Emeritus and Honorary Research Associate in Systematic Entomology, University of Agricultural Sciences, c/o P.O. Box 221, K.C. Park P.O., Dharwar 580 008, Karnataka, India.
E-mail: kumarsinh.g@gmail.com

Abstract. Some 340 species of hover-flies, of 96 genera in 15 Tribes and 3 Subfamilies have so far been recorded from the southern Palaearctic and northern Afrotropical borderlands that make up the North-West Frontier Provinces of the Indian subcontinent, *i.e.*, from Afghanistan east through Pakistan to NW. India, including the States of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Delhi, Punjab (+ Chandigarh), Haryana, Rajasthan and Gujarat. These species in the north-west Indian subcontinent are closely related to those that fly in the central and eastern Palaearctic and northern Afrotropical regions. They are distinct from others that are found mainly in the Oriental Region and which fly further east and south in India, in Nepal (especially eastern), as well as in Bhutan, Bangladesh, Burma and the Bay Islands; also futher east into the Indochinese Peninsula and the Malay Archipelago; as well as in all of India south to Sri Lanka and the Indian Ocean island groups. The fauna of Nepal is also included in full, even though its eastern portions also habour many strict Oriental species. Comprehensive notes are given under each species here treated which attempt to summarize whatever published information is available on them, and also unpublished data from my own researches. A similar endeavour is undertaken to try and document almost all of the literature that has been published on this Syrphidae fauna here. Updated nomenclature is presented, where Subfamilies are dealt in phylogenetic sequence but tribes, genera and species entered in an alphabetical checklist within higher taxon, including regional synonymy, new combinations and ***nomina nuda*.** The latter include the following, apparently undescribed, names : *Callicera peshawarensis* Arif, 2001, **nom. nud**., *Callicera brunetti* Arif, 2001, **nom. nud**., *Xylota swatensis* Arif, 2001, **nom. nud**., *Platycheirus maculatus* Arif, 2001, **nom. nud.,** and *Syrphus agraensis* Nayar & Nayar, 1965, **nom. nud.** ***New synonymy*** proposed in this paper is as follows : *Lathyrophthalmus obliquus* (Wiedemann, 1824)[= *Lathyrophthalmus connectens* Hervé-Bazin, 1923], **n. syn**., *Syrphus aeneifrons* Brunetti, 1913 [= *Syrphus transversus* Brunetti, 1913], **n. syn.,** *Citrogramma flavigenum* Wyatt, 1991 [= *Citrogramma chola* Ghorpadé, 1994], *Syrphus orsua* Walker, 1852 [= *Syrphus brunettii* Hervé-Bazin, 1924], **n. syn**., *Eristalis aegrotus* Fabricius, 1805 [= *Dideopsis hemipennis* Hull, 1945, **n. syn**., and *Scaeva albomaculata* Macquart, 1842 [= *Lasiopticus albomaculatus* var. *sulphureus* Sack, 1935], **n. syn.** The following other ***new combinations*** are also proposed : *Platycheirus kalatopensis* (Nayar, 1968), **n. comb.** and *Pandasyopthalmus annandalei* (Ghorpadé, 1992) **n. comb.** **Lectotypes** that were designated, mainly during my doctoral and postdoctoral tenures, are here formalized, *viz.*, for *Baccha pulchrifrons* Austen, 1893 [= *Allobaccha*], *Baccha triangulifera* Austen, 1893 [= *Allobaccha*], *Syrphus javanus* Wiedemann, 1824 [= *Allograpta*], *Xanthogramma bouvieri* Hervé-Bazin, 1923 [= *Allograpta*], *Syrphus incisuralis* Macquart, 1855 [= *Asarkina*], *Baccha nubilipennis* Austen, 1893 [= *Asiobaccha*], *Syrphus brunettii* Hervé-Bazin, 1924 [= *Dasysyrphus*], *Syrphus nectarea* Fabricius, 1787 [= *Episyrphus*], *Syrphus nectarinus* Wiedemann, 1830 [= *Episyrphus*], *Scaeva scutellaris* Fabricius, 1805 [= *Ischiodon*], *Ischiodon platychiroides* Sack, 1913, *Epistrophe magnicornis* Shiraki, 1963 [= *Ischiodon*], *Syrphus erythropyus* Bigot, 1884 [= *Ischiodon*], *Lasiopticus albomaculatus* var. *sulphureus* Sack, 1935 [= *Scaeva*], and *Sphaerophoria flavoabdominalis* Brunetti, 1915. However, as to phylogenetic analysis of the Syrphidae, this is still incomplete and unresolved research, and hence not discussed or attempted in this paper.

Introduction

Enrico Brunetti had started publishing on Indian Diptera (including Syrphidae) around 100 years ago (1907-1925) when living in Calcutta (now called 'Kolkata,' phonetically, in local Bengali vernacular). He was working there as a bandmaster, playing the piano in Opera

Houses and larger hotels, and entertaining the then British Raj populace in the evenings. He also spent his daylight hours collecting insects and studying the then poorly known Indian fauna of true flies informally, on a piece-work basis, at the Indian Museum, as a honorary 'outside specialist,' this even when budget funds were unavailable to him. It was with the encouragement of Dr Nelson Annandale, the first Superintendent of that museum, who recognized the exceptional talent of Brunetti, an amateur dipterist, then being a scientific acquaintance of G.H. Verrall in his native England. This began in 1906 when Brunetti, born of an Italian father and an English mother, settled down and resided in Calcutta for 17 years. After which he voyaged back to England in 1921 on the P. & O. 'Somali,' via then Ceylon (now Sri Lanka), being given an assignment to work on taxonomic revisions of Indian Diptera while based in the British Museum (Natural History) [now called the Natural History Museum], London, and with access to the remaining (outside of those in the 'Indian Museum,' now the Zoological Survey of India) type specimens of older authors and newly named and described Indian species of flies that were deposited there in that magnificent museum in England.

See Thompson & Ghorpadé (1992: 10) and Subba Rao (1998: 74-78, unpaged potrait at the end) for more details on the life and work of Brunetti, who was the undisputed 'Father of Indian Dipterology' and whose work on Indian and other Oriental Diptera, almost single-handedly, followed the publication of the comprehensive Oriental Diptera Catalogue of van der Wulp (1896) and which is documented in the Oriental Diptera Catalog of Delfinado & Hardy (1973, 1975, 1977). The Syrphidae portion in the latter catalogue (Knutson *et al.*, 1975) is now being revised and updated by Ghorpadé, Mengual & Thompson (*in prep*.).

A decade after Brunetti completed and published his FAUNA volume on our Syrphidae (Brunetti, 1923), H.L. Bhatia, Assistant to the Imperial Entomologist, Pusa, *viz.*, T. Bainbrigge Fletcher, wrote an important paper on the life-histories of some Indian species of Syrphidae, with the help of Mohammad Shaffi, Fieldman to the Imperial Entomologist, and their introductory notes in that paper (Bhatia & Shaffi, 1933: 543-544) are quoted selectively here :

> "The Syrphidae of India, so far as the adults are concerned, have been dealt with by Brunetti [1923]. Since then no attempt has been made to revise his work on the family. Taking Brunetti's work as a basis for further investigations, such a revision is badly needed, for it will bring forth some very useful information and add many new genera and species to the list of those already described in the Fauna Volume. There is a great diversity of forms within this family and there is no family of insects which resembles bees and wasps so much as the Syrphidae. Like the adults the larvae of Syrphidae present different forms associated wth different feeding habits. Some are of the ordinary maggot type, others possess a long tail which is three to four times the length of the body and on this account have been called rat-tailed larvae, and still others (*microdon*) [*sic*] possess such a peculiar combination of characters as to have baffled the entomological workers so much as to have made them give to the larvae the rank of distinct species in the Phylum Mollusca.
>
> The economic status of the family is on the whole beneficial. There are some species the larvae of which have been known to cause some damage to the leaves and flowers of maize [Riley and Howard, 1888] in certain localities of America and still others, *e.g.*, *Eumerus strigatus* whose larvae destroy to a certain extent the bulbs of onion. . . These stray instances of damage done by the larvae of some species of Syrphidae are nothing as compared to the immense good done by others the larvae of which prey upon the nymphs of Aphidae, Coccidae, Psyllidae and Aleyrodidae. The ravages of plant lice, scale insects and the white fly to the cultivated crops are too well known, both to the cultivator and to the scientific worker, and therefore need not be mentioned here."

More than four decades after this was written I had begun my researches on this family of flies on whom much new information and many new taxa have been discovered and described in the past fifty years or so. This paper has especially been cogitated, pondered and researched just so that we are aware of the known facts. These are of the 'Palaearctic track' species recorded in the extreme northwestern borderlands of India (Kashmir, Himachal, Uttarakhand, Punjab, Chandigarh, Haryana, Delhi, Rajasthan and Gujarat; also Bihar and Uttar Pradesh), and in Pakistan and Afghanistan, which usually do not extend eastward into the dominantly Oriental portions of the Indian subregion (*i.e.*, in eastern and southern India, eastern Nepal, Bhutan, Bangladesh, Burma, Sri Lanka and the Andaman & Nicobar Is.), except for a few which are peregrine and widespread. This present targeted subject area lies in the

'Great Palaearctic Desert' that extends from the western borderlands of the Sahara in northern Africa across the Middle East to Mongolia in northeastern Asia.

This detailed paper of mine will hopefully be appreciated by readers who enjoy this activity, of reading, as I used to in my younger days, every parcel of reprints and photocopies received being slowly enjoyed in imbibing their novel contents and engaging illustrations, etc., and gaining more knowledge, with increased excitement on the life and diversity of these gorgeous hover-flies ! As I had quoted W.J. Grant in my first paper on a summation of Diptera taxonomy in this sub-continent (Ghorpadé, 1998: 1), "The true descriptive writer must be his subject just as a novelist must be his character." "A dead fact is a scientist's fact; a living fact an artist's . . ."

Two further similar papers are planned by me, and are now in early stages of preparation, one on the Syrphidae of the north-eastern Indian sub-continent (with the 'Assam' area), and the other on the hover-fly fauna of 'Dravidia,' or central and peninsular India and Sri Lanka, this latter made up of land that is most ancient here (Primal India), lying south of the recently formed Indo-Gangetic Plains, the Himalayas and the north-eastern, 'Assam' areas of this Indian sub-continent. Dravidia was a portion of the 'Lesser (not Greater !) Indian Plate,' which was once part of the prehistoric southern hemisphere supercontinent, Gondwanaland. The age and character of 'Dravidia' was most aptly described by the celebrated British Indian writer of the Raj era, E.M. Forster (1924; introductory lines of Chapter 12, 'Caves'), in his novel "*A Passage to India*," where he himself had coined the term 'Dravidia,' and wrote:

> "But India is really far older. In the days of the prehistoric ocean the southern part of the peninsula already existed, and the high places of Dravidia have been land since land began, and have seen on the one side the sinking of a continent that joined them to Africa, and on the other the upheaval of the Himalayas from a sea. They are older than anything in the world. No water has ever covered them, and the sun who has watched them for countless aeons may still discern in their outlines forms that were his before our globe was torn from his bosom. If flesh of the sun's flesh is to be touched anywhere, it is here, among the incredible antiquity of these hills."

From the *Indian Year Book* of 1942, I quote the following description of the NWFP (North-West Frontier Province) as then known, which I consider relevant and interesting :

> "The North-West Frontier Province, as its name denotes, is situated on the north-west frontier of the Indian Empire. It is in form an irregular strip of country lying north by east and south by west and may generally be described as the tract of country, north of Baluchistan, lying between the Indus and the Durand boundary line with Afghanistan. To the north it extends to the mountains of the Hindu Kush. From this range a long broken line of mountains runs almost due south, dividing the province from Afghanistan, until the Sulaiman Range eventually closes south of the Province from Baluchistan. . . The territory falls into three main geographical divisions: the Cis-Indus district of Hazara; the narrow strip between the Indus and the Hills, containing the districts of Peshawar, Mardan, Kohat, Bannu and Dera Ismail Khan, and the rugged mountainous regions on the north and west between those districts and the border line of Afghanistan . . . The area of this tract is roughly 24,986 square miles and in it are situated, from north to south, the political agencies severally known as the Malakand, Khyber, Kurram, North Waziristan and South Waziristan Agencies. The Indian States of the North-West Frontier Provinces are Amb, Phulra, Dir, Swat and Chitral. . . This is a country of deep valleys and secluded glens, which nature has fenced in with almost inaccessible mountains. It is peopled with wild tribes of mysterious origin, in whom Afghan, Tartar, Turkoman, Persian, Indian, Arab and Jewish intermingle. They had lived their own lives for centuries, with little intercourse even among themselves, and as Sir Valentine Chirol truly said "the only bind that ever could unite them in common action was the bond of Islam."

The following quotes of Brunetti (1907a: 166-167, 1917: 59), and Annandale, on their studies of the Diptera of Simla, summarize the situation prevalent in this tract in the last century and provide some perspective, of interest :

> "The specimens dealt with in this report are from places of various altitude in the vicinity of Simla, and were captured by Dr. Annandale and his native assistant this year between April 24th and May 8th. In all, there are about 130 species, and,

considering the late season, snow still persisting in sheltered spots, this seems a very satisfactory result for a fortnight's work.

"The more I see of the Himalayan Diptera, the more I am inclined to consider that it belongs faunistically to the Palæarctic region, and not to the Oriental, except as regards the lesser heights on the southern side.

"I collected a fair amount of material in 1905 and 1906 during two visits to Mussoorie and one to Darjiling, and the Simla material now under examination strikingly resembles my Diptera from the other two localities, all the collections containing a considerable proportion of European species, these latter, moreover, retaining in most cases their typical form. This is conspicuously the case in the present instance as regards the family Syrphidae, of which, out of the twenty-five species captured, I have identified positively ten as commonly distributed European species, showing no variation whatever, whilst among the unnamed remainder some will in all probability prove to be European also. *Scatophaga stercoraria* L., the very common dung fly of Europe and North America, is not recorded from the East proper, yet it is as common at Mussoorie, Darjiling and Simla as in accepted Palæarctic localities like Hong-kong, Shanghai, Hankow and Japan [1], in all of which places I found it as abundant as in Europe." [Vockeroth (1977: 438) confirmed this in the Oriental Diptera Catalog].

"I am hoping to make more extensive studies on the Dipterological hill fauna of India at no distant date, but at present it seems to me that at an altitude of 5,000 or 6,000 feet (almost certainly at 7,000) the Dipterous fauna at least, is much more Palæarctic than Oriental." [1] [Brunetti, 1907a: 166-167]

As an 'Introductory Note' to Brunetti's (1917) definitive paper on Simla Diptera, where he enumerated some 220 species of 40 family taxa (*ca* 36 Syrphidae), Annandale had written :

"Mr. Brunetti has asked me to prefix an introductory note to his paper, which is based on the collections of the Indian Museum [now the Zoological Survey of India, Calcutta] and of the Imperial Agricultural Institute at Pusa [presently the Indian Agricultural Research Institute, New Delhi]. We have to thank Mr. T. Bainbrigge Fletcher, Imperial Entomologist, for co-operation in the matter.

"The term 'Simla District' is not used in any precise geographical or political sense but merely to indicate localities in and at the base of the Himalayas near Simla whence specimens are available. The chief localities are Dharampur (alt. 5,000 ft.), Kasauli (6,000 ft.), Simla (7,000 ft.), Phagu (9,000 ft.), Theog (8,000 ft.), and Matiana (8,000 ft.). The last three are on the Tibet-Himalayan road.

"Most of these localities are, therefore, at considerable, but none at very great altitudes. It is important to remember that the Simla Himalayas, at any rate from 7,000 feet upwards, and also to a large extent at lower altitudes, lie practically in the Palaearctic Region[1] [see footnote]. Such plants as the edelweiss flourish by the roadside, with roses, dandelions and primulas ; and many of the butterflies are no more at most than races of those with which we are familiar in England. There are no tropical forests, but pine-woods and bare hillsides. *It is, I think, important that this fact should be emphasized in dealing with an Indian district so remote in every way from what, in Europe, naturalists would attribute to India* [emphasis mine – K.G.].

"A large part of the material on which Mr. Brunetti has worked was collected by myself from year to year in the month of May, while I was on duty at Simla as a member of the Board of Scientific Advice, and the spring fauna is, therefore, better represented than that, which is probably richer, of the monsoon rains and early autumn. In the present state of our knowledge of the Indian Diptera, it is advisable to do no more than glance at certain of the groups of Brachycera, for example, the Muscinae Verae, the Asilidae and many of the Acalyptrata. A few conspicuous species may be safely identified, but the majority is best left unnamed until the different forms can be investigated, family by family, from different countries or at any rate

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[1]Shanghai, Hankow (= Wuhan) and Hong Kong have a dominantly Oriental fauna, as will be indicated in a forthcoming updated Catalogue of Chinese Syrphidae (Ghorpadé & Huo, *in prep*.). The predominantly Palaearctic species extend eastward along the high Himalayas maximally to the Kali-Gandaki River in central Nepal, the hypothetical biogeographical border (see Gaonkar, *in prep*.). Except for the North-West Frontier, as detailed in this paper, the Indian subcontinent is otherwise dominantly Oriental in affinity.

Subfamily	Afghanistan	Pakistan	Kashmir	Himachal	Uttarakhand
SYRPHINAE	15—41	21—44	27—59	23—49	29—58
ERISTALINAE	17—32	17—41	17—43	22—39	24—44
MICRODONTINAE	0	1—1	0	1—1	3—4
TOTAL	32—73	39—86	44—102	46—99	56—106

Subfamily	Delhi	Punjab (+CH)	Haryana	Rajasthan	Gujarat
SYRPHINAE	8—11	13—22	5—6	4—5	6—7
ERISTALINAE	2—7	7 - 14	3—4	5—6	5—8
MICRODONTINAE	0	0	0	0	1—1
TOTAL	10—18	20—36	8—10	9—11	12—16

Table I. Genera and species of each subfamily recorded in the North-West Indian Frontier territories. Nepal has 69-159 (Microdontinae 4-4, Eristalinae 32-66, Syrphinae 33-86); of which some are Oriental taxa also.

from large areas. Much still remains to be done also among the Nemocera [*sic*]. Kieffer has been able merely to touch the fringe of the Chironomidae, and of the other families, for which the most part reach their adult stage in the wet season. Mr. Brunetti is not in a position to examine much material. The Mycetophilidae in particular are very imperfectly represented in collections, whilst the Cecidomyiidae are quite unknown. This of course is through no fault of Mr. Brunetti, to whom we are indebted for by far the greater part of such knowledge as we possess of the Indian Diptera. N. A." [= Nelson Annandale, in Brunetti, 1917: 59]

The summation above of Palaearctic elements in the northwestern borderland Indian fauna of Syrphidae by Brunetti was made at a time when collections available and being made were Limited, and sampling done patchily along the Himalayas. My own sampling of true flies and other insects on these mountains, initiated in 1973, revealed many undiscovered and new species that also included endemics in this magnificent mountain system, those which had speciated and evolved here, even though being closely related to Palaearctic species flying in eastern and mediterranean Europe, the Middle east and in the former southern U.S.S.R. The actual Palaearctic species found here can be gauged from a study of the checklist presented below and assumptions made of faunal elements thereof.

See Ticehurst (1922), Meinertzhagen (1928), Whistler (1944), Ripley (1954), Swan & Leviton (1962), Holloway (1974), Mani (1974), Roberts (1991: 17-33), Lambeck & van Brink (1973a: 96-98), Holloway (1974), Claussen & Weipert (2003), Ghorpadé (2014a) and Gaonkar (*in prep*.)

for helpful biogeographical notes. For an older general account of the North-West Frontier Province see Crooke (1897). A recent book (Ahsan, 1997) by a former Minister for Interior (Pakistan) contains reading matter on the political culture of the Indus region, and theorizes that the River Indus and its people (of the Northwest Indian subcontinent), the "Sind People," were historically distinct from others in this subcontinent (the "Hind" people") and may offer some intellectual 'exercise' to a few individuals among us with interest in the distinctness of the geography, fauna and flora of this NWFP area of our sub-continent, the focus of this paper of mine ? The significance of animals, clothing and anthropological material was highlighted by Ahsan and the broad contours of history brushed with poetry, folk heroes and literature of the Indus. Westlake (1993) is also another readable recent book on the history of the Indian hill stations founded from the early 19th Century during the British Raj (1772-1947) in the Indian subcontinent, dealing with localities that had constituted most actual field collecting spots of Syrphidae by Brunetti and his contemporaries during the *ca* 200 years of colonial activities of the British in India (1772—1947) that make up most of the study material available for our research on the Syrphidae (and other animal and plant taxa) from this sub-continent. From traders on ships to colonial rulers, the long history of the 'Empire' of the British is well documented, for example by Edwardes (1967), Keay (1991), and James (1994), among many others, from the beginning of the 17th Century onwards. Gaonkar (*in prep*.) has an excellent summary of the Natural History of this sub-continent. And the novel, *Bugles and a Tiger*, which details Lt.-Col. John Masters, D.S.O., and "his time at Sandhurst and service on India's Northwest Frontier on the eve of the Second World War is among the finest portraits of the profession of arms ever written."

As Brunetti had then made plans to "make extensive studies on the Dipterological hill fauna of India" (*op. cit*.) in 1907, I myself was intent to continue my surveys of the Himalayas and the hills of north-east India (erstwhile 'Assam') bordering Nepal, Bhutan, Bangladesh and Burma, once again (after initial fieldwork done during my doctoral studies in 1973 to 1979), more carefully and comprehensively, recently also using traps for more thorough sampling. My researches have indicated that over 75% of all Indian subregion Syrphidae species fly on the Himalayas and in northeastern India, and we are still nowhere near understanding the total fauna that exists – 3 subfamilies, 15 tribes, 114 genera, 553 species recorded so far (*vide* Ghorpadé, 2014c).

Much habitat destruction through growing human numbers and activity, for 'development' (!), has disturbed and degraded the natural floral and faunal richness of this subcontinent. Even the smaller insects which are thought to need minimal ranges to survive in stable populations (?) have been threatened. My field wanderings over the last four decades has revealed much major species extinctions (?), and ranges and populations have certainly shrunk for the rarest species, which now perhaps survive only in Protected Areas (75 national parks, 428 wildlife sanctuaries, and reserve forests) where human and livestock populations are limited, or non-existent, through conservation action. Besides the still undiscovered (new, or known only elsewhere) species, we need to collect and trap others that are poorly known, after their initial original descriptions, and publish papers that redescribe these infrequent and rare species in this subregion; as well as to designate fresh vouchers for species now available only as a few old and partly damaged specimens, held mainly in foreign museums abroad.

Syrphidae fauna of the North-west Indian borderlands

Faunistic studies of Syrphidae in this subcontinent have been limited (see Ghorpadé *et al*., 2011: 79, for summary), like those of other insects (see Ghorpadé, 2012a), and those of this present target area are based on just a few studies done on western Indian borderland states by Brunetti (1907a,b, 1908, 1915, 1917), van Doesburg (1955), Nayar (1968a,b), Lambeck & van Brink (1973, 1975a), Datta & Chakraborti (1984), Ghorpadé (2014c,e) and Ghorpadé & Pathania (2014). Shah *et al.* (2014) summarized records from the Western Himalayas recently, and Mitra *et al.* (2015) from India. Some studies were also carried out in Pakistan (Aslamkhan *et al.*, 1997; Ghorpadé & Shehzad, 2013) and Afghanistan (Bankowska 1967, 1968, 1969; Dušek & Láska, 1980; Ghorpadé, 2014d). The syrphid fauna of Afghanistan and Pakistan are especially poorly known and much more sampling needs to be attempted in all other areas also, to discover many more species, known and unknown, especially on the high Himalayas. It may be noted that the identities given in several of these local lists may be suspect and erroneous. My collecting has revealed many such misidentified species (Ghorpadé, 1982b, 1994, 2009, 2014c, d, e, Thompson & Ghorpadé, 1992, Ghorpadé & Pathania, 2014) and further field

work will uncover many more (*cf* Ghorpadé & Shehzad, 2013). The Indian subregion has a total of some 493 species in 107 genera recorded until now (Ghorpadé, 2014c) and note that these here listed 338 species from the North-West Frontier make up almost 60 % of the Indian sub-continent's fauna!

This paper is a a summation of my pre-doctoral, doctoral, post-doctoral and later research, carried out from 1973 until now and ongoing. It is here published ahead of my planned further generic reviews and revisions, to present data that co-specialists working on Oriental—Papuan (and Palaearctic) Syrphidae could make use of until these papers of mine (with or without collaborators) on these genera are finally published in the near future. It may be mentioned that perhaps some of the recent literature (after the 1980s) on local areas Syrphidae, especially non taxonomic works, have not been thoroughly searched for and included in my bibliography given at the end of this paper. My Check-list (Ghorpadé, 2014c) is the basic database (*q.v.*).

For preparing the checklist given below, almost all published work on hover-flies of the North-west Frontier (once called the "Forbidden Territory") was consulted. Species and Genera (I have treated all currently recognized 'subgenera' as full genera here) are cited as are now nomenclaturally valid. Subfamilies are listed in presently researched phylogenetic sequence, but their *tribes, genera and species are subsequently cited in alphabetical order,* so also are the Indian States, for convenience, the countries listed from west to east, and north to south. Only the original reference citations and regional synonymy are given, chronologically, and distribution of each species listed, by country, giving records of occurrence in this north-west frontier area, the north-western Indian States listed alphabetically. For India, the concerned and geographically relevant, nine north-western States and Union Territories are also indicated in alphabetical sequence, using their acronyms, *viz.*, CH (Chandigarh, included with Punjab), DL (Delhi), GJ (Gujarat), HP (Himachal Pradesh), HR (Haryana), JK (Jammu & Kashmir), PB (Punjab), RJ (Rajasthan), and UK (Uttarakhand). Records from the States of Bihar (BI) and UP (Uttar Pradesh) on the Gangetic Plain are also cited where considered relevant. For some species, undetected and possible synonymy, or misidentification, is also indicated for each species in my "NOTES" appended, for information and further research. My unpublished specimen data (as 'Ghorpadé, unpubl.') is also indicated for some species when felt necessary and relevant here. Note that Nepal, particularly its 'temperate' western portion, west of the Kali—Gandaki River[1] (see footnote on p. 4), is also covered in this paper in some detail, but syrphid species occurring in that country need to be studied more carefully to resolve their taxonomy and their Palaearctic or Oriental affinities. The Nepalese hover-fly fauna has been documented in a recent paper by me (Ghorpadé, 2015, *q.v.*).

Regarding the phylogeny of Syrphidae, Thompson & Rotheray (1998: 88-89) had written :

> "The higher classification of the Syrphidae is in a state of flux. The traditional classification is largely based on adult characters. Recent work on larval characters has generated different classifications. . . However, until a comprehensive analysis is done on a combined data set of both adult and larval characters, we have accepted the traditionally defined groups as that is how the literature and knowledge is currently organized."

And Mengual (*pers. comm.*) recently informed me :

> "Nowadays there are many analyses [DNA sequencing] done showing that Microdontinae are basal to the other two subfamilies, that Bacchini are basal to the rest of Syrphinae, that Pipizini are [the] sister group of Syrphinae and that Merodontini and relatives are basal to the rest of Eristalinae + Syrphinae. . . And within Syrphinae, for example, Paragini are NOT the basal group."

See also Mengual *et al.* (2008), Ghorpadé (2007), Thompson (2003), Ståhls *et al.* (2003), Rotheray & Gilbert (1999) and Thompson & Rotheray (1998) for latest Syrphidae phylogeny analyses. I have therefore listed only the currently recognized subfamilies in assumed 'phylogenetic' order, and treated 'subgenera' as full genera in this paper, to avoid complication, as stated above.

A total of 340 hover-fly species are enumerated in the Checklist below from the North-west Frontier as documented so far, these grouped in 96 genera, under 15 tribes and 3 subfamilies as now recognized : Microdontinae 5 genera—6 species, Eristalinae 48—175, and Syrphinae 43—159. The genera and species so far known from each individual political division (Country, States) are as given in the Table above (see p. 5 for details of genus and species numbers of

each subfamily in these territories). Ghorpadé & Pathania (2014: 6-7) gave 50 species (in 25 genera) of Syrphidae known so far from the Punjab Doab biogeographical sub-area, in Pakistan and India, *q.v.* But these figures are initial approximations, requiring more careful work. See Ghorpadé (2001, 2013) for my understanding of the biogeography of this sub-continent (= subregion).

Incidentally, the numbers of syrphids recorded in the five Indian plains States (and of others too) could possibly be increased by checking and identifying collections made from these areas present in the Calcutta (ZSI), Dehra Dun (FRI), and New Delhi (IARI) museum collections, which I have done partly and propose to complete. However, fresh samplings of these hover-flies in undisturbed habitats, as well as in agroecosystems, is an urgent requirement to document and assess the "backyard biodiversity" of human habitations and the diversity in still existing wild surroundings away from human and livestock presence and activity (see Kim & Byrne, 2006; Ghorpadé *et al*., 2011: 4; Ghorpadé, 2012a).

An attempt is made in this paper to give full and correct synonymy of most if not all species treated below. Research after the Oriental Catalog of Knutson *et al.* (1975) has clarified much doubt and error, improving concepts, and, finally, as Thompson *et al.* (1982: 161) had stated :

> "Nomenclature is basic to science, being the system of names for concepts, without which communication would be impossible. To be efficient such a system should be stable, that is, only one name and always the same name for a concept. . . That system is embodied in the *International Code of Zoological Nomenclature . . .*"

Systematic Annotated Checklist

Subfamily MICRODONTINAE

Tribe Microdontini

Furcantenna nepalensis Reemer, 2013

Furcantenna nepalensis Reemer, *in* Reemer & Ståhls, 2013a, Zookeys, 288: 98 (♂; 'Godavari 6000', Ktmd., Nepal') [CNC, Ottawa]

Nepal (Cheng & Thompson, 2008, Reemer & Ståhls, 2013a,b, Ghorpadé, 2014c, 2015).

[NOTE: This is the first record of this genus from the Indian sub-continent. The male holotype is labeled "Nepal, Ktmd. / Godavari 6000' / 13 Aug. 1967 / Can. Nepal Exped." (Reemer & Ståhls, 2013a: 98-99, figs 74-80). The only other known species of this genus, *yangi* Cheng, also with forked antennae, was described from Kwangsi (= Guangxi) Province in southern China (Cheng & Thompson, 2008: 29-30, 38, figs 3-9). Reemer & Ståhls (2013b: 683) also wrote that based on morphology, this species "was recovered in a clade containing *Carreramyia* and *Schizoceratomyia*," being very similar to the latter in external morphology and male terminalia, which Cheng & Thompson (2008: 29) had stated earlier while describing the new genus *Furcantenna* Cheng. Ghorpadé (2014c: 6, 2015: 4) listed it in his check-lists of Indian sub-continent and Nepal Syrphidae.]

Metadon annandalei (Brunetti, 1907)

Microdon annandalei Brunetti, 1907b, Rec. Indian Mus., 1: pl. xiii, fig. 10; 1908, *ibid*., 2: 91 (♂; 'Nepal, Soondrijal') [ZSI, Calcutta – examined]

Metadon annandalei : Reemer & Ståhls, 2013a, Zookeys, 288: 134. (as *n. comb.*)

Pakistan; India: HP, UK; Nepal (Brunetti, 1907b, 1908, 1915, 1923, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Cheng & Thompson, 2008, Reemer & Ståhls, 2013a,b, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: This species was validated by Brunetti's figure (1907b: Pl. XIII, fig. 10) and the later text description (Brunetti, 1908: 91-92). This patronym was selected by him, as Brunetti himself wrote: "I have much pleasure in naming this handsome species after the Superintendent of the Indian Museum [= Nelson Annandale], at whose hands I have received so much assistance and consideration in my study of Oriental Diptera." Brunetti (1915: 255) reported a female for the first time "from Bhowali, Kumaon, 2-vii-12 [*Imms*]." In his FAUNA volume, Brunetti (1923: 316-317, Pl. VI, fig. 7) gave more locality records: "Pusa, 18.ix.1908; Chapra, Bengal [*sic*]; Simla, 1898 (*Nurse*); Khasi Hills, Assam." Knutson *et al.* (1975: 369) listed this also from "E & W Pakistan" without giving specific locations. Kapoor *et al.* (1979: 67) listed it from Nepal. Ghorpadé & Shehzad (2013:

2-3) gave detailed notes on this species from Pakistan, *q.v.* Mitra *et al.* (2015: 62) listed it as an Indian species and Ghorpadé (2014c: 6) gave its complete known distribution in this sub-continent. Reemer & Stahls (2013b: 684) wrote "in combined parsimony analysis, *Metadon* is recovered as sister of *Parocyptamus*, within a clade containing also. . ." three other genera. I examined the holotype in theZSI, Calcutta when I visited there in March 1981 during my doctoral research tenure. Shah *et al.* (2014: 299), Ghorpadé (2015: 4) and Mitra *et al.* (2015: 62) listed it.]

Microdon bellus Brunetti, 1923

Microdon bellus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 315 (♀; 'Mussoorie') [NHM, London]; Reemer & Ståhls, 2013a, Zookeys, 288: 139.

India: UK; Nepal (Brunetti, 1923, Sack, 1932b, Das, 1959, Coe, 1964, Knutson *et al*., 1975, Kapoor *et al.*, 1979, Thompson & Rotheray, 1998, Cheng & Thompson, 2008, Reemer & Ståhls, 2013a,b, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 315-316, fig. 65) described this from the Pusa Collection (IARI, New Delhi) based on two females taken at Mussoorie in September and October 1906 (type sent to BMNH, London). He also mentioned that a headless male specimen "pinned on the same piece of cork as one of the females may be the ♂, though the genitalia are not visible." Coe (1964: 289) reported a female from Taplejung District in east Nepal. Knutson *et al.* (1975: 369) listed this from these localities and Kapoor *et al.* (1979: 67) from Nepal. Reemer & Ståhls (2013a: 139) retained it in *Microdon s. str.*. and then they wrote (2013b: 684) "*Microdon* has served as a 'waste basket' for taxa of which taxonomic affinities were inadequate for location elsewhere. . . this group is polyphyletic. . ." Cheng & Thompson (2008: 40) stated "*Microdon* is the nominotypic group, hence, remains some what a catch all for various unrelated species [249 spp. in all regions] not placed in other genera. Shah *et al.* (2014: 299), Ghorpadé (2014c: 6, 2015: 4), and Mitra *et al.* (2015: 62) included it in their checklists. Ghorpadé (1981b: 75) listed *Saissetia formicarii* (Hemiptera: Coccoidea) as prey in nests of the ant *Crematogaster dohrni* in N.E. India (*vide* Das, 1959), but this appears to be a supposition based on association, or pure co-ocurrence, without observation of actual feeding by the larvae ? Cheng & Thompson (2008: 21) had written of the Microdontinae "The known larvae are predators of ant brood, and, hence, found in ant nests. . ." See also Sack (1932b: 234) and Thompson & Rotheray (1998: 107) for discussion and key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Microdon fulvopubescens Brunetti, 1923

Microdon fulvopubescens Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 313 (♀; 'Ceylon') [NHM, London]; Arif, 2001, *Taxonomic Studies of Syrphidae (Diptera) of Pakistan*, p. 20, 124; Reemer & Ståhls, 2013a, Zookeys, 288: 139; Ghorpadé & Shehzad, 2013, Colemania, 37: 3.

Pakistan: Balochistan (Ziarat) (Arif, 2001, Arif *et al*., 2002, Reemer & Ståhls, 2013a, Ghorpadé & Shehzad, 2013).

[NOTE: See detailed notes in Ghorpadé & Shehzad (2013: 3); this is a certain misidentification by Arif (2001: 20-21, 124) who based it on a single ♀ taken from Ziarat in September on an ornamental plant in Pakistan and his specimen needs to be examined for correct identity. The specimen was stated to be deposited in "the Insect Museum, Department of Agricultural Entomology, University of Agriculture, Faisalabad." This species was described and is known only from Sri Lanka and records outside of this island are suspicious. Reemer & Ståhls (2013a: 139) retained it in *Microdon s. str.* Knutson *et al.* (1975: 370) and Ghorpadé (2014c: 6) listed it.] **]**

Paramixogaster contractus (Brunetti, 1923)

Microdon contractus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 31o (♀;'Deesa, Bombay Presidency') [NHM, London].

Paramixogaster contractus: Reemer & Ståhls, 2013a, Zookeys, 288: 145. (as *n. comb.*)

India: GJ (Brunetti, 1923, Knutson *et al.*, 1975, Cheng & Thompson, 2008, Reemer & Ståhls, 2013a,b, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 310-311) described this from "a unique ♀ from Deesa (Bombay Presidency), iii.1897 (*Nurse*)." The type-locality Deesa is now in Gujarat State, and not in 'Maharashtra' as cited by Knutson *et al.* (1975: 370), them probably misinterpreting the old 'Bombay Presidency' of the then erstwhile British Raj, and assuming Maharashtra State, of which Bombay (now Mumbai) is the capital city. "*Paramixogaster* has an appendix on vein R4+5 (absent in *Mixogaster*), greatly

elongate basoflagellomere, and pilose and developed metasternum" (Cheng & Thompson, 2008: 42). Reemer & Ståhls (2013a: 145) transferred this species from *Microdon* Meigen, 1803 of Brunetti to *Paramixogaster* Brunetti, 1923. Reemer & Stahls (2013b: 684-685) then added five Afrotropical species to this genus "considered previously to be Oriental and Australian in its distribution . . ." Knutson *et al.* (1975: 370), Ghorpadé (2014c: 6), and Mitra *et al.* (2015: 62) included it in their checklists.]

Tribe Spheginobacchini

Spheginobaccha chillcotti Thompson, 1974

Spheginobaccha chillcotti Thompson, 1974, Trans. Amer. Ent. Soc., 100: 274 (♂;'Nepal, Katmandu, Balaju, 4500ft') [CNC, Ottawa]

India: UK; Nepal (Thompson, 1974, Kapoor *et al*., 1979, Cheng & Thompson, 2008, Reemer & Ståhls, 2013a,b, Ghorpadé, 2014b,c, 2015, Mitra *et al.*, 2015)

[NOTE: Thompson described this from a single male taken on 10.vi.1967 near Kathmandu in Nepal. He wrote : "This species is dedicated to the late Dr. J.G. Chillcott, the initiator and leader of the Canadian Nepal Expedition and an outstanding Dipterist in his own right." Ghorpadé (2014b: 6) listed five males from Dehra Dun, 600m in Uttarakhand that he had examined and gave detailed notes, *q.v*. This was a first record of this species outside of Nepal. Kapoor *et al.* (1979: 63), Reemer & Ståhls (2013a: 149), Ghorpadé (2014c: 6, 2015: 4; as '*chilcotti*,' *lapsus calami*), and Mitra *et al.* (2015: 62) included it in their checklists.]

Spheginobaccha macropoda (Bigot, 1883)

Sphegina? macropoda Bigot, Ann. Soc. Ent. Fr., (6) 3: 331 (♀; 'Burma') [NHM, London]

Baccha robusta Brunetti, 1907b, Rec. Indian Mus., 1: pl. xi, figs 3, 4; 1908, *ibid*., 2: 50 (♂♀; 'Lower Burma, Mergui') [ZSI, Calcutta - examined]; Hervé-Bazin, 1924, Ann. Soc. Ent. Fr., 92: 292. (as *n. syn.*);

Spheginobaccha macropoda : Hervé-Bazin, 1924, Ann. Soc. Ent. Fr., 92: 292. (as *n. comb.*); Thompson, 1974, Trans. Amer. Ent. Soc., 100: 262.

Spheginobaccha lieftincki van Doesburg, 1968, Zoöl. Meded., Leiden, 43: 160 (♂; 'Malaya, Perak, Ipoh, Sungei Raia') [RNH, Leiden]; Thompson, 1974, Trans. Amer. Ent. Soc., 100: 263. (as *n. syn.*)

India: UK, UP ? (Brunetti, 1907b, 1908, 1913b, 1915, 1923, Hervé-Bazin, 1924, van Doesburg Sr, 1968, Thompson, 1969, 1974, Knutson *et al*., 1975, Dirickx, 1995, Cheng & Thompson, 2008, Reemer & Ståhls, 2013a,b, Ghorpadé, 2014b,c, Mitra *et al.*, 2015)

[NOTE: Brunetti (1907b: Pl. XI, figs 3-4; 1908: 50) described his *robusta* as a *Baccha* based on ten males and females taken at Mergui in 'Lower Burma.' Hervé-Bazin (1924: 292) corrected Brunetti's *robusta* as being *Spheginobaccha macropoda* Bigot. Brunetti (1913b: 267) mentioned seeing four specimens from Darjiling, 1000-3000 ft. He commented that *Spheginobaccha* was "Near *Ascia* and *Sphegina*" (Brunetti, 1915: 226). In his FAUNA volume (Brunetti, 1923: 112, 120) he included both *Spheginobacha macropoda* and *Baccha robusta* separately, without realizing these were the same species. See Thompson (1974: 262-267) and Ghorpadé (2014b: 8-9) for detailed discussions. I examined the holotype male (head lost) of *Baccha robusta* Brunetti in ZSI, Calcutta which was labeled "Baccha robusta Brunetti TYPE ♂ / TYPE / Mergue 5528/10 / Spheginobaccha macropoda (Bigot), K.D. Ghorpade det. 1981." Also saw the Allotype ♀ (with antennae and abdomen lost) labeled "TYPE / Baccha Robusta Brunetti TYPE ♀ / Mergue 5560/10 / Spheginobaccha macropoda (Bigot), K.D. Ghorpade det. 1981."

Thompson (1974: 267) wrote "The type series of *lieftincki* van Doesburg consists of a mixed series of *duplex* Walker and *macropoda* Bigot. However, P.J. van Helsdingen informs me that the holotype of *lieftincki* is a specimen of *macropoda* Bigot." Reemer & Ståhls (2013a: 149) confirmed its placement in the Microdontinae. Cheng & Thompson (2008 : 44) wrote "*Spheginobaccha* was placed in the subfamily Microdontinae by Hull (1949: 318, also Shatalkin 1975) and this placement has been confirmed by DNA sequence evidence (Ståhls *et al.* 2003)." Knutson *et al.* (1975: 339), Ghorpadé (2014c: 6), and Mitra *et al.* (2015: 62) included it in their checklists.

"The species now placed in the subfamily Microdontinae are an unusual group among the flower flies" (Cheng & Thompson, 2008: 2). Thompson (1969) wrote an early important paper on this group when some 350+ species were known (p. 75), this increasing to some 405 species (Cheng & Thompson, 2008: 21) and now to about 454 (Reemer & Ståhls, 2013b: 661). Some 552 species group names (excluding misspellings) and from 50 to 180 genus group taxa were evaluated by Reemer & Ståhls (2013a,b). Thompson (1969: 77, 79-80) gave a summary of taxonomic studies on this subfamily. He wrote "The genera I include in the Microdontinae are the same as those listed by Hull (1949) except *Spheginobaccha* is excluded [this surprisingly, owing to lack of postmetacoxal bridge and specialized structures of male terminalia, as he reasoned then]. *Indascia* Keiser does belong to the Microdontinae, not to the Cheilosinae as supposed by its author (Keiser, 1958)." His Plan 1 (text fig.) was stated "to offer the most logical illustration of the relationship of the Microdontinae to the other syrphids. . . The strongly plesiomorphic nature of the subfamily suggests that the microdons

might best be considered as a separate family. . . No other groups have been derived from the microdontine line. Hull (1949) included the Eumerinae and Nausigasterinae in the microdontine divergence . . . [but these] could not have evolved from the Microdontinae for a number of reasons. . . It is also highly unlikely that the phytophagous larvae of Eumerinae and the saprophytic larvae of Nausigasterinae could have evolved from a specialized larval form like *Microdon* which lacks segmentation and segmental spines and possesses specialized mouthparts."

Later, Cheng & Thompson (2008: 22) wrote "Recent analyses based on DNA sequence data (Ståhls *et al.*, 2003), however, suggest that this question [of *Spheginobaccha* being the primitive (basal) sister-group to all the other Eristalinae] needs to be revisited as *Spheginobaccha* appears to be a proper member of the Microdontinae based on DNA data. Obviously one would want to know what the larvae of *Spheginobaccha* do !" The papers of Hull (1949), van Doesburg Sr (1968), Thompson (1969, 1972b, 1974), Dirickx (1995), Cheng & Thompson (2008), Reemer & Stahls (2013a,b) and Ghorpadé (2014b) may be consulted for more information on the Microdontinae.]

Subfamily ERISTALINAE

Tribe Brachyopini

Asiosphegina bispinosa (Brunetti, 1915)

Sphegina bispinosa Brunetti, 1915, Rec. Indian Mus., 11: 223 (♂; 'Margherita, Assam') [ZSI, Calcutta - examined]

Asiosphegina bispinosa : Knutson *et al.* , 1975; 338. (as *n. comb.*)

India: UK (Brunetti 1915, 1923, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 223) described this based on a male and three females from 'Assam, E. and W. Himalayas.' The holotype male was from Margherita (now in Arunachal Pradesh), one female from Darjiling, 7000 ft collected by Brunetti himself and two other females taken near Bhowali, 5700 ft., Kumaon, Western Himalayas, by A.D. Imms. The 'type' male and female are in the ZSI, Calcutta, confirmed by my examination there in 1981. In his FAUNA volume, Brunetti (1923: 107-108, Pl. III, figs 9-10) gave a description and some figures, but his data on the types was curiously different from that given in his earlier paper where he had described this species. Here he mentioned a type male from 'Sureil, Darjiling District, 5000 ft., 11-31.x.1917 (*Annandale* and *Gravely*)' and a type female 'in the Pusa collection [= IARI, New Delhi] from Mussoorie, ix.1906.' He also stated the '*Type* ♂ in Indian Museum [= ZSI, Calcutta] is in indifferent condition.' I found the two 'types' from Margherita and Darjiling in Calcutta, pinned in Box 16, but could not locate the 'type' from Sureil. Knutson *et al.* (1975: 338) listed this and Shah *et al.* (2014: 303), Ghorpadé (2014c: 6) and Mitra *et al.* (2015: 62) included it in their checklists.]

Asiosphegina hansoni Thompson, 1966

Sphegina (Asiosphegina) hansoni Thompson, 1966, Bull. Brooklyn ent. Soc., 59+60: 42 (♂; 'Parewavir, 570m, Nepal') [USNM, Washington, DC]

Nepal (Thompson, 1966, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Thompson & Rotheray, 1998, Ghorpadé, 2014c, 2015).

[NOTE: Thompson described this based on a single male taken in Nepal in March 1957 by E.I. Coher and G.P. Joshi, with 'unusual structures on the postabdomen' and 'not closely related to any known species.' Knutson *et al.* (1975: 338), Kapoor *et al.* (1979), and Ghorpadé (2014c: 6, 2015: 4) listed it. See Thompson & Rotheray (1998: 117) for key to Palaearctic taxa of this genus.]

Brachyopa Unnamed sp. 1 [undet.]

India: HP (Brunetti, 1907a, Sack, 1932b, Thompson, 1980, Thompson & Rotheray, 1998, Ghorpadé, 2014c).

[NOTE: Brunetti (1907a: 169) mentioned "there is a single ♂ from Kodiali (8,400 feet) [on the Simla Hills] which I am unable to place generically. It is nearest to *Brachypalpus*, but lacks the enlarged posterior femora with spines beneath." Chris Thompson (*pers. comm.*) feels it may be a species of *Brachyopa*. He published a synopsis of Palaearctic *Brachyopa* (Thompson, 1980), with a note on the problem of old scientific names, which can be consulted. Ghorpadé (2014c: 7) listed it. See also Sack (1932b: 128) and Thompson & Rotheray (1998: 114, 117) for discussion and key to this genus in the Palaearctic.

In his manuscript file on a 'Conspectus of Oriental—Papuan Syrphidae' e–mailed to me, Chris Thompson (*in litt.*) mentions an "undescribed species" from Burma (and Thailand ?), but makes no mention of the above unnamed speces from Kodiali (Brunetti, 1907a: 169).]

Chrysogaster tadzhikorum Stackelberg, 1952

Chrysogaster tadzikorum Stackelberg, 1952, Trudy Zool. Inst., Leningr., 12: 363 (sex ?; 'Tajikistan, Stalinabad, southern slope of Hissar mountain ridge, Ziddy') [ZIRAS, St Petersburg]

Afghanistan (Bańkowska, 1968, 1969, Peck, 1988, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 205, 1969: 280) listed specimens taken in east Afghanistan's Nengrahar Province. Peck (1988: 135) and Ghorpadé (2014c: 7, 2014d: 4) listed it from Afghanistan.]

Chrysogaster Unnamed sp. 1 [undet.]

India HP (Brunetti, 1907a, Sack, 1932b, Thompson & Rotheray, 1998, Ghorpadé, 2014c).

[NOTE: Brunetti (1907a: 168) mentioned two males of an undetermined *Chrysogaster* taken at Matiana on the Simla Hills, and it was listed by Ghorpadé (2014c: 7). See also Sack (1932b: 34) and Thompson & Rotheray (1998: 115, 117) for discussion and key to this genus in the Palaearctic.]

Lejogaster metallina (Fabricius, 1777)

Syrphus metallina Fabricius, 1777, Species Insect., 2: 431 (sex ?; 'Germaniae') [?]

Afghanistan (Bańkowska, 1968, 1969, Peck, 1988, Ghorpadé, 2014c,d).

[NOTE: "Fabricius (1781)" entered in some publications is in error; 1777 is the correct year of its published description. Bańkowska (1968: 205, 1969: 280) gave data on specimens of '*Liogaster metallina*' collected in Afghanistan. Peck (1988: 137) and Ghorpadé (2014c: 7, 2014d: 4) listed it from that country by this correct binomen.]

Lejogaster splendida (Meigen, 1822)

Chrysogaster splendida Meigen, 1822, Syst. Beschr., 3: 271 (sex ?; 'Österreich') [?]
Chrysogaster tarsata Meigen, 1822, Syst. Beschr., 3: 271 (sex ?; 'Österreich') [?]
Liogaster aurichalcea Becker, 1913, Annu. Mus. Zool. Acad. Sci. St-Petersb., 17: 606 (sex ?; 'Iran: Chorassan, Dorf Kjaris-i-Nan; Pers.-Beludshistan zwischen Ku-i-Murgak und Dech-i-Pabid; Kirman') [?]

Afghanistan (Sack, 1932b, Bańkowska, 1969, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé, 2014c,d).

[NOTE: Ghorpadé (2014c: 7, 2014d: 4) listed this as *tarsata* (Meigen, 1822) in error; Peck (1988: 138) gave *splendida* (Meigen, 1822) as the valid name with page priority and the present correct binomen. Bańkowska (1969: 280) listed specimens taken in north and east Afghanistan, as '*Liogaster splendida*.' See also Sack (1932b: 33) and Thompson & Rotheray (1998: 117) for discussion and key to this genus in the Palaearctic.]

Myolepta graciliventris Wiegmann, 1986

Myolepta graciliventris Wiegmann, 1986, J. N.Y. ent. Soc., 94: 378 (♂; 'Sundarijel, Nepal') [USNM, Washington, DC]

Nepal (Wiegmann, 1986, Ghorpadé, 2014c).

[NOTE: Wiegmann described this from Sundarijel near Kathmandu in Nepal based on two males labeled "Nepal, Sundarijel, 3 May 1980, Amnon Freidberg coll." and included it in a key to known Oriental species of this genus. When I visited Ottawa in August 1983, I had seen these two male specimens and determined it as an unnamed *Myolepta* which Chris Thompson told me was undescribed, and new, then. Ghorpadé (2014c: 7) listed it.]

Myolepta himalayana Brunetti, 1915

Myiolepta himalayana Brunetti, 1915, Rec. Indian Mus., 11: 233 (♂♀; 'Matiana, West Himalayas') [ZSI, Calcutta - examined]

India: HP (Brunetti, 1915, 1917, 1923, Sack, 1932b, Thompson, 1971, Knutson *et al.*, 1975, Thompson & Rotheray, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 233, Pl. XIII, figs 12-13) described this based on a male and female taken at Matiana by Annandale, putting it in the correct genus as '*Myiolepta*.' He mentioned this (Brunetti, 1917: 89) in his Simla District Diptera paper and added "marked 'S. 15' (probably meaning Sept. 15th)." In his FAUNA volume, Brunetti (1923: 229-230, fig. 45) gave a full description, a figure of its facial profile, but still used the wrong '*Myiolepta*' spelling. I saw the two specimens in the ZSI (Calcutta) type collection, pinned in Box 16, when I visited in 1981. Thompson (1971: 344) mentioned it as a *Myolepta*, correctly, and included it in his key to the three then known Oriental species. Knutson *et al.* (1975: 337) included these three species as *Myolepta*. Listed by Shah *et*

al. (2014: 299), Ghorpadé (2014c: 7) and by Mitra *et al.* (2015: 62). See also Sack (1932b: 386) and Thompson & Rotheray (1998: 115-116) for discussion and key to this genus in the Palaearctic.]

Neoascia pavlovskii Stackelberg, 1955

Neoascia pavlovskii Stackelberg, 1955, Trudy Zool. Inst., Leningr., 12: 346 (sex ?; 'Hissarian mountain ridge, Kondara, Tajikistan') [ZIRAS, St Petersburg]

Afghanistan (Sack, 1932b, Bańkowska, 1968, Peck, 1988, Thompson & Rotheray, 1998, Reemer & Hippa, 2005, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 199) mentioned specimens collected in NE. Afghanistan. Peck (1988: 144) and Ghorpadé (2014c: 7, 2014d: 4) listed it from that country. Reemer & Hippa (2005) described the "first two Oriental species of *Neoascia*," from the mountains in northern Vietnam and northern Burma, overlooking this species recorded from Afghanistan which country has hitherto not been considered Oriental (of Indian sub-continent affinity), but rather as Palaearctic (!). They discussed two possible 'subgenera' of *Neoascia* (p. 338) and added on biogeography of the genus "The areas in which both species have been found are part of the eastern offshoot of the Himalayan mountain chain. At high altitudes (above 2000 m), the flora and fauna of these mountains contains many Palaearctic elements (Malaise 1945). Therefore, it is hardly surprising that representatives of the genus *Neoascia* have been found here." See also Sack (1932b: 123) and Thompson & Rotheray (1998: 117) for discussion and key to this genus in the Palaearctic.]

Orthonevra himalayensis Nielsen, 2001

Orthonevra himalayensis Nielsen, 2001, Dipteron, 4(1): 13 (♂; 'Mt Everest, Tibet') [DZAS, Beijing]

Nepal (Nielsen, 2001, Weipert & Claussen, 2006, Ghorpadé, 2014c, 2015).

[NOTE: Nielsen (2001: 13, fig. 2) described it from Mt Everest at 500o ft elevation, a pair taken *in copula*. Weipert & Claussen (2006: fig. 16) compared it with *karnaliensis* and *kozlovi* (*q.v.*). Ghorpadé (2014c: 7, 2015: 4) listed it.]

Orthonevra karnaliensis Weipert & Claussen, 2006

Orthonevra karnaliensis Weipert & Claussen, 2006, Studia Dipterologica, 12: 320 (♂; 'Hochtal Gothichaur, 2900-4100m, Karnali Prov., Nepal') [NM, Erfurt]

Nepal (Weipert & Claussen, 2006, Ghorpadé, 2014c, 2015)

[NOTE: Weipert & Clausen (2006: 320, figs 1-5, 9-15, 17-19) described this from a large series taken in the Karnali and Seti Provinces of NW. Nepal in May and June. Ghorpadé (2014c: 7, 2015: 4) listed it.]

Orthonevra kozlovi (Stackelberg, 1952)

Orthoneura kozlovi Stackelberg, 1952, Trudy Zool. Inst., Leningr., 12: 357 (♂♀; 'China, r Bomyn, Ichegyn, northern Tsaidam Gobi Rob') [ZIRAS, St Petersburg]

Afghanistan; India: JK (Bańkowska, 1968, Lambeck & van Brink, 1973, 1975a, Peck, 1988, Weipert & Claussen, 2006, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Bańkowska (1968: 206) mentioned a female taken in E. Afghanistan at Pagmangebirge, 2400m in July. Lambeck & van Brinck (1973: 93) took six males and a female on white *Ranunculus* flowers at Gulmarg in Indian Kashmir, and described its karyotypes (Lambeck & van Brink, 1975a). Weipert & Claussen (2006: fig. 16) compared it with *karnaliensis* and *himalayensis* (*q.v.*). Peck (1988: 141), Shah *et al.* (2014: 299), Ghorpadé (2014c: 7) and Mitra *et al.* (2015: 62) listed it.]

Orthonevra nobilis (Fallén, 1817)

Eristalis nobilis Fallén, 1817, *Syrphici Sveciae*, p. 57 (sex ?; 'Svecia') [UZM, Copenhagen ?]

Pakistan ?; India: JK (Sack 1935, van Doesburg, 1955, Weipert & Claussen, 2006, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Sack (1935) and van Doesburg (1955) mentioned it taken on the Dutch Karakorum Expedition, but not whether it was taken in present India or Pakistan. Weipert & Clausen (2006: 328) discussed it along with other Oriental species of this genus. Shah *et al.* (2014: 299), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 62; as '*Ortho Evra nobilis*') listed it from India.]

Orthonevra pilifacies (Stackelberg, 1952)

Orthoneura pilifacies Stackelberg, 1952, Trudy Zool. Inst., Leningr., 12: 361 (sex ?; 'Hissar mountain ridge, Gafilabad, Ziddy, Tajikistan') [ZIRAS, St Petersburg]

Afghanistan (Sack, 1932b, Bańkowska 1968, Peck 1988, Thompson & Rotheray, 1998, Ghorpadé, 2014c).

[NOTE: Bańkowska (1968: 205) mentioned several specimens taken in NE. Afghanistan. Peck (1988: 142) and Ghorpadé (2014c: 7) listed it. See also Sack (1932b: 27) and Thompson & Rotheray (1998: 117) for discussion and key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Orthonevra aenethorax Kohli, Kapoor & Gupta, 1988

Orthonevra aenethorax Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 124 (♀; 'Kasauli, H.P.') [IARI, New Delhi – examined]

India: HP, JK (Kohli *et al*., 1988, Weipert & Claussen, 2006, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*. 2015).

[NOTE: See notes given below under *indica* Brunetti.]

Orthonevra indica Brunetti, 1915

Chrysogaster (Orthoneura) indica Brunetti, 1915, Rec. Indian Mus., 11: 203 (♂; 'Kangra Valley') [ZSI, Calcutta – examined]

India: HP (Brunetti 1915, 1923, Singh *et al*., 1955, Knutson *et al*., 1975, Weipert & Claussen, 2006, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1915) placed this in *Orthonevra* but his male type from "Kangra Valley, xi-09, Dudgeon," now in Himachal Pradesh, deposited in the Z.S.I. Calcutta, requires to be examined properly to corroborate his generic placement. I found the type pinned in Box 15 in ZSI, Calcuta. Singh *et al.* (1955: 714) gave 'Kangra Valley, 4500 ft.' for '*Chrysogaster (Orthoneura) indica* Brunetti.' Knutson *et al.* (1975: 337) listed it as an *Orthonevra* from the Punjab. Note that Weipert & Claussen (2006: 329, figs 24, 25), in a recent paper, concluded about this and *aenethorax* Kohli *et al.* (*q.v*.) that "According to the original descriptions and figures, neither species appears to belong to the genus *Orthonevra* as currently understood," and that "The latter character [of upper cross vein M1 in wing—K.G.] suggests that *O. indica* does not belong to the genus *Orthonevra*, and should be placed elsewhere in one of the related genera of the Chrysogasterini." They also noted that "*aenethorax* . . . has characters that clearly conflict with the concept of *Orthonevra* . . . characters indicate that this taxon was misplaced by its authors and that it should be classified elsewhere outside the Chrysogasterini." Shah *et al.* (2014: 299), Ghorpadé (2014c: 7) and Mitra *et al.* (2015: 63) listed it.] **]**

Sphegina guptai Mutin, 1998

Sphegina (Sphegina) guptai Mutin, 1998, Internat. J. Dipterol. Res., 9(3): 240 (♂; 'Northwest Himalaya, Rahla, 2743 m') [USNM, Washington, DC]

India: HP (Mutin, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*. 2015).

[NOTE: Mutin (1998: 240) described this from a male and a female taken at Rahla, 2743m and Ahla, 2286m, both in Himachal Pradesh, collected in June by M.L. Gupta, who was my colleague in the Zoology Department of Delhi University when I was pursuing my doctorate in Dr V.K. Gupta's Systematic Entomology Laboratory in 1973-1974. Shah *et al.* (2014: 303), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 63) listed it.]

Sphegina kumaoniensis Mutin, 1998

Sphegina (Sphegina) kumaoninensis [*sic*] Mutin, 1998, Internat. J. Dipterol. Res., 9(3): 241 (♂; 'Khati, Kumaon Himalaya') [USNM, Washington, DC] [*lapsus calami*]

India: UK (Mutin, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*. 2015).

[NOTE: Mutin (1998: 241) described this as "*kumaoninensis*" from a damaged type male [in USNM, Washington, DC] taken at Khati, 2210m, on the Kumaon Himalaya, now in present Uttarakhand, collected in October by Girish Chandra, again my colleague in the Zoology Department of Delhi University when I was pursuing my doctorate in Dr V.K. Gupta's systematic entomology laboratory in 1973-1974. The species name was spelt correctly in the abstract and hence the subsequent incorrect spelling on p. 241 can be taken as a *lapsus calami*. Shah *et al.* (2014: 303), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 63) listed it.]

Sphegina tricoloripes Brunetti, 1915

Sphegina tricoloripes Brunetti, 1915, Rec. Indian Mus., 11: 225 (♀;'Bhowali, Kumaon District, 5700 ft.') [ZSI, Calcutta – examined]

India: HP, UK (Brunetti 1915, 1923, Sack, 1932b, Knutson *et al*., 1975, Thompson & Rotheray, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*. 2015).

[NOTE: Brunetti (1915: 225, Pl. XIII, fig. 9) described it from a single female taken at Bhowali, 5700 ft., Kumaon District, 2-vii-10, collected by A.D. Imms. In the FAUNA volume, Brunetti (1923: 109-110, Pl. III, fig. 11) again described and illustrated it. A 'second ♀ was taken by Col. Nurse, Simla, viii.1908' he wrote. The holotype I confirmed as deposited in ZSI, Calcutta. Shah *et al.* (2014: 304), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 63) listed it.]

Thompson (1972b: 14-116) had recognized this tribe as 'Chrysogasterini' then [now Brachyopini] in his illuminating generic revision of the Neotropical Milesinae [= Eristalinae now]. He wrote "The chrysogasterines form a rather homogeneous tribe . . . can be divided into two subtribes, Chrysogasterina and Spheginina. . . The spheginines form a natural group when restricted to *Sphegina* and *Neoascia*. . . The Spheginina is a predominantly Holarctic group . . . The Chrysogasterina are worldwide in distribution." His Diagram 4 gave a phylogenetric tree for Chrysogasterini genera where *Sphegina* and *Neoascia* were basal, proceeding to *Chrysogaster s. lat.* [+ *Orthonevra*], with *Myolepta* as the most derived genus. He also gave a key to Neotropical Genera of this tribe. See also Sack (1932b: 119) and Thompson & Rotheray (1998: 117) for discussion and key to this genus in the Palaearctic.]

Tribe Callicerini

Callicera christiani Ghorpadé, 1982

Callicera christiani Ghorpadé, 1982, Colemania, 1(3): 165 (♀; 'Manali 1828m') [USNM, Washington, DC - examined]

India: HP (Ghorpadé, 1982, 2014c, Shah *et al.*, 2014, Mitra *et al*., 2015)

[NOTE: Ghorpadé (1982: 165, figs 1-2) described this from a single female taken by him at Manali, 1828m in October 1979. The holotype is labeled "INDIA, Himachal Pradesh, Manali, 1828m, 10.x.1979, K.D. Ghorpade A841 / HOLOTYPE Callicera christiani Ghorpade, 1982." As I wrote (Ghorpade, 1982: 165) "The single female of this new species was netted around noon as it, very conveniently, flew directtly towards me and momentarily hovered in front with a distinct droning noise facilitating its surprisingly easy capture. I was collecting in a leafless apple orchard with some chir pines (*Pinus roxburghii*) on a cultivated hill slope above the hot sulphur spring at Vashisht on the banks of the River Beas." It was named after F. Christian Thompson "in deep appreciation of his personal interest in and support of my interest in the Syrphidae." Shah *et al.* (2014: 290), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 63) listed it.]

Callicera nitens Coe, 1964

Callicera nitens Coe, 1964, Bull. Br. Mus. Nat. Hist. (Ent.), 15: 286 (♀; 'above Sangu, c. 9,200 ft., Taplejung District, E. Nepal') [NHM, London]

Nepal (Coe, 1964, Knutson *et al.*, 1975, Ghorpadé, 1982, 2014c, 2015)

[NOTE: Coe described this based on a single female taken in east Nepal. Ghorpadé (1982: 166) included it in a key to Oriental species of this genus, and Knutson *et al.* (1975: 332), Ghorpadé (2014c: 7, 2015: 5) listed it.]

Callicera robusta Coe, 1964

Callicera robusta Coe, 1964, Bull. Br. Mus. Nat. Hist. (Ent.), 15: 286 (♂♀; 'Naini Hills 7000-8000 ft., N.E. India') [NHM, London]

India: UK; Nepal (Coe, 1964, Knutson *et al.*, 1975, Ghorpadé, 1982, 2014c, Claussen & Weipert, 2003, Shah *et al.*, 2014, Mitra *et al.*, 2015)

[NOTE: The type-locality was wrongly assumed to be in "NE India" by Knutson *et al.* (1975: 332). See Ghorpadé (2007: 5) for correct interpretation. Coe (1964: 286-287) gave the locations as "Naini Hills 7,000-8,000 ft., and Kunj Khanak, 8,000 ft.," from these hills, which must be in or around Naini Tal on the Kumaon Himalaya. Ghorpadé (1982: 166) included it in a key to Oriental species of this genus, but he inadvertently omitted Nepal from that paper (Ghorpadé, 2015: 5), which was in error. Claussen & Weipert (2003: 374) mentioned one female taken at Umg. Jumla, 2200-2400m, in May in the Karnali Province of Nepal. Knutson *et al.* (1975: 332), Shah *et al.* (2014: 29o), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 63) listed it.]

Callicera sanguensis Coe, 1964
Callicera sanguensis Coe, 1964, Bull. Br. Mus. Nat. Hist. (Ent.), 15: 286 (♂; 'Taplejung District, E. Nepal ') [NHM, London]

Nepal (Sack, 1932b, Coe, 1964, Ghorpadé, 1982, 2014c, 2015, Thompson & Rotheray, 1998)

[NOTE: This was described by Coe (1964: 288) based on a single male taken in mixed vegetation by stream in gully in an undisclosed locality in Taplejung District in eastern Nepal. Knutson *et al.* (1975) mistakenly omitted listing this in their Catalog. Ghorpadé (1982: 166) included it in a key to Oriental species and then listed it (Ghorpadé, 2014c: 7, 2015: 5). See Ghorpadé (1982) and Thompson (1972b: 112-113) for discussion on this tribe. See also Sack (1932b: 111) and Thompson & Rotheray (1998: 107) for discussion and key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Callicera brunetti Arif, 2001, **nom. nud.**
Callicera sarhadi Arif, 2001, *Taxonomic Studies of Syrphidae (Diptera) of Pakistan*, p. 71. (♂; 'Kalam, Swat) [IMUA, Faisalabad] **nom. nud.**

Pakistan : Khyber Pakhtunkhwa (Kalam) (Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Arif (2001: 71-72) described this based on 2♂ specimens taken at the above locality in June from apricot, tobacco, rice and grass. Stated as close to *Callicera aenea* and *C. spinolae*. This also is probably misidentified and specimens need to be examined for correct identity. See Ghorpadé & Shehzad (2013: 3). Ghorpadé (2014: 7) listed it.]

Callicera peshawarensis Arif, 2001, **nom. nud.**
Callicera peshawarensis Arif, 2001, *Taxonomic Studies of Syrphidae (Diptera) of Pakistan*, p. 75. (♂; 'Peshawar') [IMUA, Faisalanad] **nom. nud.**

Pakistan : Khyber Pakhtunkhwa (Peshawar)(Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Arif (2001: 75, 80 [*sic* !]) described this based on a single ♂ specimen taken at the above locality in June from apricot, tobacco, rice and grass which is certainly incorrect for a single specimen ?! It was compared with *Callicera 'sarhadi,'* which was NOT described but included in the checklist (p. 125) instead of *brunetti* [*sic*], in error, and close to *C. spinolae* and *C. aenea*. This is also probably misidentified and specimens need to be examined for correct identity. See Ghorpadé & Shehzad (2013: 3). Ghorpadé (2014c: 7) listed it.] **]**

Tribe Cerioidini

Ceriana brevis (Brunetti, 1923)
Ceria brevis Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 328 (♀; 'Pusa') [NHM, London]

Pakistan ? ; India: BI, JK (Brunetti, 1923, Shannon, 1927, Singh *et al*., 1955, Knutson *et al*., 1975, Aslamkhan *et al*., 1997, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 328-329) described it (as '*Ceria*') and mentioned that the holotype female was taken at Pusa [Bihar] in a house in April. He also mentioned seeing another female from 'Kashmir, 5000 ft., iv.1901 (*Nurse*).' The record from Pakistan is probably misidentified and specimens need to be examined for correct identity; see Ghorpadé & Shehzad (2013: 3). Singh *et al.* (1955: 714) gave Kashmir, 5000 ft. Shannon (1927: 51), Shah *et al.* (2014: 290), Ghorpadé (2014c: 7), and Mitra *et al.* (2015: 63) listed it.]

Ceriana brunettii (Shannon, 1927)
Tenthredomyia brunettii Shannon, 1927, J. Wash. Acad. Sci., 17(2): 45 (♂♀; 'British Baluchistan, Quetta)' [NHM, London]

Pakistan (Shannon, 1927, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Shannon (1927: 45-46) described this 'Rather small species' (as *Tenthredomyia*') from Quetta in then British Baluchistan, a pair taken there by Col. C.G. Nurse in June. It was "Named for Mr. E. Brunetti, in recognization [*sic*] of his contributions to our knowledge of Indian *Diptera*."' It was

curiously omitted in the Knutson *et al.* (1975) catalog, but listed by Peck (1988: 178), Ghorpadé & Shehzad (2013: 4) and Ghorpadé (2014c: 8).]

Ceriana compacta (Brunetti, 1907)

Ceria compacta Brunetti, 1907b, Rec. Indian Mus., 1: pl. xiii, fig. 13; 1908, *ibid*., 2: 95 (♀; 'Mussoorie, Lower Himalayas') [NHM, London]

India: UK (Brunetti, 1907b, 1908, 1915, 1923, Shannon, 1927, Knutson *et al*., 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1907b: Pl. XIII. fig.13, 1908: 95) described this (as '*Ceria*') based on a single female taken by him 'at Mussoorie, 22-vi-05,' and then (Brunetti, 1915: 250-251) he mentioned finding another female, also from Mussoorie, 4-iv-05. But in the FAUNA volume (Brunetti, 1923: 329) he mentioned only the type female. Shannon (1927: 51), Shah *et al.* (2014: 290), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Ceriana dimidiatipennis (Brunetti, 1923)

Ceria dimidiatipennis Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 329 (♂; 'Hangu, North-West Frontier Province') [NHM, London]

Pakistan; India: JK (Brunetti, 1923, Shannon, 1927, Singh *et al*., 1955, Lambeck & van Brink, 1973, 1975a, Knutson *et al*., 1975, Aslamkhan *et al*., 1997, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti's '*Ceria dimidiatipennis*' Holotype ♂ and Paratype ♂ (taken by T.B. Fletcher) were from Hangu, N.W.F.P., now in Pakistan; the Allotype ♀ was from Abbottabad, also now in Pakistan and again caught by Fletcher. He also saw specimens from Quetta (Baluchistan), and Kashmir, taken by Nurse, which latter could also have been in currently administered Pakistani Kashmir. However, Singh *et al.* (1955: 714) gave Kashmir, 5000-6000 ft. Lambeck & van Brink (1973: 93, 1975a: 11) gave specimens seen from Nagin Lake, Arts Emporium and Moghul Gardens near Srinagar, Indian Kashmir and described karyotypes. Shannon (1927: 51), Knutson *et al*. (1975: 344), Shah *et al.* (2014: 290), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Ceriana ornatifrons (Brunetti, 1915)

Ceria ornatifrons Brunetti, 1915, Rec. Indian Mus., 11: 252, Pl. XIII, fig. 22 (♀; 'Kumdhik, Nepal Hmalaya') [ZSI, Calcutta - examined]

Nepal (Brunetti, 1915, 1923, Shannon, 1927, Sack, 1932b, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Thompson & Rotheray, 1998, Ghorpadé, 2014c, 2015, Mitra *et al*., 2015)

[NOTE: Brunetti (1915: 252, 1923: 331) described this, as a *Ceria*, from the base of the Nepal Himalayas, 22.iii.1909, and also mentioned specimens from Singla, 1500ft, Darjiling District, iv.1913, taken by Lord Carmichael's collector. The holotype was seen by me in Box 17 at the ZSI, Calcutta in 1981. Shannon (1927: 51), Knutson *et al.* (1975: 344), Kapoor *et al.* (1979: 64), Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.* (2015: 63) listed it. See also Sack (1932b: 339) and Thompson & Rotheray (1998: 109) for discussion and key to this genus in the Palaearctic.]

Monoceromyia crux (Brunetti, 1915)

Ceria crux Brunetti, 1915, Rec. Indian Mus., 11: 253 (♀; 'Kousanie, 6075 ft, Kumaon') [ZSI, Calcutta – examined]

India: UK (Brunetti, 1915, Shannon, 1927, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c).

[NOTE: Brunetti (1915: 253) described this, as a *Ceria*, from a single female taken at 'Kousanie, 6075 ft., Kumaon, vii-14 [*Col. Tytler*], in the Western Himalayas.' He commented "*Ceria* probably contains numerous as yet undiscovered species in the Himalayas." In the FAUNA volume (Brunetti, 1923: 332) he again gave a full description. Shannon (1927: 52), Knutson *et al.* (1975: 344), Shah *et al.* (2014: 299), and Ghorpadé (2014c: 8) listed it, but Mitra *et al.* (2015) omitted it, by mistake ?]

Monoceromyia eumenioides (Saunders, 1842)

Ceria eumenioides Saunders, 1842, Trans. ent. Soc. Lond., 3: 60 (♀; 'northern India') [NHM, London]

Ceria eumenoides : Brunetti, 1908, Rec. Indian Mus., 2: 96; Bhatia, 1931, Indian J. agric. Sci., 1(4): 503 [*lapsus calami*]

Ceria apicata Brunetti, 1908, Rec. Indian Mus., 2: 95 (♂; 'Ganjam, Madras Presidency') [ZSI, Calcutta – examined]

Ceria apicata Bigot, *nomen nudum* : Brunetti, 1908, Rec. Indian Mus., 2: 96.

Pakistan; India: BI (Brunetti, 1923, Shannon, 1927, Bhatia 1931, Beeson, 1953, Knutson *et al.*, 1975, Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1908: 96) mentioned two female specimens in the ZSI, Calcutta collection. In the FAUNA volume (Brunetti, 1923: 337-338, P. VI, fig. 8) he gave localities : 'Kohat, North-West Frontier Province, 7.v.1916 (*Fletcher*), Matheran, Bombay Presidency, iii. & v.1899 (*Nurse*), Chapra, Bengal [*sic*] (*Mackenzie*), Calcutta, Abbottabad, Hazara District, 21.v.1915 (*Fletcher*), and northern Bengal (Saunders Collection).' Also from 'Ganjam (Madras Presidency) [= Orissa] for *apicata*. Bhatia (1931: 503-508, Pl. LVI) gave details of its life history at Pusa (Bihar) where a gravid female was caught in April on flowing sap of a Siris (*Albizia lebbek*) tree. Beeson (1953: 339) gave this as breeding in sap of fermenting *Albizia lebbek* and quoted Bhatia (1931). Shannon (1927: 52), Knutson *et al.* (1975: 344), Ghorpadé & Shehzad (2103: 4), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Monoceromyia javana (Wiedemann, 1824)
Ceria javana Wiedemann, 1824, Analecta Ent., p. 32 (♀; 'Java') [UZM, Copenhagen ?]
Ceria vittigera Bigot, *nomen nudum* : Brunetti, 1908, Rec. Indian Mus., 2: 96.

Nepal (Brunetti, 1908, 1913b, 1915, 1923, Shannon, 1927, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Brunetti (1908: 96) wrote "A specimen from the Naga Hills in the collection [ZSI, Calcutta], labeled *C. vittigera*, Big., is only *C. javana*, Wied., the former name being a *nomen nudum*." Brunetti (1913b: 273) mentioned "Four ♀♀, Darjiling, 1000-3000 ft." Brunetti (1915: 251) then wrote "I have seen several specimens of *C. javana*, W., ♀" [in his own collection]. In the FAUNA volume (Brunetti, 1923: 339-340, fig. 71) he gave a full description and a figure based on several specimens "in the British and Indian Museums. Darjiling District, 1000-3000 ft., v. 1912 (*Lord Carmichael*); Sukna, 500 ft., 2.vii.1908 (*Annandale*); Sidapur, Coorg, S. India, 3000 ft., 29.iv.1917; Margherita, Assam." I suspect that the material from Coorg (Karnataka) may be misidentified ? Shannon (1927: 52), Knutson *et al.* (1975: 344), Kapoor *et al.* (1979: 64), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Monoceromyia multipunctata (Hull, 1941)
Cerioides multipunctata Hull, 1941, Psyche, 48(4): 163 (♂; 'Koolos, India') [MCZ, Cambridge, MA]

India: HP (Hull, 1941, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2105).

[NOTE: The only male type was taken from "Koolos, India" by a Mr Carleton, and most probably refers correctly to the Kulu valley in Himachal Pradesh ? Knutson *et al.* (1975: 345), Shah *et al.* (2014: 299), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Monoceromyia obscura (Brunetti, 1907b)
Ceria obscura Brunetti, 1907b, Rec. Indian Mus., 1: Pl. xiii, fig. 12, 1908, *ibid.*, 2: 94 (♀; 'Sikkim') [ZSI, Calcutta – examined]

Nepal (Brunetti, 1907b, 1908, 1923, Shannon, 1927, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Brunetti's (1907b: Pl. XIII, fig. 12, 1908: 94) validated this species name. Further details were later given by Brunetti (1923: 338-339) as follows : "Described from one ♀ in the Indian Museum collection, from Sikkim. De Meijere records a ♂ from the same locality. I have seen examples from the Runjit Valley, Sikkim, v.1894 (Bingham); Taungu, Sikkim, xi.1888 (Bingham); and from Assam." Coe (1964: 271) reported one male from "East Nepal: Bi Khola, c. 7,500-c. 8,850 ft., 13.v.1962, 1 ♂ (G. Ebert, H. Falkner). In Zoologisches Sammlung des Bayerischen Staates." I confirmed the type in ZSI, Calcutta when I visited in 1981. Shannon (1927: 52), Knutson *et al*, (1975: 345), Kapoor *et al.* (1979: 64), Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.* (2015) listed it.]

Monoceromyia polistoides (Brunetti, 1923)
Ceria polistoides Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 335 (♀; 'Simla') [BMNH, London]

Pakistan; India: HP; Nepal (Brunetti, 1923, Shannon, 1927, Knutson *et al.*, 1975, Kapoor *et al.*, 1979,Thompson & Rotheray,1998, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 335) described it from "Simla, v.1897 (*Nurse*)." Shannon (1927: 52), Knutson *et al.* (1975: 345), Kapoor *et al.* (1979: 64), Ghorpadé & Shehzad (2013: 4), Shah *et al.* (2014: 299),

Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.*, 2015: 63) listed it. See Thompson & Rotheray (1998: 109) for a key to this genus in the Palaearctic.]

Sphiximorpha fulvescens (Brunetti, 1915)

Ceria fulvescens Brunetti, 1915, Rec. Indian Mus., 11: 251 (♂; 'Bhowali, 5,700 ft, Western Himalayas') [ZSI, Calcutta – examined]

India: UK (Brunetti, 1915, 1923, Shannon, 1927, Knutson *et al.*, 1975, Thompson & Rotheray, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 251, Pl. XIII, figs 20-21) described this "from one ♂ in the Indian Museum from Bhowali (5,700 ft.), July 1909 [*A.D. Imms*]." In his FAUNA volume (Brunetti, 1923: 325-326) he gave a full description of this species from the Kumaon District, and wrote "The uniform orange-brown colour of this species and the absence of antennal petiole separate it at once from all other Indian ones." Shannon (1927: 50), Knutson *et al.* (1975: 346), Shah *et al.* (2014: 304), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it. Shannon (1927) gave a rather complete listing of Cerioidinae flies of the genera *Cerioides* Rondani, *Tenthredomyia* Shannon, *Monoceromyia* Shannon, and *Polybiomyia* Shannon, as described until then.

About Indian Cerioidini Brunetti (1915: 253-254) had written: "*Ceria* probably contains numerous as yet undiscovered species from the Himalayas. In the Indian Museum [ZSI, Calcutta] are five undescribed species with 8, 2, 2, 2 specimens, and 1 specimen, respectively, but all in bad condition." In the FAUNA volume (Brunetti, 1923: 321-340) he included 18 species, five described then as new, and made some notes on his "continuity before priority" belief on scientific names (p. 254). He wrote then : "The CERIINAE are a well-defined group of rather large, wasp-like flies, which also resemble to some extent the flies of the subfamily CONOPINAE. The group consists mainly of the genus *Ceria* and its alleged subgenera. Though most of the species are tropical, a certain number extend to temperate regions. They are nearly always yellow and black elongated flies of moderate or large size, loving the sunshine, flowers and sweet-smelling plants." "The larvae of the European *C. conopsoides* have been found in the sap of diseased poplars and other trees and in ulcers on elms." "On the principle of continuity before priority I retain the generic name *Ceria* in preference to *Cerioides*; and I am inclined to recognize *Sphiximorpha*, Rond., as a good genus, in spite of the existence of some intermediate species, of which however, none are known from the East." "The only way to obtain ultimate finality in nomenclature is rigidly to establish it *now* by upholding all time-honoured names and by ruthlessly ignoring the present fevered craze in some quarters for change." (Brunetti, 1915: 254). However, for a discussion regarding the use of generic names in the tribe Cerioidini, see Vockeroth (1971). Two genera, *Ceriana* Rafinesque, 1815 (species with a well developed antennal process) and *Sphiximorpha* (species with antennal process very short or absent) are recognized in place of *Ceria* Fabricius, 1794 which is preoccupied by Scopoli, 1793. ICZN ruling cannot be disregarded or ignored ! See also Shannon (1927) and Stackelberg (1928). See Thompson & Rotheray (1998: 109) for a key to this genus in the Palaearctic.

Thompson (1972b: 129-132) wrote about Cerioidini - "Wasp-mimics with very short appressed hairs, each hair arising from a distinct but very small puncture. . . *Ceriana*, *sensu lato* contains a large number of highly varied wasp mimics which some workers, notably Shannon (1925 and 1927) and Hull (1949), have placed in a number of different genera. However, the characters used by Shannon and Hull, such as length of antennae and frontal prominence, abdominal shape and postmetacoxal bridge, are the types of attributes involved in forming the mimetic appearance of these flies. Thus convergence rather than common ancestry is a distinct possibility for *Ceriana*. Riek (1954), the only person who has done a detailed study of the genus using genitalic characters, has shown that the traditional characters of Shannon *do not* divide the Australian *Ceriana* into genera along phylogenetic lines. Riek has suggested that until the world species of *Ceriana* can be studied for genitalic characters, it is best to consider all the species as belonging to one genus, *Ceriana*. Since many of the world species of *Ceriana* are very rare in collections and unavailable for study . . . I have followed Riek's advice and leave all species of Cerioidini in one genus for the present. . . Curran (1941) has provided a key to the Neotropical *Ceriana* but it includes less than one-half of the described species. However, *Ceriana* because of their distinctive mimetic appearances are easily recognised from their original descriptions. Shannon (1927) states that for more than 120 described species there have been less than 10 synonyms !"]

Tribe Eristalini

Dolichomerus crassa (Fabricius, 1787)

Syrphus crassus Fabricius, 1787, Mantissa Insect., 2: 334 (sex ?; 'Tranquebar, Madras, India') [?]

India: BI, UK; Nepal (Brunetti, 1908, 1910, 1913b, 1915, 1923, Ghorpadé, 1973b, 2014c, 2015, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Shah *et al.*, 2014, Mitra *et al.*, 2105)

[NOTE: Brunetti (1908: 71-74) gave a key to Oriental species of *Megaspis* including this (as *crassus*, F.) and remarked "This is a good genus, but the roughness of the frons, which distinguishes it, is not

always easily visible." He mentioned differences of this from *sculptata* van der Wulp [as '*sculptatus*,' now known only from Timor, Indonesia]. Brunetti (1910: 171) later noted this (as *Megaspis*) being "generally common throughout the summer" in Sri Lanka. Kapoor *et al.* (1979: 66) gave it from Chhauni, 1400m in Nepal. In my masters thesis (Ghorpade, 1973b) I had written "This striking jet black species was rather rare around Bangalore taken only once on niger flowers around Bangalore." Knutson *et al.* (1975: 358), Ghorpadé (2104c: 8, 2015: 5), Shah *et al.* (2014: 301; as '*Phytomia*'), and Mitra *et al.* (2015: 63) listed it.]

Eoseristalis albibasis (Bigot, 1880)

Eristalis albibasis Bigot, Annls Soc. Ent. Fr., (5) 10: 215 (♀; 'Indostan') [MNHN, Paris ?]

Pakistan; India: HP (Brunetti 1917, 1923; Nayar, 1968b, Knutson *et al*. 1975, Peck, 1988, Thompson, 2003, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: There is a question if *Eristalis himalayensis* Brunetti, 1908 *q.v.*, which was a new name proposed for *Eristalis ursinus* Bigot, 1880, not Jaennicke, 1867, is a synonym ? Needs study. Brunetti (1917: 87) cited a female from Simla taken by Annandale in May. Brunetti (1923: 169-170) described it from "one ♀ in the Indian Museum, Simla, 7000 ft., 16.v.1909 (*Annandale*). This is undoubtedly a valid species, though it bears a considerable resemblance to *himalayensis*, from which it is easily separated by the clear wings, greater depth of epistome below the eyes, and minor characters." Nayar (1968b: 29) identified a female as "*Eristalis albibasis* Bigot" from Jindari Ghat, Dalhausie [*sic*], 6,700 ft. as this species, taken in September but noted it "differs from the published description in the stigma being distinct, brownish-yellow and the halteres pale yellow." Thompson (2003: 6) included it in his useful key to genera of the 'subtribe' Eristalina, as '*Eristalis* (*Eoseristalis*).' See also Ghorpadé & Shehzad (2013: 4). Knutson *et al.* (1975: 351), Shah *et al.* (2014: 294; as '*Eristalis*'), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) who listed it.]

Eoseristalis arbustorum (Linnaeus, 1758)

Musca arbustorum Linnaeus, 1758, *Syst. Nat.*, Ed. 10, p. 591 (♂; 'Europe' = Sweden *vide* Thompson *et al.*, 1982: 151, *q.v.*) [NHM, London]

Musca nemorum Linnaeus, 1758, *Syst. Nat.*, Ed. 10, p. 591 (♀; 'Europe' = Sweden *vide* Thompson *et al.*, 1982: 158) [NHM, London]

Afghanistan; Pakistan; India: HP ?, JK, UK ? (Brunetti, 1923, Sack, 1935, Singh, 1953, van Doesburg, 1955, Singh *et al*., 1955, Bańkowska, 1968, 1969, Lambeck & van Brink, 1973, 1975a, Knutson *et al*., 1975, Thompson *et al.* 1982, Datta & Chakraborti, 1984, Peck, 1988, Aslamkhan *et al*., 1997, Arif, 2001, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 180) wrote a description based on a single ♀ from Kashmir, 1915 (*Pease*) in the Indian Museum (see also Ghorpadé & Shehzad (2103: 4). Brunetti further wrote : "The species should not be rare in the Western Himalayas, considering that it is probably the commonest in Europe after *tenax*; yet I have not met with it either in India, China or Japan." Van Doesburg (1955: 47) listed this as one of the species recorded "from the Karakorum-region" by Sack (1935). Singh (1953) recorded this as a useful pollinator. Singh *et al.* (1955: 714) gave Kashmir. Bańkowska (1968: 197, 1969: 278; as '*Eristalis*') gave specimen records from Afghanistan. Lambeck & van Brinck (1973: 95, 1975a: 12) took several specimens near Nagin Lake, Arts Emporium, Moghul Gardens, and Gulmarg, near Srinagar in Indian Kashmir, and described karyotypes. Thompson *et al.* (1982: 151, 158) examined and designated lectotypes of this and *nemorum* and discussed synonymy. Datta & Chakraborti (1984: 250, fig. 12) listed many specimens from Kashmir, gave flower records, but their identification needs confirmation. Arif (2001: 35-36, 124) reported 4♂ 3♀ taken in grass along water canals at Multan, Quetta and Ziarat in March 1998 and listed as '*Eristalis*.' Ghorpadé & Shehzad (2013: 4) gave records from Pakistan and Ghorpadé (2014d: 4) from Afghanistan. Knutson *et al.* (1975: 351), Shah *et al.* (2014: 294; as '*Eristalis*'), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Eoseristalis brevifacies (Coe, 1964)

Eristalis brevifacies Coe, 1964, Bull. Br. Mus. Nat. Hist. (Ent.), 15: 273 (♂; 'East Nepal, Taplejung District, between Sangu and Tamrang, c. 5,200 ft.') [NHM, London]

India: JK, UK; Nepal (Coe, 1964, Knutson *et al*., 1975, Kapoor *et al*., 1979, Claussen & Weipert, 2003, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al*., 2015)

[NOTE: See Coe (1964: 274, fig. 10) for differences from *himalayensis*. Claussen & Weipert (2003: 376, 378) cited one female taken at Ghorapani (2855m) in the Annapurna region of Nepal. Knutson *et al.* (1975: 351), Kapoor *et al.* (1979: 65), Shah *et al.* (2014: 295), Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.* (2015: 63) listed it.]

Eoseristalis cerealis (Fabricius, 1805)

Eristalis cerealis Fabricius, 1805, Syst. Antliat., p. 232 (♀; 'China') [UZM, Copenhagen]
Eristalis solitus Walker, 1849, List Dipt. Colln Br. Mus., 3: 619 (♂; 'Nepal') [NHM, London]
Eristalis incisuralis Loew, 1858, Wien. Ent. Mschr., 2: 108 (♂♀; Japan) [?]
Eristalis barbata Bigot, 1880, Annls Soc. Ent. Fr., (5) 10: 214 (♂; 'Indostan') ['Bigot Colln' ? NHM, London]
Eristalis lunar Nayar, 1968b, Agra Univ. J. Res. (Sci.), 16(3): 27 (♂; 'Kalatop')[ZSI, Calcutta – examined]; Ghorpadé, 2014e, Colemania, 46: 2 (as *n. comb.*, *n. syn.*)
Eristalis (Eoseristalis) cerealis Fabricius : Knutson *et al.*, 1975, Cat. Dipt. Orient. Reg., p. 351 (Catalog).

Pakistan; India: CH, HP, JK, UK; Nepal (Brunetti, 1908, 1915, 1917, 1923, 1925, Hervé-Bazin, 1914, Coe, 1964, Nayar, 1968b, Lambeck & van Brink, 1973, 1975a, Lambeck & Kiauta, 1973, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Datta & Chakraborti, 1984, Arif, 2001, Claussen & Weipert, 2003, Mitra *et al.*, 2004a,b, 2015, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, unpubl., Shehzad, unpubl.)

[NOTE: Brunetti (1908: 71) wrote of his identification of this species as *solitus* being corroborated by Mr. Austen, and that a "considerable series in the Indian Museum collection shows specimens from Sikkim, Shillong, Kurseong and Mussoorie, all of which agree well with my own collected examples from Mussoorie, Darjiling, China and Japan, and with others taken by Dr. Annandale at Naini Tal. Walker originally described it from Nepal." Brunetti (1908: 70) also wrote : "Amongst some unnamed species of *Eristalis* in the Indian Museum collection is a ♀ from Sikkim closely resembling *intricarius*, L., but with the face much more produced, the hair on the major part (apical) of the abdomen bright red, the legs wholly black, and the arista plumose nearly to the tip. The produced face makes it appear specifically distinct. Brunetti (1915: 230) later wrote "This species (as '*Eristalis solitus*') is common in Himalayan localities . . . In the Indian Museum from . . Mussoorie, Naini Tal, Simla . ." He wrote (for '*Eristalis solitus*') "This species is apparently found all along the 5,000 to 9,000 ft. level of the Himalayas, being common at . . . Mussoorie and Naini Tal." Brunetti (1923: 172-173) treated this as *Eristalis solitus* Walker of which he examined "a large series of both sexes in the Indian Museum, and in the Pusa, my own and other collections, from hilly regions in India, Burma, Assam . . ." He studied "the unique type ♂ of *barbatus* [*sic*] in Bigot's collection . . . in wretched condition . . . undoubtedly only *solitus*, Walk." Brunetti (1925: 77) later wrote that *solitus* Walk. was synonymous with *cerealis* F. Hervé-Bazin (1914: 151, figs 1-3) gave figures of both sexes of this species, including that of var. *barbata* Bigot. Hervé-Bazin (1924: 293) wrote *solitus* Walker was a synonym of *cerealis* Fabricius. Coe (1964: 275) listed specimens, as *Eristalis cerealis* Fabricius, from eastern Nepal. Lambeck & van Brink (1973: 95, 1975a: 13) listed specimens taken at Nagin Lake and Moghul Gardens, near Srinagar, commenting that "Along the Himalaya the species [as '*Eristalis*' *s. str.*] ranges as far westwards as Kashmir"; they also described karyotypes. Lambeck & Kiauta (1973: 76) mentioned two females of '*Eristalis (Eristalis) solitus* Walker' taken at Chauni (1400m) and at Tribhuvan (1400m) in Nepal. Lambeck & van Brink (1975a: 24) discussed karyotypes. I examined 2 ♂ 1 ♀ in CNC, Ottawa taken from Sundarijel and Godavari Botanical Garden in Nepal in May by Amnon Freidberg. Datta & Chakraborti (1984: 251, fig 13a,b) gave several specimens taken in Jammu & Kashmir, with flower records and figure of the male terminalia. Arif (2001: 36-37, 39, 124) reported 5♂ 6♀ taken in grass along water canals at Hazara, Abbotabad [*sic*] and Shinkiari (Mansehra) in April 1990 as '*Eristalis solitus*.' Claussen & Weipert (2003: 376, 378) gave several specimens taken in Bagmati, Karnali and Koshi Provinces of Nepal and in the Annapurna region. Mitra *et al.* (2004a: 34) mentioned one male from the Kalatop-Khajjiar WLS in Himachal and (Mitra *et al.*, 2004b: 122) as visiting yellow flowers of an *Aster* sp. Ghorpadé & Shehzad (2013: 4) gave records from Pakistan, and Kapoor *et al.* (1979: 65) listed it from Nepal. In March 1981 I studied the male holotype of *lunar* Nayar in the Z.S.I. collection at Calcutta, with the following labels : "HOLOTYPE [red label] / Eristals lunar Nayar sp. nov., det J.L. Nayar / Kalatop, 8000 ft., India / Coll. J.L. Nayar, 25.IX.1962 / 3732/H6 / Eoseristalis cerealis (Fabricius) det. K.D. Ghorpade 1981," and found it synonymous with *cerealis* Fabricius, *n. comb.*, *n. syn* (see Ghorpade, 2014e: 2). Knutson *et al.* (1975: 351), Shah *et al.* (2014: 295; as '*Eristalis*'), Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.* (2015: 63) listed it.]

Eoseristalis himalayensis (Brunetti, 1908)

Eristalis ursinus Bigot, 1880, Annls Soc. Ent. Fr., (5) 10: 215 (♂; 'Hindustan') [ZSI, Calcutta ?]
Eristalis himalayensis Brunetti, 1908, Rec. Indian Mus., 2: 70 (as *nom. nov.* for *ursinus* Bigot, 1880 not Jaennicke, 1867)

Pakistan; India: HP, JK, UK; Nepal (Brunetti, 1908, 1917, 1923, Hervé-Bazin, 1924, Coe, 1964, Nayar, 1968b, Lambeck & Kiauta, 1973, Lambeck & van Brink, 1973, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Peck, 1988, Arif, 2001, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: This is a very frequent large eristaline on the Himalayas and may probably be synonymous with *albibasis* Bigot *q.v.* ? Brunetti (1908: 70) made some interesting notes on the species-group to which this belongs, including *intricarius* Linnaeus and *orientalis* Wiedemann, but which latter is a *Mallota* ! He mentioned one female (as '*Eristalis*') taken at Phagu in May by Annandale and Kemp. He noted (Brunetti, 1923: 169) that it was "Apparently common along the Himalayas at about 5,000 ft. and upwards during most of the summer, having seen specimens from Simla through Garhwal, Kumaon and Nepal to Sikkim and Darjiling." Hervé-Bazin (1924: 293) gave some notes contesting Brunetti's name for *ursinus* Bigot apparently preoccupied by Jaennicke which he wrote it was not !? Coe (1964: 272) mentioned many specimens taken in eastern Nepal, and discussed its relationship with *albibasis* Bigot (*op. cit.*), stating "I am inclined to believe that the type [of *albibasis*] will be found to represent a teneral example of *himalayensis*." Nayar (1968b: 29) gave a series of males taken at Kalatop, nr Dalhousie, 8000 ft., in September, taken below the Rohtang Pass, 13,000 ft., and on the southern slope of the Pir Panjal Range. Lambeck & Kiauta (1973: 75) mentioned two males taken at Phuki Drangka (3400m) and Tengpoche Gonda (3850m) in September in Nepal. Lambeck & van Brink (1973: 88) cited Coe's paper. Arif (2001: 32-33, 124) reported 2♂ taken in sarson (= mustard, *Brassica campestris*) at Mansehra and Abbotabad [*sic*] in Hazara District in March 1999 as an '*Eristalis*.' Claussen & Weipert (2003: 376, 378) mentioned many specimens taken in Nepal. Kapoor *et al.* (1979: 65), Peck (1988: 187), Ghorpadé & Shehzad (2013: 4), Shah *et al.* (2014: 295), Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.* (2015: 63) listed it.]

Eoseristalis horticola (De Geer, 1776)

Musca horticola De Geer, 1776, Mem. Pour serv. Hist. Ins., 6: 140 (sex ?; 'Europe') [NRS, Stockholm]

Eristalis basifemoratus Brunetti, 1923, *Fauna Brit. India*, Dipt, 3: 175, Pl. III, fig. 21 (♀; 'India ?') [ZSI, Calcutta]

? Eristalis quadristriatus Macquart, 1846, Dipt. Exot. Suppl., 1: 127 (245) (♀; 'Inde') [MNHN, Paris ?]

Pakistan; India ? (Brunetti, 1923, Knutson *et al.*, 1975, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015, Shehzad, unpubl.)

[NOTE: Brunetti's (1923: 176) original description of his *basifemoratus* carries a note that "this was described from a single ♀, not in good condition, in the Indian Museum. No locality is affixed, but it is certainly from India, and the pale base of the hind femora stamps it as surely a distinct species. But for this latter character . . . this form might be regarded as the ♀ of *quadristriatus*, Macq." I did not find the type in ZSI, Calcutta when I visited there in 1981. Knutson *et al.* (1975: 349) treated this as a good species and transferred it to *Eristalinus* (= *Lathyrophthalmus* now), but this needs study. Knutson *et al.* (1975: 351), Peck (1988: 187), Ghorpadé & Shehzad (2013: 4), Ghorpadé (2014c: 8), and Mitra *et al.* (2015: 63) listed it.]

Eoseristalis intricarioides (Brunetti, 1923)

Eristalis intricarioides Brunetti, 1923, *Fauna Brit. India*, Dipt, 3: 171 (♀; 'Sikkim') [ZSI, Calcutta – examined]

India: SI ; Nepal (Brunetti, 1923, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015, Shehzad, unpubl.).

[NOTE: Brunetti (1923: 171-172) based this new species solely on a single female type taken by Knyvett in Sikkim. He wrote : "A furry, *intricarius*-like species, easily recognized by the colours of the abdominal pubescence. . . all the tibiae are wholly black, the middle metatarsi quite black; the ground-colour of the base of the 2nd abdominal segment is grey, and the epistome is fully as long as the height of the eyes." *Eristalis intricarius* (L., 1758) is a peregrine European species. I confirmed the type in Box 16 in ZSI, Calcutta in 1981. Claussen & Weipert (2003: 376, 378) recorded one female from Gothichaur, ca. 2850m, in Karnali Province of Nepal. Knutson *et al.* (1975: 351), Kapoor *et al.* (1979: 66), Ghorpadé (2014c: 8, 2015: 5), and Mitra *et al.* (2015: 63) listed it. See also my notes under *cerealis* above (p. 21).]

Eoseristalis simplicipes (Curran, 1928)

Eristalis simplicipes Curran, 1928, J. Fed. Malay St. Mus., 14(2): 300, fig. 22 (♂♀; 'Gunong Tahan (summit), 7186 ft., Gunong Gedong, 6400 ft., Rhododendron Hill, 5200 ft., Cameron's Highlands, Lubok Tamang, 3500 ft.,' all Pahang, Malaya) [NHM, London]

Nepal (Coe, 1964, Kapoor *et al.*, 1979, Ghorpadé, 2014c, 2015).

[NOTE: Coe (1964: 274-275) identified a single female as this species from eastern Nepal, giving notes on differences in his specimen from Curran's (1928) description. Taken on blooms of *Guizotia abyssinica* in October at Sangu, c. 6200 ft., in Taplejung District of Nepal. This Nepal specimen and Curran's female need to be studied further to establish correct identity. Kapoor *et al.* (1979: 66), and Ghorpadé (2014c: 8, 2015: 5) listed it.]

Eoseristalis tibetica (Violovitsh, 1976)

Eristalis tibeticus Violovitsh, 1976, Novye i maloizvestnye vidy fauny Sibiri., 10: 125 (♀; 'Mt Everest, Tibet, China') [BI, Novosibirisk]

Nepal (Thompson, 1972b, Violovitsh, 1976, 1977, Thompson & Rotheray, 1998, Nielsen, 2001, Ghorpadé, 2014c, 2015)

[NOTE: See Nielsen (2001: 15-16, fig. 3) for notes on this species taken on the northern slope of Mt Everest (8848m) which is in Tibet. But since the southern slope is in Nepal it is accepted here as a Nepalese species too. Ghorpadé (2014c: 9, 2015: 5) listed it. See Thompson & Rotheray (1998: 112) for a key to this genus in the Palaearctic.

Thompson (1972b: 132-133, 142) in his revision of Eristalinae genera wrote "The basal setal patch on the hind femur will readily distinguish the eristalines from all other syrphid taxa except *Merodon*. . . Eristalini is traditionally broken down into two subtribes based on whether the marginal cell is open or closed, Helophilina and Eristalina, respectively. Both of these subtribes are world-wide in distribution." "*Eoseristalis* is readily distinguished from *Eristalis* . . . and related genera by its almost completely bare posterior thoracic pleurae. . . is an available name for the *arbustorum* group.]

[SPECIES INCERTAE SEDIS :

Eoseristalis curvipes (Schiner, 1868)

Eristalis curvipes Schiner, 1868, in Reise der österreichischen Fregatte Novara, Dipt., p. 363 (♂♀; 'Ceylon') [?]

India: CH (Awtar Singh *et al*., 1985).

[NOTE: Awtar Singh *et al.* (1985: 191) gave this from Chandigarh as a common species found there from November to January, visiting marigold and candy-tuft flowers. But this was certainly misidentified and specimens need to be examined for correct identity. Known only from Sri Lanka though there is a similar (same ?) species on the higher ghats in peninsular India (Ghorpade, unpubl. data).] **]**

Eristalinus sepulchralis (Linnaeus, 1758)

Musca sepulchralis Linnaeus, 1758, *Syst. Nat*., Ed. 10, p. 596 (♀; 'Europe' = Sweden *vide* Thompson *et al*., 1982: 160) [NHM, London]

Afghanistan; Pakistan; India: JK (Brunetti, 1915, 1923, Hervé-Bazin, 1923b, Sack, 1932b, Singh *et al*., 1955, Bańkowska, 1968, Lambeck & van Brink, 1973, Knutson *et al*., 1975, Aslamkhan *et al*., 1997, Thompson & Rotheray, 1998, Arif, 2001, Saleem *et al*., 2001, Arif *et al*., 2002, Thompson, 2003, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d, Shah *et al*., 2014, Mitra *et al*., 2015, Shehzad, unpubl.).

[NOTE: Only this species is a true *Eristalinus* Rondani, 1845 , *s. str*. (dichoptic males); all other species (also spotted-eyed, but with holoptic males) are better placed in *Lathyrophthalmus* Mik, 1897, *q.v*. Thompson *et al.* (1982: 160) examined and designated a lectotype of this and discussed synonymy. Thompson (2003: 4) included it in his useful key to genera of the 'subtribe' Eristalina. Brunetti (1915: 228) mentioned collecting this "common European species" in China (Shanghai, Hankow), it being common there. In his FAUNA volume, Brunetti (1923: 161, Pl. IV, fig. 3) gave a description, mentioned the male "with eyes rather widely separated," and gave Kashmir and China as localities of specimens he found in the 'Indian Museum' (= ZSI, Calcutta). Hervé-Bazin (1923b: 130-132, figs 1-2) included nice figures of each sex and a description, along with a key to the 13 '*Lathyrophthalmus*' species which he dealt with in that paper. Singh *et al.* (1955: 714) gave Kashmir for this species (as '*Eristalis*') in their paper on insects of the North-west (Punjab) Himalayas. Bańkowska (1968: 197) listed specimens taken in east Afghanistan. Lambeck & van Brink (1973: 94) mentioned ten specimens taken at the Arts Emporium and Moghul Gardens near Srinagar, 1600m. Arif (2001: 26, 28) reported 5♂ taken in wheat at Quetta and Panjgur in March 1998 but this is a misidentified '*Eristalinus*' as he stated the eyes of male were contiguous. Ghorpadé & Shehzad (2013: 5) gave records from Pakistan, and Ghorpadé (2014d: 4-5) from Afghanistan. Knutson *et al.* (1975: 349), Shah *et al.* (2014: 294), and Mitra *et al.* (2015: 63) listed it. See also Sack (1932b: 268) and Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic.]

Eristalis tenax (Linnaeus, 1758)

Musca tenax Linnaeus, 1758, *Syst. Nat.*, Ed. 10, p. 591 (♀; 'Europe' = Sweden *vide* Thompson *et al*., 1982: 160) [NHM, London]

Eristalis cognatus Wiedemann, 1824, Analecta Ent., p. 37 (♂; 'Tranquebar, India') [UZM, Copenhagen]

Eristalis sinensis Wiedemann, 1824, Analecta Ent., p. 37 (♂; 'China') [UZM, Copenhagen ?]
Eristalis ventralis Thomson, 1869, *in:* K. Svenska fregatten Eugenies resa, Zool., Dipt., p. 489 (♂♀; 'China') [?]

Afghanistan; Pakistan; India: CH, HP, JK, PB, UK; Nepal (Brunetti, 1907a, 1908, 1913b, 1915, 1917, 1923, Hervé-Bazin, 1914, Sack, 1932b, Rahman 1940, 1942, Singh, 1953, Batra, 1956, Coe, 1964, Joshee, 1968, Bańkowska, 1968, 1969, Atwal *et al*., 1971, Lambeck & van Brink, 1973, 1975a, Lambeck & Kiauta, 1973, Knutson *et al*., 1975, Kapoor *et al*., 1979, Datta & Chakraborti, 1984, Awtar Singh *et al*., 1985, Peck, 1988, Abrol, 1993, Aslamkhan *et al*., 1997, Thompson & Rotheray, 1998, Arif, 2001, Saleem *et al*., 2001, Claussen & Weipert, 2003, Thompson, 2003, Mitra *et al*., 2004a,b, 2015, Sajjad & Saeed, 2010, Sajjad *et al*., 2010, Shehzad, 2011, unpubl., Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Ghorpadé, 2014c,d, 2015, unpubl., Mitra *et al*., 2015).

[NOTE: Thompson *et al.* (1982: 160) examined and designated a lectotype of this species and discussed synonymy. The type-locality 'Tranquebar' of *cognatus* Wiedemann is certainly an error of labeling, this locality being in the southern Indian state of Tamil Nadu where *tenax* certainly does not occur naturally. Thompson (2003: 4) included it in his useful key to genera of the 'subtribe' Eristalina, as '*Eristalis*.' Brunetti (1907a: 169) cited specimens taken at Matiana and Theog on the Simla Hills where it was stated to be "common everywhere." He wrote (Brunetti, 1908: 71) that he had taken it "at Mussoorie; yet I have seen only a very few specimens from the Indian plains (Bareilly, Meerut) and none at all from any more tropical locality." He mentioned "A ♀ from Senchal, 8000 ft., v-1913" (Brunetti, 1913b: 272). Brunetti (1917: 87) wrote "This world-wide species is probably to be found all through the summer months, occurring freely at all the Himalayan places of resort." Specimens were taken at Phagu, Simla, and Matiana, in May, on the Simla Hills. Hervé-Bazin (1914: 151) mentioned three specimens from 'Inde,' Rahman (1940, 1942) reported it from north India and from Lyallpur, [= Faisalabad] now in Pakistan. Singh (1953) recorded this as a useful pollinator. Batra (1956: 22) collected this on cabbage at Baragraon (5100') in the Kulu Valley. Coe (1964: 276) listed it from eastern Nepal, some flies coming to blooms of *Guizotia abyssinica*. Bańkowska (1968: 197, 1969: 279) gave many specimens taken in Afghanistan. Joshee (1968) found rat-tailed maggots of doubtful name (as *Eristalis tenax* ? *q.v.*) from bull frog stomachs in the Greater Bombay area, certainly misidentified; see also *L. arvorum* (*q.v.*). Atwal *et al.* (1971) recorded it from north-west India. Lambeck & van Brink (1973: 95, 1975a: 13) described karyotypes, and took it at Nagin Lake, Arts Emporium, Moghul Gardens and Gulmarg near Srinagar, 1600m and stated "Next to *E. arbustorum* [actually *cerealis* ?], it is probably the most common representative of the genus in Kashmir." Lambeck & Kiauta (1973: 76) mentioned one female from Chauni (1400m) in Nepal. Lambeck & van Brink (1975b: 24) discussed karyotypes of specimens from Nepal. I examined two males in CNC, Ottawa taken from Sundarijel and Godavari Botanical Garden in Nepal in May by Amnon Freidberg. Knutson *et al.* (1975: 251) listed it as 'entire Oriental region; cosmopolitan' which is an inaccuracy often made when authors overlook geography and climate and assume peregrine ranges, which is most presumptive ! Kapoor *et al*. (1979: 65) listed it from Nepal. Datta & Chakraborti (1984: 249) gave several specimens taken in Kashmir and mentioned flowers it visited there. They added 'For male terminalia, see Nayar (1968[d]).' Awtar Singh *et al.* (1985: 191) reported it from Chandigarh area throughout the year as a 'very common species' visiting chrysanthemum, candy-tuft, *Brassica campestris*, and grass flowers. Abrol (1993) reported it pollinating flowers of *Brassica*, carrot, onion, peach, plum and pear in Jammu and Kashmir. Arif (2001: 41-42, 45, 124) reported 9♂ 5♀ taken in grass at Faisalabd, Multan, Sibi and Ziarat in March and September 1998 as '*Eristalis*.' Ghorpadé & Shehzad (2013: 5) gave records from Pakistan and Ghorpadé (2014d: 5) from Afghanistan. Claussen & Weipert (2003: 374) listed many specimens taken in Nepal. Mitra *et al.* (2004a: 34; 2004b: 122) took specimens in June and noted this species visiting yellow flowers of an *Aster* sp. in Kalatop-Khajjiar WLS in Himachal in the morning hours. Shah *et al.* (2014: 295) and Ghorpadé (2014c: 9, 2015: 5) listed it. See also Sack (1932b: 253) and Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic. Thompson (1972b: 139-140) quoted Vockeroth (*in litt.*) that "*Eristalis* should be restricted to *tenax* and related species only. . . *Palpada* and *Eristalis* both have the barrettes pilose. . ."]

[SPECIES INCERTAE SEDIS

Eristalis Unnamed sp. 'E' [undet.]
Pakistan (Aslamkhan *et al.*, 1997, Ghorpadé, 2014c)

[NOTE: Aslamkhan *et al.* (1997) listed this and the following two unidentified species of '*Eristalis*' from Pakistan. One other was listed by Chaturvedi from the Valley of Flowers, Garhwal, all of which require to be studied and determined correctly.]

Eristalis Unnamed sp. 'F' [undet.]

Pakistan (Aslamkhan *et al.*, 1997, Ghorpadé, 2014c)

Eristalis Unnamed sp. 'G' [undet.]
Pakistan (Aslamkhan *et al.*, 1997, Ghorpadé, 2014c)

Eristalis Unnamed sp. 1 [undet.]
India: UK (Chaturvedi, 1981) **]**

Eristalodes paria (Bigot, 1880)

Eristalomyia paria Bigot, 1880, Annls Soc. Ent. Fr., (5) 10: 218 (♂♀; 'Ceylon') [NHM, London]

Eristalomyia zebrina Bigot, 1880, Annls Soc. Ent. Fr., (5) 10: 222 (♂; 'Ternate, Moluccas') [MNHN, Paris ?]

Eristalis kobusi de Meijere, 1908, Tijdschr. Ent., 51: 252 (♂♀; 'Tosari, W. Java;) [ZM, Amsterdam ?]

Eristalis arisanus Matsumura, 1916, Thousand Insects Japan, 2: 264 (♂; 'Arisan, Formosa' = Taiwan) [HU, Sapporo ?]

Eristalis quinquelineatus var. *orientalis* Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 183 (♂♀; several localities for syntypes; lectotype not designated) [ZSI, Calcutta and NHM, London]

Eristalis santoshi Nayar, 1968, Agra Univ. J. Res. (Sci.), 16(3): 28 (♂; 'Kalatop, 8000 ft.') [ZSI, Calcutta – examined]; Ghorpade, 2014e, Colemania, 46: 3 (as *n. comb., n. syn.*)

Pakistan; India: CH, HP, JK, UK, UP; Nepal (Brunetti 1913b, 1917, 1923, Hervé-Bazin, 1924, 1926, Coe, 1964, Bankowska, 1968, Nayar, 1968b, Lambeck & Kiauta, 1973, Lambeck & van Brink, 1975a, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Datta & Chakraborti, 1984, Thompson, 2003, Claussen & Weipert, 2003, Shah *et al.*, 2014, Ghorpadé, 2014c,e, 2015, unpubl. data, Mitra *et al.*, 2015, Fazli Subhan, unpubl. data).

[NOTE: Brunetti (1923: 183-186) treated this as *Eristalis quinquelineatus* var. *orientalis* nov., which Brunetti described "from a short series of both sexes in the Indian Museum and elsewhere." He mentioned seeing specimens from the following localities : Kasauli, Theog, Phagu, Simla, Naini Tal, Kousanie, Kurseong, Sureil, Bijnor, as well as from southern Indian locales like Mysore, Ootacamund, and Yercaud. But did not specify a holotype ('type') so all these must be treated as syntypes and a lectotype selected later. He also gave extensive notes and indicated a wide range, from "South Europe, Africa, India, Ceylon and Java." He also mentioned that this species "appears to be variable in the relative extent of black and yellow on the abdomen. The arcuate whitish band (usually present in several Indian species [*sic*]) on the 2nd, 3rd and 4th abdominal segments is apparently normally absent on the 2nd segment in African specimens, though occasionally it is more or less indistinctly discernible, but it is nearly always present in Indian examples. . . The eye-stripes are normally three or four in number, in addition to the usually dark inner and hind margins, but the number is variable; I have seen a specimen with five complete dark stripes in addition to the inner and hind margins." Brunetti concluded that *paria* Bigot is "synonymous with *Eristalis quinquelineatus*." But Knutson *et al.* (1975: 349) clearly note that *quinquelineatus* (Fabricius) is "Not Oriental." Hervé-Bazin (1924: 294-296) gave a lengthy discussion about Brunetti's *quinquelineatus orientalis* and presented a synonymy of this, *quinquestriatus* and *paria*, which would be useful in any future revisionary work on this group. Hervé-Bazin (1926: 82-85, fig. 11) gave a lengthy discussion about this and *taeniops*, with figures of dorsal views of heads. Brunetti (1917: 87-88) mentioned an '*Eristalis* sp.' from Kasauli, Phagu and Kumaon and likened it to '*kobusi*, Meij.' which apparently is this species. He mentioned (Brunetti, 1913b: 272) three males from Singla as '*Eristalis orientalis*, W.' which also could be this species ? Coe (1964: 275) cited specimens collected in east Nepal and stated 'Widespread in India.' Nayar (1968b: 28, 30) gave a female from Kalatop-Lakkarmandi bridal path near Dalhousie, and described as new *santoshi* from Kalatop which I had synonymised with *paria* (Ghorpade, 2014e: 3). Lambeck & Kiauta (1973: 76) gave a short discussion about its identity and cited one male taken at Chauni (1400m) in Nepal. Lambeck & van Brink (1975a: 24) discussed karyotypes in Nepal specimens. Datta & Chakraborti (1984: 249) listed a male and female from Pahalgam, Kashmir on *Helianthus* sp. flowers in September, as '*Eristalinus* (*Eristalodes*),' and illustrated its male terminalia (fig. 11). I studied the male holotype of *lunar* Nayar in the Z.S.I. collection at Calcutta, with the following labels : "HOLOTYPE [red label] / Eristals santoshi Nayar sp. nov., Det. J.L. Nayar / Kalatop—L. Mandi, 29.IX.'61, Coll. J.L. Nayar / 3731/H6 / Eristalodes paria (Bigot) det. K.D. Ghorpade 1981," and found it synonymous with *paria* (Bigot), *n. comb., n. syn* (see Ghorpade, 2014e: 3). Thompson (2003: 4) included it in his useful key to genera of the 'subtribe' Eristalina, as '*Eristalinus* (*Eristalodes*).' Claussen & Weipert (2003: 374) mentioned many specimens from Nepal. Kapoor *et al.* (1979: 65) listed it from Nepal. Shah *et al.* (2014: 294), Ghorpadé (2014c: 9, 2015: 5), and Mitra *et al.* (2015:63) listed it.]

Eristalodes taeniops (Wiedemann, 1818)

Eristalis taeniops Wiedemann, 1818, Zool. Mag. (Wied.), 2: 42 (sex ?; 'Vorgebirge der Guten Hoffnung' = Cape of Good Hope, South Africa) [?]
Eristalis torridus Walker, 1849, List Spec. Dipt. Ins. Coll. Br. Mus., 3: 612 (Lectotype ♀; type-loc. ?) [NHM, London]

Afghanistan; Pakistan; India: PB ? ; Nepal (Brunetti, 1923, Sack, 1932b, Rahman, 1940, 1942, Bańkowska, 1968, Knutson *et al*., 1975, Kapoor *et al*., 1979, Peck, 1988, Thompson *et al*., 1990, Aslamkhan *et al*., 1997, Thompson & Rotheray, 1998, Arif, 2001, Sajjad & Saeed, 2009, 2010, Sajjad *et al*., 2010, Shehzad, 2011, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Ghorpadé, 2014c,d,e, 2015).

[NOTE: Brunetti (1923: 187) described this Mediterranean, African and Middle Eastern species based on specimens from Peshin and Quetta in Balochistan (Pakistan) and observed that "specimens from Indian localities have a more grayish or dusty appearance than the more normal South African ones." Bezzi (1915: 90) noted it as a "Mediterranean species, widely spread over the Ethiopian Region, and readily distinguished by its five dark bands on the eyes and by the very indistinct thoracic stripes." See Ghorpadé & Shehzad (2013: 5) for more notes, and more in Thompson *et al.*, (1990), which paper recorded it as an immigrant, a synanthropic flower fly into Florida State (U.S.A.). Rahman (1940, 1942) noted it from northern India (Punjab ?) and Lyallpur [=Faisalabad] in Pakistan. Bańkowska (1968: 197) reported specimens taken in Afghanistan, and Ghorpadé (2014d: 5) cited records from that country. Kapoor *et al.* (1979: 65) listed it from Nepal. Arif (2001: 39-40, 124) reported 2♂ taken in sunflower fields at Jhang and Tanak (Hazara) in October 1998 as '*Eristalis.*' Ghorpadé & Shehzad (2013: 5) cited records from Pakistan, and Ghorpadé (2014e: 15) listed it from the Pakistan Punjab. Knutson *et al.* (1975: 350), Peck (1988: 182), Shah *et al.* (2014: 294), and Ghorpadé (2014c: 9) listed it. See also Sack (1932b: 267) and Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic.]

Helophilus continuus Loew, 1854

Helophilus continuus Loew, 1854, Programm K. Realschule zu Meseritz, p. 18 (sex ?; 'Sibirien') [?]

Afghanistan (Bańkowska, 1968, Peck, 1988, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 197) and Ghorpadé (2014d: 5) reported specimens from NE. Afghanistan. Peck (1988: 196) and Ghorpadé (2014c: 9) listed it.]

Helophilus parallelus (Harris, 1776)

Musca parallelus Harris, 1776, Expos. Eng. Ins., p. 57 (sex ?; England ?) [NHM, London]
Eristalis trivittatus Fabricius, 1805, Syst. Antl., p. 235 (sex ?; 'Austria') [?]

Afghanistan (Sack, 1932b, Bańkowska, 1969, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1969: 277; as '*trivittatus* (F.) and Ghorpadé (2014d: 5) reported specimens from N. Afghanistan and Peck (1988: 197) and Ghorpadé (2014c: 9) listed it from that country. See Sack (1932b: 278, 289, 388) and Thompson & Rotheray (1998: 111) for discussion and key to this genus in the Palaearctic. Thompson (1972b: 133) included this genus in his key to Neotropical genera of Eristalini.]

Lathyrophthalmus aeneus (Scopoli, 1763)

Conops aeneus Scopoli, 1763, Ent. Carniolica, p. 356 (sex ?; 'Idria,' = Idrija, Yugoslavia) [type destroyed ?]
Eristalis taphicus Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 191 (♀; 'Egypten') [UZM, Copenhagen ?]
Eristalis ridens Walker, 1849, List Dipt. Brit. Mus., 3: 610 (♀; 'Egypt') [ZM, Frankfurt]
Lathyrophthalmus aeneus var. *nigrolineatus* Hervé-Bazin, 1923b, Annls Sci. Nat., (10) 6: 134 (♂♀ ; 'Kurrachee') [MNHN, Paris]

Afghanistan; Pakistan; India: CH, DL, GJ, HP ?, JK, PB, UK, UP; Nepal (Verrall, 1901, Brunetti, 1915, 1923, Hervé-Bazin, 1923b, 1924, Rahman, 1940, 1942, Nayar & Nayar, 1965, Anand *et al*., 1967, Nayar, 1968b, Bańkowska, 1969, Gokulpure, 1972, Knutson *et al*., 1975, Lambeck & van Brink, 1975a, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Anand, 1986, Peck, 1988, Aslamkhan *et al.*, 1997, Saleem *et al*., 2001, Arif, 2001, Arif *et al.*, 2002, Thompson, 2003, Saeed *et al*., 2008, Sajjad *et al*., 2008, 2010, Sajjad & Saeed, 2010, Ali *et al*., 2011, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d,e, 2015, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 229) wrote of *taphicus* : "A few in the Indian Museum from Karachi, both sexes. Verrall claims this to be a variety of *aeneus*, Scop., from a series taken at Aden, and this may

probably be the case." Verrall (1901: 501-503) diagnosed *aeneus* as "A rather small remarkably neat unicolorous species with holoptic spotted eyes, being bare like the arista, scutellum aeneous like mesonotum, and inhabiting the seacoasts." He suggested "the probability of *E. taphicus* of Wiedemann being a form of *E. aeneus*," a southern form which he examined specimens of from Aden in the Arabian peninsula. Hervé-Bazin (1923b: 132-134, figs 3-5, 1924: 293) wrote of *taphicus* as a possible variety of *aeneus* which ranged from Aden, Socotra and Karachi to Shanghai in China and in Japan. He also named, described and illustrated *nigrolineatus* as a new variety with a peculiar black fascia on the second tergite. However, Brunetti (1923: 163) concluded that "Though regarded by many authors as a variety of *aeneus*, Scop., *E. taphicus* appears to be a valid species." He then goes on to give the differences and puts *ridens* Walker as a synonym of *taphicus* Wiedemann. Note that Hervé-Bazin (1923b: 141) gave *ridens* Walker as a synonym of *quinquelineatus* Fabricius which latter is an African species ! These synonymies still remain to be checked by study of terminalia, especially, and based on a larger series of specimens. Hervé-Bazin (1924: 293) treated this (as '*taphicus*') which he mentioned is a synonym of *aeneus*, like *ridens* is. Rahman (1940, 1942) noted it from northern India (Punjab ?) and Lyallpur [= Faisalabad] in Pakistan. Nayar & Nayar (1965: 241) listed '*taphicus*' from Agra in a note that has many 'suspicious' Himalayan species from the Gangetic Plain ! Anand *et al.* (1967) recorded it (as '*Eristalis taphicus*') from Delhi (also Meerut, Babugarh, Bulandshahr and Saharanpur in Uttar Pradesh, and from Karnal in the Punjab ?). Nayar (1968b: 30) recorded this (as '*taphicus*') from Kalatop, 8000 ft., near Dalhousie. Gokulpure (1972: 848) recorded this (as '*Eristalis*') from Damoh in Madhya Pradesh. Lambeck & van Brink (1975a: 24) described karyotypes of specimens from Nepal. Kapoor *et al.* (1979) omitted this species from their Nepal checklist, by oversight ?
Awtar Singh *et al.* (1985: 192) gave it (as '*taphicus*') from Chandigarh and Pinjore as a common species from November to January, visiting flowers of chrysanthemum and candy-tuft. Anand (1986: 199) listed this (as '*Eristalis taphicus*') from Delhi on flowers. Arif (2001: 26, 28) reported 7♂ 5♀ taken in grass under forest plantation at Ziarat and Panjgur in March and September 1998 and listed as an "*Eristalinus*." See also notes in Ghorpadé & Shehzad (2013: 5) and in Ghorpadé (2014d: 5) from Pakistan and Afghanistan. Ghorpadé (2014e: 4) cited specimens taken in Chandigarh. Knutson *et al.* (1975: 347), Shah *et al.* (2014: 293), Ghorpadé (2014c: 9), and Mitra *et al.* (2015: 63) listed it. Thompson (2003: 4) included it in his useful key to genera of the 'subtribe' Eristalina, as '*Eristalinus* (*Eristalinus*).']

Lathyrophthalmus arvorum (Fabricius, 1787)

Syrphus arvorum Fabricius, 1787, Mantissa Insectorum, 2: 335 (♂♀; China) [?]

Syrphus quadrilineatus Fabricius, 1787, Mantissa Insectorum, 2: 336 (♂?; Tranquebar) [UZM, Copenhagen ?]

Musca tranquebarica Gmelin, 1790, Syst. Nat., 5: 2870 (unjustified *nom. nov.* for *quadrilineatus* Fabricius).

Eristalis fulvipes Macquart, 1846, Dipt. Exot., Suppl., 1: 256 (128) (♂; 'Nouvelle-Hollande' = Queensland, Australia) [MNHN, Paris ?]

Eristalis anicetus Walker, 1849, List Dipt. Colln Br. Mus., 3: 624 (♂; unknown) [NHM, London]

Eristalis antidotus Walker, 1849, List Dipt. Colln Br. Mus., 3: 626 (♂; China) [NHM, London]

Eristalomyia fo Bigot, 1880, Annls Soc. Ent. Fr., (5) 10: 220 (♂; Amoy = Xiamen in Fujian, China) [MNHN, Paris]

Eristalomyia eunotata Bigot, 1891, Nouv. Archs Mus. Hist. nat. Paris, (3) 2: 208 (♂; Laos) [MNHN, Paris]

Eristalis okinawensis Matsumura, 1916, Thous. Insects Japan, Add. 2, p. 261 (♂; Okinawa, Ryukyu Is) [HU, Sapporo]

Eristalis (Lathyrophthalmus) haileyburyi Nayar, 1968, Pan-Pacific Ent., 44: 121 (♀; 'St. John's College, Agra, India') [ZSI, Calcutta – examined]; Ghorpadé, 2014e, Colemania, 46: 4. (as *n. syn.*)

Pakistan; India: JK, PB, UP, peregrine in subcontinent ? ; Nepal (Brunetti, 1915, 1917, 1923, 1925, Hervé-Bazin, 1923b,c, 1924, 1926, Baid, 1959, Coe, 1964, Nayar & Nayar, 1965, Joshee, 1968, Nayar, 1968c, Gokulpure, 1972, Ghorpade, 1973b, 2014c,e, Lambeck & Kiauta, 1973, Lambeck & van Brink, 1975a, Panchabhavi & Rao, 1978, Kapoor *et al.*, 1979, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Peck, 1988, Aslamkhan *et al.*, 1997, Claussen & Weipert, 2003, Saeed *et al.*, 2008, Sajjad & Saeed, 2010, Sajjad *et al.*, 2010, Ali *et al.*, 2011, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015, Shehzad, unpubl.).

[NOTE: Brunetti (1915: 228) wrote "The species is the commonest of the Indian ones (of '*Eristalis*') and occurs apparently all over the country from the Himalayas to the south. . . It has been found by Dr. Annandale breeding in rotting seaweed in brackish water at Lake Chilka, Orissa, in February and November." He then wrote (Brunetti, 1917: 87) "This common Indian species occurs at Simla, Matiana, Theog, Phagu and Kufri." Brunetti (1923: 183) wrote "It is very common apparently all over India, in hills and plains, and occurs probably in all parts of the Orient. The actual dates run from March to October . . ." and he then continued with its synonymy. He then made some corrective notes (Brunetti, 1925: 76-77). Hervé-Bazin (1923b: 145-146, figs 20-21) gave two nice figures of both sexes along with some notes. Hervé-Bazin (1923c: 174) mentioned a misspelling

'*acervorum* Macquart' and gave 'Bengale and Bombay' as localities from where known. Hervé-Bazin (1924: 294) gave *fo* Bigot and *eunotata* Bigot as synonyms, in addition to Brunetti's (1923: 181) synonymy. He then gave records from China, Japan and Indochina (Hervé-Bazin, 1926: 86). Baid (1959) gave a '*Eristalis* sp.' flying from September to March around the Sambhar Lake in Rajasthan, which could be this common species ? Coe (1964: 275) recorded it from eastern Nepal. Joshee (1968) found rat-tailed maggots of doubtful name (as *Eristalis tenax* ? *q.v.*) from bull frog stomachs in the Greater Bombay area; could be this widespread species ? Nayar & Nayar (1965: 241) recorded it from Agra (U.P.), and Gokulpure (1972: 848) from Damoh (M.P.). I examined the sole holotype ♀ of *haileyburyi* Nayar (1968c: 121, figs 2,4,6) in the collection of ZSI, Calcutta, labeled "Haileybury House / St. John's College, Agra, India / 3.iii.1960 / J.L. Nayar / Eristalis (Lathyrophthalmus) haileyburyi Nayar, Holotype." It is nothing but *L. arvorum* (Fabricius) and was synonymized by me (Ghorpadé, 2014e: 4). In my masters thesis (Ghorpade, 1973b) I had written "This species was rather uncommon around Bangalore . . . adult flies were secured on niger and mango flowers and in wheat fields. . . . similar to *obliquus* . . male face in profile with prominent tubercle as in that species; hairs on frons denser and black . . hind femora wholly yellowish or orange-yellow, never black." Lambeck & Kiauta (1973: 76) confirmed it from Nepal and stated "At least in the post monsoon period it apparently represents an important item in the diet of the dragonfly *Orthetrum sabina* (Drury)." Lambeck & van Brink (1975a: 25) discussed its karyotypes from Nepalese specimens. I examined 6♀ in CNC, Ottawa taken from Sundarijel and Kathmandu in Nepal in May by Amnon Freidberg. Kapoor *et al.* (1979: 64) listed it from Nepal localities. Panchabhavi & Rao (1978: 254) reported it to visit flowers of niger (*Guizotia abyssinica*) in northern Karnataka. Datta & Chakraborti (1984: 247-248, fig. 9) gave it from Jammu & Kashmir and illustrated its male terminalia which they thought "shows differences from that by Nayar (1968)." Awtar Singh *et al.* (1985: 191) gave it from Chandigarh, Morinda and Ambala [Haryana] flying throughout the year, very common and visiting flowers of chrysanthemum, lotus, chillies, and wild weeds. Claussen & Weipert (2003: 374, 378) gave notes on specimens collected in Nepal. Ghorpadé *et al.* (2011: 81) gave some notes on this species. It is known from the Punjab in India (Ghorpadé, 2014e: 4) and in adjoining Pakistan (Ghorpadé & Shehzad, 2013: 6) but should occur in all other NW. Indian states where it remains to be confirmed; I have not found any published records from these other NW. Indian States. Knutson *et al.* (1975: 347), Shah *et al.* (2014: 293), Ghorpadé (2014c: 9), and Mitra *et al.* (2015: 63) listed it.]

Lathyrophthalmus laetus (Wiedemann, 1830)

Eristalis laetus Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2 : 192 (♂; 'China') [UZM, Copenhagen]
Eristalis pallinevris Macquart, 1842, Dipt. Exot., 2(2): 46 (♂; 'Bengal, India') [MNHN, Paris]
Eristalis quinquefasciatus Schiner, 1849 : *nomen nudum*
Lathyrophthalmus ishigakiensis Shiraki, 1968, *Fauna Japonica*, Syrphidae, 3: 177 (♂ ; 'Ishigaki Is., Japan') [NIAS, Tsukuba]

Afghanistan; India: BI, CH, DL, JK, PB, RJ, UK; Nepal (Brunetti, 1923, Hervé-Bazin, 1924, Rahman, 1940, Baid, 1959, Anand *et al.*, 1967, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Anand, 1986, Peck, 1988, Shah *et al.*, 2014, Ghorpadé, 2014d).

[NOTE: Brunetti (1923: 165-167) perhaps misidentified this, noting it was "Originally described from China" and listed specimens from Nepal, Mt Abu (Rajasthan) and Shillong (Meghalaya), as well as from south India at Ootacamund and Mysore. Thompson (*pers. comm.*.) treats this as a synonym of *megacephalus* (Rossi, 1794), *loc. cit.*, but which latter is probably a southern European and African species and not Oriental ? Hervé-Bazin (1923: 141, 1924: 293) treated that as a synonym of *quinquestriatus* Fabricius, *q.v.* (!) and clarified that *laetus* of Brunetti (1923) was *ocularius* Coquillett and questioned his inclusion of south Indian localities. As noted under *L. aeneus* above (*op. cit.*, pp. 25-26) this complex of species requires study of types and adequate material to clear synonymy and establish species validity. Brunetti (1923: 160-161), in his discussion of the genus *Eristalis* Latreille, placed *pallineuris* [*sic*] and *laetus* in two of his different groups and noted "I have seen no specimen of this species (*E. pallineuris*, Macq.), nor can I glean any information as to which subgenus it should be referred." Awtar Singh *et al.* (1985: 191) recorded it from Chandigarh and Dhanas as a rare species flying from November to March and visiting flowers of candy-tuft, chrysanthemum and *Brassica campestris*; this requires confirmation of species identity. Baid (1959) gave a '*Eristalis* sp.' flying from September to March around the Sambhar Lake in Rajasthan, which may be this species ? Kapoor *et al.* (1979: 64) listed it from Nepal. Datta & Chakraborti (1984: 248, fig. 10) gave specimens taken in Kashmir on *Tagetes patula* flowers and illustrated its male terminalia. Anand *et al.* (1986: 199) recorded it from Delhi, and Karnal (Punjab), apparently feeding on *Aphis gossypii* on cotton (!) which is a wrong interpretation, observation (?) for this species. Peck (1988: 183) gave Afghanistan, but Ghorpadé & Shehzad (2013) and Ghorpadé (2014d) do not include it from Pakistan or Afghanistan ! Knutson *et al.* (1975: 348), Ghorpadé (2014c: 9, 2014e: 4) and Mitra *et al.* (2015: 63) listed it. Dr Thompson (*pers. comm.*) treated this species, *pallinevris* Macquart, and *obscuritarsis* de Meijere as synonyms of *megacephalus* Rossi (*q.v.*, *op. cit.*) and this needs to be carefully researched to arrive at the correct interpretation. Especially as the type is lost. See also notes in Ghorpadé(2014d: 5).]

Lathyrophthalmus megacephalus (Rossi, 1794)

Syrphus megacephalus Rossi, 1794, Mantissa Insectorum, 2: 63 (♂: lost; 'Etruria' = Toscana, Italy) [lost]

Afghanistan; Pakistan ?; India: BI, DL, JK, PB, UK; Nepal ? (Hervé-Bazin, 1923b, 1924, Rahman, 1940, Anand *et al*., 1967, Bańkowska, 1968, Peck, 1988, Shah *et al*., 2014, Ghorpadé, 2014c,d, Mitra *et al*., 2015).

[NOTE: I noticed this extralimital (?) species name in the manuscript on Oriental—Papuan Syrphidae Conspectus sent me by Dr Chris Thompson. As noted under *laetus* above it remains to be determined if this is actually the same as the truly Oriental species, and their synonyms, like *ishigakiensis, laetus, obscuritarsis, pallinevris*, and *quinquefasciatus*. Hervé-Bazin (1923b: 141) treated it as a synonym of *quinquelineatus* but which latter Knutson *et al*. (1975: 349) had clearly noted was "Not Oriental" ! Brunetti (1923: 187) had placed it as a synonym of *quinquestriatus* and noted "*Syrphus megacephalus*, Rossi, is evidently synonymous with *E. quinquestriatus*, and was described in the same year. I have accepted the latter name, as Dr. de Meijere has adopted it." But see Hervé-Bazin's (1923b: 141) synonymy of this under *quinquelineatus* as stated above ! Ghorpadé (2014d: 5) listed it from Afghanistan, though no other author had done so, not even Peck (1988; 183). But being a southern Palaearctic (Mediterranean) species it should occur in Afghanistan and Pakistan.]

Lathyrophthalmus obliquus (Wiedemann, 1824)

Eristalis obliquus Wiedemann, 1824, Analecta Ent., p. 38 (♂♀; 'Bengal') [UZM, Copenhagen]

Lathyrophthalmus connectens Hervé-Bazin, 1923b, Annls Sci. nat. Zool., 6: 148 (♂♀; 'Saigon, Java') [MNHN, Paris] **n. syn.**

India; Nepal (Brunetti, 1915, 1923, 1925, Hervé-Bazin, 1923b, 1926, Curran, 1930, Ghorpadé, 1973b, 2014c, 2015, Knutson *et al*., 1975, Mitra *et al*., 2015)

[NOTE: Brunetti (1915: 28) gave New Guinea and Java as distributional records and added "It is closely allied to *arvorum*, F." In his FAUNA volume Brunetti (1923: 164-165, Pl. IV, fig. 4) gave a description "from a few indifferent examples in the Indian Museum" from West Bengal and Tamil Nadu States. Then (Brunetti, 1925: 76) he wrote about *E.* (*L.*) *connectens* Hervé-Bazin that was "omitted in error from the Fauna volume." *L. connectens* was cited from "Trichinopoly, Inde méridionale (ma collection)" also by Hervé-Bazin (1923b: 148), but not from "Ceylon" as Brunetti (1925: 28) wrongly indicated. Hervé-Bazin (1926: 86) gave "Cochinchine, Java, Inde méridionale" as localities for his *connectens;* the fine figures of *obliquus* female and *connectens* male are both of this same species. He also gave comparisons (Hervé-Bazin, 1923b: 151) of this species with *arvorum* F., *feruugineus* de Meij., and *connectens* H.-B., and I find weak arguments for sustaining *connectens* as a separate species, as Hervé-Bazin himself wrote, and so synonymise it here, **n. syn.** Curran (1930) gave *connectens* as a doubtful synonym of *obliquus*, and included this in a key to Oriental *Lathyrophthalmus*, including species from Australia. See comments in Ghorpadé *et al*. (2011: 81) which establishes this as a common and widespread species in southern India; there have been no published records of this species from the North-west Frontier area or from Nepal, but I have seen specimens from there (Ghorpadé, unpubl.) In my Master's thesis (Ghorpadé, 1973b) I had written "This species was found to be rather abundant around Bangalore in winter . . from September to February. Adult flies were secured on flowers of mango, cashew, niger and *Tridax procumbens* and in fields of wheat, radish and ragi [= finger millet]." It was keyed out as "tergite 4 with a pair of obliquely placed white pollinose spots; some black hairs in centre of scutellum." Knutson *et al*. (1975: 348, 349; gave "southern Oriental region; New Guinea"), and Ghorpadé (2014c: 9, 2015: 5), and Mitra *et al*. (2015: 63, 64) listed it.]

Lathyrophthalmus obscuritarsis (de Meijere , 1908)

Eristalis obscuritarsis de Meijere, 1908, Tijdschr. Ent., 51: 250 (♂♀; 'Java, Singapore, Malaya, Bombay') [ZM, Amsterdam]

Eristalis (Lathyrophthalmus) lalitai Nayar, 1968, Pan-Pacific Ent., 44: 119 (♀; 'St. John's College, Agra, India') [ZSI, Calcutta – examined]; Ghorpadé, 2014e, Colemania, 46: 5. (as *n. syn.)*

Afghanistan; Pakistan; India: BI, CH, DL, GJ, HP, HR, JK, PB, UK; Nepal (Brunetti, 1923, Hervé-Bazin, 1915, 1923, 1924, Bhatia, 1931, Rahman, 1940, 1942, Singh *et al*., 1955, Coe, 1964, Nayar & Nayar, 1965, Ghose, 1966, Anand *et al*., 1967, Nayar, 1968c, Bańkowska, 1969, Atwal *et al*., 1971, Ghorpadé, 1973b, 2014c,d,e, 2015, unpubl., Lambeck & van Brink, 1973, 1975a, Knutson *et al*., 1975, Awtar Singh *et al*., 1985, Aslamkhan *et al*., 1997, Saeed *et al*., 2008, Sajjad & Saeed, 2009, 2010, Sajjad *et al*., 2010, Ali *et al*., 2011, Ghorpade *et al*., 2011, Saeed *et al*., 2012, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015, Shehzad, unpubl.).

[NOTE: This species was generally known by this name in our subcontinent but is treated in synonymy now. However, this is yet unconfirmed and uncorroborated by accurate taxonomic research and study of types. See notes under *aeneus* and *megacephalus* above (*op. cit*., pp. 25-27) for more details. The Oriental Catalog (Knutson *et al*., 1975: 348) placed it as a new synonym of *laetus* but I am not aware if a lectotype of *obscuritarsis* was designated and types checked and confirmed as conspecific. Hervé-Bazin (1923b: 127) mentioned that *obscuritarsis, nigroscutatus* and *tristriatus*, all from Java, were a distinct 'species-group' but then did not treat *obscuritarsis* at all, neither in any detail, nor with any figures. I believe he had misidentified *obscuritarsis*, but this can only be proven after a lectotype of this species is selected and so designated, since the syntypes of de Meijere (1908) could be mixed and polytypic, hailing from Java, Singapore, Malay peninsula and even Bombay [now Mumbai] in western India. Brunetti (1923: 191-192) had given detailed notes on this and *quinquestriatus* which he considered distinct : "*E. obscuritarsis*, de Meij., is very closely allied to *E. quinquestriatus*, Fabr., yet it is a perfectly distinct species, as is quite obvious when several specimens of each sex of both forms are placed side by side." He goes on to list the diagnostic characters in some detail. Again, Hervé-Bazin (1924: 297) stated that this is *quinquelineatus* F., but see notes under *paria* above (*op. cit*., p. 24). Brunetti (1915: 230) listed it. Rahman (1940, 1942) noted it from northern India (Punjab ?) and Lyallpur [= Faisalabad] in Pakistan. Bhatia (1931: 508-519, Pl. LVII) described its life history from larvae "observed in large numbers floating in every dirty drain during the last week of April and the whole of the month of May 1930 at Pusa [Bihar.]" But this was misidentified as *quinquestriatus* Fabricius (*q.v*.). Singh *et al.* (1955: 714) gave Kashmir. Coe (1964: 276) stated it is "Widespread in India . . ." and gave specimen data from east Nepal. I examined one female in CNC, Ottawa taken from Sundarijel in Nepal in May by Amnon Freidberg. Nayar & Nayar (1965: 241) recorded it from Agra. Ghose (1966) gave it as a good pollinator of *capsularis* and *olitorius* jute. Anand *et al.* (1967) recorded it from Delhi. I examined the sole holotype ♀ of *lalitai* Nayar (1968c: 119) in the collection of ZSI, Calcutta, labeled "St. John's College, Agra, India / 10.xii.1962 / Lalita Taneja / Eristalis (Lathyrophthalmus) lalitai Nayar, Holotype." It is nothing but *L. obscuritarsis* (de Meijere) and was synonymized as such by Ghorpadé (2014e: 5). Bańkowska (1969: 278) listed specimens taken in east Afghanistan. Atwal *et al.* (1971) mistakenly gave it as a predator of the aphid *Lipaphis erysimi* at Delhi. In my masters thesis (Ghorpade, 1973b) I had written "This species was fairly common around Bangalore in winter when it was collected from November to January on mango and niger flowers, in herbaceous weeds and in ragi [= finger millet] fields." It was keyed out as "tarsi black, at most pale at base; abdomen comparatively longer, more elongate-conical." Lambeck & van Brink (1973: 96, 1975a: 13) mentioned it as a "widespread, oriental species . . . common in India," and that "the southern slopes of the Himalaya represent the northernmost part of its distribution area" ; also described karyotypes. Awtar Singh *et al.* (1985: 192) recorded it from Chandigarh, Zirakpur and Dhanas as common from November to January, visiting flowers of chrysanthemum, candy-tuft and *Brassica campestris*. Ghorpadé *et al.* (2011: 82) gave notes on this species and Ghorpadé & Shehzad (2013: 6) gave records from Pakistan, with a discussion and questions of its apparent synonymy with *quinquelineatus* F., *megacephalus* Rossi, and *laetus* Wied. See also Ghorpadé (2014d: 5) on records from Afghanistan and more notes on identity. Ghorpadé & Pathania (2014: 5) mentioned specimens taken in Chandigarh and Haryana. Knutson *et al.* (1975: 348; as synonym of *laetus* Wied.), Shah *et al.* (2014: 294; as synonym of *megacephalus* Rossi), Ghorpadé (2014c: 9, 2015: 5) and Mitra *et al.* (2015: 64) listed it.]

Lathyrophthalmus quadristriatus (Macquart, 1846)
Eristalis quadristriatus Macquart, 1846, Dipt. Exot. Suppl., 1: 127 (♀; 'Inde') [NHM, London]

Pakistan; India; Nepal (Brunetti, 1923, 1925, Coe, 1964, Knutson *et al*., 1975, Kapoor *et al*., 1979, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,e, 2015, Mitra *et al*., 2105)

[NOTE: Brunetti (1923: 176) just mentioned that his *basifemoratus* "might be regarded as the ♀ of *quadristriatus*, Macq. The 3rd abdominal segment is obviously discoloured in the unique *type*, and may or may not resemble that of *quadristriatus*, Maq." But Brunetti (1925: 76-77) mentioned that "This species, described from India, was inadvertently omitted [in his FAUNA volume, 1923]." He gave Macquart's description, and commented "It must be rather closely allied to *arvorum* but differences in the frons, abdominal markings and the colour of the femora may make it distinct." It was described based on a single female in Bigot's collection from India, with no specific locality cited. As with *basifemoratus*, I could not find the holotype female of *quadristriatus* in ZSI, Calcutta type collection when I visited there in 1981. Coe (1964: 276) listed specimens (as '*Eristalis*') taken in east Nepal, adding "Represented in the Brit. Mus. (Nat. Hist.) collection by a single ♀ labeled 'ex Bigot Coll. Pres. By G.H. Verrall. B.M. 1894-234'. I am satisfied that my above series from Nepal is the same species. There is a dark spot at *both* extremeties of the stigma in all the material, an unusual feature in the genus." Kapoor *et al.* (1979: 64) listed it from Nepal, India and Sri Lanka in this subcontinent. Ghorpadé & Shehzad (2013: 6) gave records from Pakistan which they wrote "could be a misidentification." This was listed by Ghorpadé (2014e: 15) from Pakistan Punjab. Ghorpadé (2014c: 9, 2015: 5) and Mitra *et al.* (2105: 64) listed it.]

Lathyrophthalmus quinquelineatus (Fabricius, 1781)

Syrphus quinquelineatus Fabricius, 1781, Species Insect., 2: 425 (sex? 'in Africa aequinoctiali') [?]
? Syrphus megacephalus Rossi, 1794, Mantissa Insectorum, 2: 63 (♂: lost; 'Etruria' = Toscana, Italy) [lost]
Eristalis fasciatus Meigen, 1835, *Faunus* (Gistel's), 2: 70 (sex ?; ' ?') [?] *nomen nudum*
? Eristalis quinquefasciatus Schiner, 1849 : *nomen nudum*
? Eristalis ridens Walker, 1849, List Dipt. Br. Mus., 3: 610 (♀; ' ? ') [NHM, London]
? Eristalis quinquevittatus Macquart, *in* Lucas, 1849, Explor. Scient. Algerie, Zool., 3: 465 (sex ?; 'd'Ain-Drean, aux environs du cercle de Lacalle' = nr La Calle, Algeria) [?]

Afghanistan; Pakistan ?; India: DL (Brunetti, 1923, Hervé-Bazin, 1923b, 1924, Anand *et al*., 1967, Bańkowska, 1968, Knutson *et al*., 1975, Peck, 1988)

[NOTE: Knutson *et al*. (1975: 349) noted it was "Not Oriental." Anand *et al*. (1967) recorded it from Delhi on castor, mustard and wheat fields. Bańkowska (1968: 198) reported specimens taken in east Afghanistan from Bashgul-Tal, 1100-1200m in Nuristan Province. Brunetti (1923: 185) gave a good discussion and how it could be separated from the similar *obscuritarsis*. Hervé-Bazin (1923b: 139-141, figs 13-14) cited specimens from Karachi (Pakistan) and Trichinopoly, which latter locality must be wrong and his series mixed up with *obscuritarsis*. Hérvé-Bazin (1924: 294-295) also gave a discussion and synonymy which is confusing ! Peck (1988: 183) gave north Africa, Iran and Afghanistan.]

Lathyrophthalmus quinquestriatus (Fabricius, 1794)

Syrphus quinquestriatus Fabricius, 1794, Ent. Syst., 4: 289 (sex?; 'India orientali') [UZM, Copenhagen ?]
Eristalis aesepus Walker, 1849, List Dipt. Coll. Br. Mus., 3: 625 (♂♀; 'China') [NHM, London]
? Eristalis quinquevittatus Macquart, *in* Lucas, 1849, Explor. Scient. Algerie, Zool., 3: 465 (sex ?; 'd'Ain-Drean, aux environs du cercle de Lacalle' = nr La Calle, Algeria) [?]
Eristalomyia picta Bigot, 1880, Annls Soc. Ent. Fr., (5) 10: 219 (♂; 'Indostan') [?]
Lathyrophthalmus basalis Shiraki, 1968, *Fauna Japonica*, Syrphidae, 3: 175 (♂; 'Iriomote I., Ryukyu Is., Japan') [NIAS, Tsukuba]

India: BI, UK; Nepal (Brunetti, 1915, 1923, Hervé-Bazin, 1923b, 1924, Bhatia, 1931, Hull, 1944a,b, Beeson, 1953, Ghorpadé, 1973b, 2014c,e, 2015, Lambeck & van Brink, 1975a,b, Kapoor *et al*., 1979, Datta & Chakraborti, 1986,a,b, Peck, 1988, Claussen & Weipert, 2003, Thompson, 2003, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: See notes under *aeneus*, *obscuritarsis* and *megacephalus* above for more details and as the situation with the identity and correct names of some of these *Lathyrophthalmus* species here. Brunetti (1915: 228) listed it, quoting de Meijere. Brunetti (1923: 187-189, Pl. IV, figs 11-14) described it "from several of each sex in the Indian Museum and Pusa collections" from Kausanie, Kumaon District and Kathmandu, Nepal besides other localities in West Bengal, Madhya Pradesh, Karnataka, Orissa, and 'Assam.' He was not sure of the true identity of *quinquevittatus* Macquart, 1849, being either a synonym of this species or of *quinquelineatus* (F., 1794). Hervé-Bazin (1923b: 141-143, figs 15-16, 1924: 293) noted that *laetus* Wiedmann [*sic*] was also synonymous ! Bhatia (1931: 508-519, Pl. LVII) described its life history from larvae "observed in large numbers floating in every dirty drain during the last week of April and the whole of the month of May 1930 at Pusa [Bihar.]" But this was misidentified and actually was *obscuritarsis* (*q.v.*). Beeson (1953: 339) gave this as breeding in stagnant water and quoted Bhatia (1931). In my Master's thesis (Ghorpadé, 1973: 73-74, 129-143, figs 57-64, 79-82) I had included and discussed four *Lathyrophthalmus* (as '*Eristalis*' then) species: *arvorum* (F.), *obliquus* (Wied.), *obscuritarsis* (de Meij.), and *quinquestriatus* (F.). In the key provided, *arvorum* was separated from the other three in having its hind femur wholly yellow or orange-yellow, never black or brownish-black as in the other three. *L. obliquus* was then separated by having a pair of white pollinose spots, placed obliquely on abdominal tergum 4 and not with any arcuate white fascia on it. *L. obscuritarsis* had black tarsi and a comparatively longer, elongate-conical abdomen, unlike *quinquestriatus* with a shorter, more ovate-conical abdomen and yellowish-white tarsi. Male genitalia were also dissected and illustrated, being diagnostic (Figs 79-82). I had also written "This was not a very abundant species around Bangalore, secured only from October to February on flowers of niger, mango and *Tridax procumbens*, also in wheat and in herbaceous vegetation. It could perhaps be mistaken for *E. obscuritarsis* de Meij. in the field but can be distinguished from that species by the characters given in the key, *viz*., tarsi yellowish-white nearly to tips, abdomen comparatively shorter, more ovate-conical." Datta & Chakraborti (1986b: 14, fig. 7) illustrated male terminalia again. See also Hervé-Bazin (1923b: 139-143, 145-146, 147-148, Figs 13-16, 20-21, 23) for descriptions and figures, but note that his '*quinquelineatus* F.' was misidentified, and is my *obscuritarsis* de Meij., as above. Gokulpure (1972: 848) mentioned it from Damoh, Madhya Pradesh. Lambeck & Kiauta (1973: 77), Lambeck & van Brink (1975a: 26) and Claussen & Weipert (2003: 374, 378) gave specimens taken in Nepal. Kapoor *et al*. (1979: 64) also listed it from Nepal. Peck (1988: 184), Shah *et al*. (2014: 294), Ghorpadé (2014c: 9) and Mitra *et al*. (2015: 64) listed it.]

Lathyrophthalmus tabanoides (Jaennicke, 1867)

Eristalis tabanoides Jaennicke, 1867, Abh. Senckenb. Naturforsch. Ges., 6: 402 (♀; 'Massaua' = Massowah in Eritrea, Ethiopia) [?]

Pakistan; India: DL (Brunetti, 1923, Hervé-Bazin, 1923c, 1924, Anand *et al*., 1967, Knutson *et al*., 1975, Anand, 1986, Peck, 1988, Aslamkhan *et al*., 1997, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al*. 2015).

[NOTE: See Ghorpadé & Shehzad (2013: 6) for notes on this dominantly Afrotropical species which has been recorded from Pakistan and, curiously (misidentified ?) from Delhi in coriander fields (Anand *et al*., 1967, Anand, 1986) ! Brunetti (1923: 189) identified 2♀ from Quetta in Pakistan taken by Col. Nurse in June, and wrote "The species appears to me valid, although Bezzi (1915: 84, *Syrphidae of Ethiop. Reg*.) thinks that it may possibly be a variety of *quinquestriatus*, F. (*quinquelineatus*, Bezzi, *nec* Fabr.)." Hervé-Bazin (1923c: 129-130, 1924: 296-297) alleges this is only a simple variety of *L. quinquelineatus* ! Thompson (*in litt*., 1982) had e-mailed me that "*Eristalis tabanoides* Jaennicke is a valid name for a species occurring in North Africa and the Middle East. Its use in Brunetti is probably based on a misidentification of *Eristalinus megacephalus* (Rossi)." This is the confusion with our *Lathyrophthalmus* species that needs to be studied by comparison of types, and many fresh specimens, and this hitherto 'lumped' genus then properly revised in the Oriental—Papuan region and true species here identified and properly named. Ghorpadé & Shehzad (2013: 6-7) gave records from Pakistan. Knutson *et al.* (1975: 349, Peck (1988: 184), Ghorpadé (2014c: 9), and Mitra *et al.* (2015: 64) listed it.]

Lathyrophthalmus tarsalis (Macquart, 1855)

Eristalis tarsalis Macquart, 1855, Dipt. Exot. Suppl., 5: 87 (♀; 'Chine boreale') [USNM, Washington, DC]
Eristalis ocularius Coquillett, 1898, Proc. U.S. natn Mus., 21: 325 (♀; 'Japan') [USNM, Washington, DC]

India; Nepal (Hervé-Bazin, 1923b, Coe, 1964, Knutson *et al*., 1975, Lambeck & van Brink, 1975a, Kapoor *et al*., 1979, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé, 2014c, 2015, Mitra *et al*., 2015)

[NOTE: Hervé-Bazin (1923b: 134-136, figs 6-10) gave nice figures of both sexes and a discussion of *L. ocularius* Coq. Coe (1964: 275) cited specimens taken in eastern Nepal on flowers pf *Guizotia abyssinica* in October at Sangu, c. 6200 ft., and mentioned seeing specimens in NHM, London of this species also from NE. India. Lambeck & van Brink (1975a: 25) described karyotypes of this in specimens *of E.* (*L.*) *ocularius* from Kathmandu, Nepal, and Kapoor *et al.* (1979:65) listed *E. tarsalis* from Nepal. Knutson *et al.* (1975: 349), Peck (1988: 184), Ghorpadé (2014c: 10, 2015: 5) and Mitra *et al.* (2015: 64), listed it. See Thompson & Rotheray (1998: 113) for a key to this genus in the Palaearctic.]

Mallota curvigaster (Macquart, 1842)

Helophilus curvigaster Macquart, 1842, Dipt. Exot., 2(2): 62 (♂; 'Java') [MNHN, Paris ?]; Bhatia, 1931, Indian J. agric. Sci., 1: 510, Pl. LVIII (life history) [MNHN, Paris]
Merodon interveniens Walker, 1860, J. Linn. Soc. Lond., 4: 120 (♂; 'Makasar, Celebes) [NHM, London]
Tigridemyia pictipes Bigot, 1882, Annls Soc. Ent. Fr., Bull., (6) 2: cxxi (♂; 'Java') [UM, Oxford]
Polydonta (?) orientalis Brunetti, 1908, Rec. Indian Mus., 2 : 74 (♂; 'Inde') [ZSI, Calcutta – examined]
Teuchomerus orientalis (Brunetti): Sack, 1922, Arch. Naturg., Abt. A, p. 265-266.

India: BI, RJ (Brunetti, 1908, 1915, 1923, 1925, Hervé-Bazin, 1924, Sack, 1922, Bhatia, 1931, Beeson, 1953, Knutson *et al*., 1975, Li & Liu, 1995, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1908: 74-76) formally named and described (?) *Polydonta orientalis* "from a single ♂ in fair condition in the Indian Museum collection, bearing no data, but marked 'Inde' in Bigot's handwriting." Brunetti was unsure of its generic placement, noting "knowing of no other [genus] in which to place the Oriental species, I leave it here, where Bigot placed it." Curiously, Brunetti also included *Helophilus curvigaster* Macquart [*sic* !] in that same paper, mentioning "the transverse bands of pubescence on the thoracic dorsum in *curvigaster*," but then not realizing that *curvigaster* and *orientalis* were the same species ! I observed the single male type of *Polydonta orientalis* in the ZSI, Calcutta, when I had then checked Brunetti's Diptera types housed there, in March 1981, and then making a note that is was *Merodon intervenius* Wlk. Brunetti (1915: 231) mentioned de Meijere's notes on this species (as *Helophilus* !). Brunetti (1923: 211-218) had also mixed up his *Merodon* species, some of which were *Mallota* and some *Mesembrius* as well !
Only *pallidus* Macquart (= *pruni* Rossi) and *albifasciatus* Macquart were true *Merodon* as included in the FAUNA volume. In fact, in the Appendix to that book, Brunetti (1923: 414-415) had accepted the synonymy of *Merodon interveniens* Walker and *Teuchomerus orientalis* Brunetti with *Helophilus curvigaster* Macquart, stating "The species is undoubtedly a *Merodon*." He also gave a locality in Sri Lanka, where he stated that it was rare. Brunetti (1925: 77) gave notes on *Merodon interveniens*, discussing its generic relationship. Bhatia (1931: 510, PL. LVIII) described its life

history in tree-holes full of decomposing vegetable matter in August at Pusa (Bihar), but misidentified it as *Helophilus curvigaster* Macquart. Beeson (1953: 340) quoted the above paper and wrote that its (as '*Helophilus*') larvae "breed in holes in trees where wet vegetable matter is putrifying." Sack (1922: 265) erected *Teuchomerus* for *Polydonta orientalis* Brunetti, but that genus is now a synonym of *Mallota* Meigen, as also are *Imatisma* Macquart, *Tigridemyia* Bigot and *Paramallota* Shiraki. Li & Liu (1995) studied the *Tigridemyia* of China and described a new species *acanthofemurilis*, comparing it with *curvigaster* which they also recorded. Knutson *et al.* (1975: 354), Ghorpadé (2014c: 1o), and Mitra *et al.* (2015: 64) listed it.

Generic concepts in the Syrphidae have altered radically in present times and, as noted above (p. 7), the higher classification and phylogeny is also in need of professional analysis, involving molecular biology as well.]

Mallota rufipes Brunetti, 1913

Mallota rufipes Brunetti, 1913, Rec. Indian Mus., 9: 271 (♂; 'Singla, Darjeeling District') [NHM, London ?]

Pakistan: Khyber Pakhtunkhwa (Sack, 1932b, Thompson & Rotheray, 1998, Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: Brunetti (1913b: 271-272) described this from a single male taken at Singla, Darjiling District. The type [in NHM, London ? Not found by me in ZSI, Calcutta] was in alcohol and so its "pubescence is considerably matted" and colour dulled. Ghorpadé & Shehzad (2013: 7) gave a record from Dera Ismail Khan, in Pakistan by Arif (2001) but this may be misidentfied ? Arif (2001: 55-56, 125) had reported 2♂ taken from wild vegetation at Darban Kalan and Gomal Bazar in Dera Ismail Khan in October 1998 and June 1999. Ghorpadé (2014c: 10) and Mitra *et al.* (2015: 64) listed it. See also Sack (1932b: 331) and Thompson & Rotheray (1998: 111) for discussion and key to this genus in the Palaearctic.]

Merodonoides multifarius (Walker, 1852)

Eristalis multifarius Walker, 1852, Insecta Saundersiana, 1: 248 (♀; 'East Indies') [NHM, London]

Merodonoides circularis Curran, 1931, J. Fed. Malay St. Mus., 16: 333 (♂; Kedah Peak, 3300 ft, Malaya) [NHM, London]

Merodonoides minutus Hull, 1944, Ann. Mag. Nat. Hist., (11) 11: 43 (♂; 'Jubblepore, Central India') [NHM. London]

Merodonoides czernyi Hull, 1944, J. Wash. Acad. Sci., 34: 400 (♂; 'Tonkin, Montes Mauson, Vietnam') [NM, Vienna]

Eristalis (Merodonoides) kandyensis Keiser, 1958, Revue Suisse de Zoologie, 65(1): 234 (♂; 'Kandy, Asgiriya') [NHM, Basel]

Eristalis yamunanagarensis Awtar Singh, Sodhi & Gupta, 1986, J. Bombay nat. Hist. Soc., 83(2): 395 (♂; 'Yamunanagar, Haryana, N. India' [IARI, New Delhi ?]; Ghorpade, 2014c, Colemania, 44: 10 (as *n. syn.*)

Pseudomeromacrus setipenitus Li, 1994, Entomologia Sinica, 1(2): 146 (♂; 'Guangzhou, China') [SCAU, Guangzhou]

India: GJ, HR, RJ; Nepal (Brunetti, 1923, Hervé-Bazin, 1924, Curran, 1931, Hull, 1944a,b, Coe, 1964, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Awtar Singh *et al.*, 1985, 1986b, Claussen & Weipert, 2003, Ghorpadé, 2014c,e, 2015, Mitra *et al.*, 2015).

[NOTE: This could probably be a polytypic species and it remains to be examined if all six synonyms indicated above are genuine and valid ? Walker's type from "East indies" is apparently a A.R. Wallace collection from one of the Indonesian islands or from the Malay peninsula. But Brunetti (1923: 195) mentioned "the type ♀ in the British Museum from India and another ♀ from the Lower ranges, N. Khasi Hills, Assam, 1878 (Chennell)." It is distributed all over the Indian subcontinent, from Haryana in the north to Sri Lanka down south, and I myself have collected many from Karnataka and Tamil Nadu on both the Western Ghats and the Eastern Droogs. It also occurs on the Indochinese peninsula and in China. Careful study of all this widespread material may and could reveal more than a single species. Curran (1931: 333) supposed "*Merodon tuberculatus* Brunetti may also belong to this genus [*Merodonoides*]" but that species is currently placed in *Mesembrius*, which genus also requires more careful study. Curran likened his new *Merodonoides* to *Tigridemyia* Bigot, but it was "at once distinguished by the petiolate marginal cell." Hervé-Bazin (1924: 297) felt this was an '*Eristalodes*.' Hull (1944a: 43) separated his *minutus* from *circularis* Curran "by the absence of a fascia upon the posterior portion of the third and fourth abdominal segments, the wholly reddish hind femora, the smaller size and different eye-pattern [four conspicuous brown stripes]." Hull (1944b: 400) noted his *czernyi* was "Related to *circularis* Curran, [but] this species is distinguished by the chiefly reddish femur and a different pattern of eye stripes." Keiser (1958: 234, fig. 7) gave differences of his *kandyensis* from *minutus* and *circularis* but stated better material would be required to come to a correct conclusion; his was based on a single male holotype. Coe (1964: 277) retained *multifarius* in the large genus *Eristalis*

agreeing with Hull (1949: 397) that characters separating *Merodonoides, Eristaloides* [*sic* !] etc., were deserving "only of minor group value." Coe then synonymized *circularis* Curran and *minutus* Hull after studying holotypes, noting that the latter "is only a pale variety of *multifarius*." Interestingly Brunetti (1923: 195) had opined : "I do not think that this species [*multifarius*] should remain in *Eristalis*, on account of the greatly thickened hind femora; the dipped 2nd vein is an additional abnormality." Thompson (2003: 4) separated this genus from others in his 'subtribe' Eristalina. Kapoor *et al.* (1979: 65) listed it from Nepal; Claussen & Weipert (2003: 374, 378) had cited a female taken in Gorkhana Park in Kathmandu in May. Awtar Singh *et al.* (1985: 192) listed an "*Eristalis* sp. nov." from Yamunanagar taken in November in wild weeds, and later (Awtar Singh *et al.*, 1986b: 395) described this as a new species *yamunanagarensis* which I (Ghorpadé, 2014c: 10) then synonymised under *Merodonoides multifarius* (Walker). Knutson *et al.* (1975: 350), Ghorpadé (2014c: 10, 2014e: 5, 2015: 5), and Mitra *et al.* (2015: 64) listed it.]

Mesembrius bengalensis (Wiedemann, 1819)

Eristalis bengalensis Wiedemann, 1819, Zool. Mag. (Wied.), 1: 16 (♂♀; 'Bengal, India') [NM, Vienna & UZM, Copenhagen]
Eumerosyrphus indianus Bigot, 1882, Annls Soc. Ent. Fr., Bull., (6) 2: cxxviii (♂; 'India') [UM, Oxford ?]
Eumerosyrphus indicus Bigot, 1883, Annls Soc. Ent. Fr. Bull., (6) 3: 349 [*lapsus calami* ?]

Pakistan; India: BI, CH, GJ, HP, HR, PB; Nepal (Brunetti 1907b, 1908, 1913a, 1923, Bhatia & Shaffi, 1933, Beeson, 1953, Knutson *et al*., 1975, Kapoor *et al.*, 1979, Awtar Singh *et al.* 1985, Claussen & Weipert, 2003, Mitra *et al.*, 2004b, 2015, Parui *et al*., 2006, Saeed *et al*., 2008; Sajjad & Saeed, 2010; Sajjad *et al.*, 2008, 2010, Bhattacharya *et al*., 2012b, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Ghorpadé, 2014c,e, 2015).

[NOTE: See Ghorpadé *et al.* (2011: 82) for some notes. Brunetti (1907a: 379, figs 4-6, 1908: 69-70) wrote in some detail of this species and mentioned diagnostics of markings on abdominal tergum 4. The male middle femur has a tooth that is diagnostic of this species. Brunetti (1913a: 167) gave notes on variation. In the FAUNA volume (Brunetti, 1923: 209-210, Pl. V, figs 103) he gave a full description and cited specimens from Calcutta, Pusa, Kathmandu (Nepal), Deesa, Bangalore and'Assam,' stating it "is apparently widely distributed throughout India." Bhatia & Shaffi (1933: 567-569, Pl. LXVII) described its life history using field collected gravid females found "hovering over wild plants near the river bank in Pusa [Bihar]." Beeson (1953: 340) quoted the above paper and wrote that its (as '*Helophilus*') larvae "breed in wet fermenting woody pulp." Kapoor *et al.* (1979: 66) listed it from Nepal. Awtar Singh *et al.* (1985: 192) recorded it as rare from Morinda, Zirakpur and Ambala during July to September, visiting flowers of mint and cucurbiits. Clausen & Weipert (2003: 376, 378) reported a female from Nepalgunj, 170m in Nepal. Mitra *et al.* (2004b: 12; as '*Messembrius*') found flies visiting flowers of a succulent plant *Rhodiola* sp. (Crassulaceae) in Himachal Pradesh, being active in morning hours. Parui *et al.* (2006: 99) took specimens at the FRH, Ropar, Indian Punjab, in June and from Anandpur, Naina Devi Road, Punjab, in October. Bhattacharya *et al.* (2012: 132) cited two males taken at Kalatop in June, this a first record from Himachal Pradesh. Ghorpadé & Shehzad (2013: 7) gave records from Pakistan. Ghorpadé & Pathania (2014: 6) listed this as recorded from the Punjab Doab in India and Pakistan. Ghorpadé (2014e: 5-6) gave some notes. Knutson *et al.* (1975: 356), Ghorpadé (2014c: 10, 2015: 5) and Mitra *et al.* (2015: 64) listed it.]

Mesembrius quadrivittatus (Wiedemann, 1819)

Eristalis quadrivittatus Wiedemann, 1819, Zool. Mag. (Wied.), 1: 17 (♂♀; 'Bengal, India') [NM, Vienna & UZM, Copenhagen]
Helophilus quadrivittatus Wiedemann : Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 210.
Mesembrius quadrivittatus Wiedemann : Knutson *et al*., 1975, *Cat. Dipt. Orient. Reg*., p. 356 (Catalog).
Merodon brunetti [*sic*] Sodhi & Awtar Singh, 1991, Acta zool Cracov., 34: 315 (♂; Morinda) [IARI, New Delhi – examined]; Ghorpade, 2014b, Colemania, 41: 9 (as *n. comb., n. syn*.)

India: BI, CH, GJ, HP, PB; Nepal (Brunetti, 1907b, 1915, 1923, Lambeck & Kiauta, 1973, Ghorpadé, 1973b, 2014b,c,e, 2015, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Sodhi & Awtar Singh, 1991, Parui *et al*., 2006, Bhattacharya *et al*., 2012b, Ghorpadé & Pathania, 2014, Mitra *et al.*, 2015).

[NOTE: See Ghorpadé *et al.* (2011: 82) for some notes. Brunetti (1907b: 379, figs 1-3, 1908: 69-70) wrote in some detail of this species and of diagnostic markings on on abdominal tergum 4. The male middle femur lacks the tooth that is diagnostic of *M. bengalensis*. Brunetti (1915: 231) mentioned de Meijere's redescription of this species. Brunetti (1923: 210-211, Pl. V, figs 4-5) gave a description, comparison with *bengalensis* and cited specimens seen from Pusa, Deesa, Calcutta, Port Canning, Puri, Katihar, Jabalpur and Siliguri, and remarked "Apparently widely distributed in the plains of India." Lambeck & Kiauta (1973: 75) cited specimens of '*Helophilus (Mesembrius) quadrivittatus*' taken at Chauni (1400m) and Taudaha (1350m) in Nepal and stated "This 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)." In my masters thesis (Ghorpade, 1973b) I had written of this species (as '*Helophilus*') with marginal cell open, "This species was decidedly rare around Bangalore, a single male taken in a wheat field in the Agricultural University campus in February. Kapoor *et al.* (1979: 66) listed it from Nepal. Sodhi & Awtar Singh (1991: 315-319, figs 1-4) named and described a new species, *Merodon brunetti*, which I synonymised under this species (Ghorpadé, 2014b: 9). Parui *et al.* (2006: 99) cited specimens taken at Anandpur, Naina Devi Road, Indian Punjab, in October. Bhattacharya *et al.* (2012: 132) cited one male taken at Hamirpur in March, a first record from Himachal Pradesh. Ghorpadé & Pathania (2014: 4, 6) cited one male taken at Ludhiana in April and gave some notes. See also notes given by me (Ghorpadé, 2014e: 4). Knutson *et al.* (1975: 356), Ghorpadé (2014c: 10, 2015: 5) and Mitra *et al.* (2015: 64) listed it.]

Mesembrius sharpi (Kohli, Kapoor & Gupta, 1988)

Helophilus sharpi Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 118 (♀?; 'Mussoorie') [IARI, New Delhi – examined]

Mesembrius sharpi (Kohli, Kapoor & Gupta, 1988): Ghorpadé, 2014c: 10. (as *n. comb.*)

India: UK (Sack, 1932b, Kohli *et al.* 1988, Thompson & Rotheray, 1998, Ghorpadé, 2014c, Mitra, 2015).

[NOTE: I examined the holotype in the Pusa Collection at IARI, New Delhi labeled "Mussoorie, 30.v.1906 / 3447 / Helophilus sharpi Kohli et al., Holotype." This collection data was erroneously omitted and not printed in Kohli *et al.* (1988: 119). The type is not a male but a female, and to me is a *Mesembrius*, probably a distinct and valid species (?), near *consors* Walker, 1860. Brunetti (1908: 64-70) treated a large number of Oriental "*Helophilus*" species and gave a key to 16 of them "made up mainly from descriptions." He also wrote "I think the table may assist as an introduction to the better study of this genus, but I find great difficulty in understanding the true affinities of Walker's species." Illustrations were given as 21 figures on Plate XII (Brunetti, 1907b). Except for Palaearctic or northern temperate Oriental species, most of these "*Helophilus*" of Brunetti are species of other genera, as has been confirmed by some recent authors. Most are *Mesembrius*, which genus is as tropical as the true *Helophilus* is dominantly temperate. Of these, *aenous* Brunetti is a *Pseuderistalis*, *celeber* Osten Sacken belongs to a still undescribed, new, genus, and *curvigaster* Macquart is a *Mallota* (*q.v.*); there is also some synonymy involved. Ghorpadé (2014c: 10) and Mitra *et al.* (2015:64) listed it. See also Sack (1932b: 284) and Thompson & Rotheray (1998: 111) for discussion and key to this genus in the Palaearctic.]

Myathropa florea (Linnaeus, 1758)

Musca florea Linnaeus, 1758, Syst. Nat., Ed. 10, 1: 591 (LT ♂; 'Europe' = Sweden (Thompson *et al.*, 1982: 156) [NHM, London]

Afghanistan (Bańkowska, 1968, Peck, 1988, Ghorpadé, 2014c,d).

[NOTE : Bańkowska (1968: 198) listed one female (as '*Myiatropa*') taken at 'Umgeb v. Kabul, 1740m' in September, mentioned by Ghorpadé & Shehzad (2013: 16) and Ghorpadé (2014d: 6). ." Peck (1988: 203) and Ghorpadé (2014c: 10) listed it.

Thompson (unpubl., *pers. comm.*) mentioned another new (?) species from "India.]

Myathropa semenovi Smirnov, 1925

Myiatropa semenovi Smirnov, Ent. Mitt., 14(3-4): 295 (LT ♂; 'aus dem Distrikte Tashkent' [= Uzbekistan] (Thompson *et al.*, 1982: 156) [NHM, London]

Nepal (Sack, 1932b, Peck, 1988, Thompson & Rotheray, 1998, Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015).

[NOTE : Claussen & Weipert (2003: 376) reported a male from 18km NW. Simikot, 2950m, Humla District, Karnali Province, of Nepal, taken in June. See also Sack (1932b: 275) and Thompson & Rotheray (1998: 111) for discussion and key to this genus in the Palaearctic.]

Pararctophila oberthueri Hervé-Bazin, 1914

Pararctophila oberthueri Hervé-Bazin, 1914, Insecta, 41: 153 (♂; 'Padong, British Bootan, Inde') [MNHN, Paris]

Arctophila simplicipes Brunetti, 1915, Rec. Indian Mus., 11: 247 (♀; 'Garhwal District, Kumaon, Western Himalayas') [ZSI, Calcutta – examined]

Arctophila (Syngenicomyia) pellicea Becker, 1921, Mitt. Zool. Mus. Berlin, 10: 88 (♀; 'Inde') [MNHN, Paris ?]

Paractophila [*sic*] *bengalensis* Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 126 (♀; 'Darjeeling, West Bengal') [IARI, New Delhi – examined]; Ghorpade, 2014c, Colemania, 44: 10 (as *n. syn*.)

Pakistan; India: JK, UK; Nepal (Brunetti, 1915, 1923, Hervé-Bazin, 1914, 1923c, 1924, Sack, 1932b, Knutson *et al*., 1975, Thompson & Rotheray, 1998, Arif, 2001, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Ghorpadé, 2014c, 2015, unpubl., Mitra *et al*., 2015).

[NOTE: Hervé-Bazin (1914: 153) named his new species "*Pararctophila Oberthüri* nov. spec. ♂." in his original description, also of the new genus *Pararctophila*, with an umlaut on the 'u' in the species name. The ICZN Code prohibits use of diacritical marks in binomens, but recommends a corrected spelling to '*ue*; for a '*ü*.' Hence the spelling '*oberthuri*' adopted in the catalog by Knutson *et al*. (1975: 339) and by Claussen & Weipert (2003: 374) is incorrect and requires to be spelt '*oberthueri*,' correctly, which is what I have used above. See Ghorpadé & Shehzad (2013: 7) for some more notes and record from Pakistan. Arif (2001: 43-44, 124) had reported 1♀ taken from a hedge in an orchard at Madian (Swat) in June 1999, as '*Arctophila simplicipes*.' Brunetti (1915: 247-248) described *Arctophila simplicipes* as new from several females taken from the Garhwal District, Kumaon, 11,000 ft from May to July. In the FAUNA volume (Brunetti, 1923: 289-291, figs 58-60) he again gave a description and figures and discussed *Arctophila* characters. Hervé-Bazin (1923c: 130-131) gave notes. I examined the sole holotype ♀ of *bengalensis* Kohli, Kapoor & Gupta in the Pusa Collection at IARI, New Delhi, labeled "Darjeeling (West Bengal), 4.iv.1985, V.K. Kohli / Paractophila [*sic*] bengalensis Kohli *et al*., Holotype." It is the same as *oberthueri* Hervé-Bazin and was synonymised by me (Ghorpadé, 2014c: 10). The diagnosis of their supposed "new" species was based only on sexual differences from the ♂ holotype of *oberthueri*, as comparison with Brunetti's description of the ♀ holotype of his *simplicipes* will also reveal. Hervé-Bazin (1924: 298-299) synonymised *simplicipes* Brunetti and gave some more notes. Claussen & Weipert (2003: 374, 378) cited specimens taken in Karnali Province of Nepal and noted the synonymy of *bengalensis* Kohli *et al*. Incidentally, I had collected one specimen flying down to a trickle of water, settling beside it and drinking (!), near Pahalgam, 2133m, in Jammu & Kashmir, in October. Knutson *et al*. (1975: 339), Shah *et al*. (2014: 301), Ghorpadé (2014c: 10, 2015: 5) and Mitra *et al*. (2015: 64) listed it. See also Sack (1932b: 346) and Thompson & Rotheray (1998: 114) for discussion and key to this genus in the Palaearctic.]

Phytomia argyrocephala (Macquart, 1842)

Eristalis argyrocephala Macquart, 1842, Dipt. Exot., 2(2) 45 (♂♀; 'Indes orientales') [MNHN, Paris]

Megaspis transversus Brunetti, 1908, Rec. Indian Mus., 2: 73, fig. (♂♀; 'Bangalore and Calcutta, India') [ZSI, Calcutta – examined]

India: BI, GJ (Brunetti, 1908, 1923, Gokulpure, 1972, Ghorpadé, 1973b, 2014c, Knutson *et al*., 1975, Thompson, 2003, Mitra *et al*., 2015).

[NOTE: Species of *Phytomia* (earlier *Megaspis*) are large and stocky eristalines, dominantly tropical in range and generally avoiding cold habitats, both latitudinal or altitudinal, unlike species of *Eristalis* (*s. str*.), *Eoseristalis*, *Eristalinus* and *Eristalodes*. Brunetti (1908: 73-74) described *transversus* as new based on eight specimens from Bangalore and Calcutta, giving diagnostics from *errans* F. I confirmed the holotype specimen in ZSI, Calcutta in 1981. Brunetti also gave a key to six species of '*Megaspis*.' Brunetti (1915: 231) quoted de Meijere, synonymising his *transversus* with this species and adding a table (= key), and commented "Mr. Austen writes me that *Megaspis* is antedated by *Phytomia*, Guer. (1833) . . . but I do not like to change the name after it has stood so long." Brunetti (1923: 201-203, Pl. IV, fig. 20) synonymised his *transversus* with this earlier name and listed its occurrence all over the subcontinent, specifically from Deesa, Parasnath (Chhota Nagpur), Ranchi, Calcutta, Pusa (Bihar), Bangalore, Talewadi (N. Kanara District, Karnataka), Travancore, Belgaum, Coonoor, Purneah, Calcutta and Burma. Gokulpure (1972: 848) recorded it from Damoh, Madhya Pradesh. In my masters thesis (Ghorpade, 1973b) I had written "This species was rather common in the winter months of October to December around Bangalore, taken in fields of niger, wheat, sannhemp and ragi [= finger millet] feeding on the flowers." It was keyed out as "arista microscopically haired on basal half; hind femora wholly black." Thompson (2003: 4) included this genus in a key to others of his 'subtribe' Eristalina. See also Ghorpadé *et al*. (2011: 82) for more notes. Knutson *et al*. (1975: 357), Ghorpadé (2014c: 10) and Mitra *et al*. (2015: 64) listed it.]

Phytomia errans (Fabricius, 1787)

Syrphus errans Fabricius, 1787, Mantissa Insect., 2: 337 (♀; 'China') [UZM, Copenhagen ?]

Eristalis varipes Macquart, 1842, Dipt. Exot., 2(2): 46 (♂♀; 'Indes orientales and China') [MNHN, Paris ?]

Eristalis amphicrates Walker, 1849, List Dipt. Colln Br. Mus., 3: 623 (♂♀; 'N. Bengal, Java, East Indies, China' [NHM, London]

Eristalis plistoanax Walker, 1849, List Dipt. Colln Br. Mus., 3: 628 (♂; 'Philippine Is.' [NHM, London]

Eristalis agyrus Walker, 1849, List Dipt. Colln Br. Mus., 3: 629 (♂; 'Philippine Is.' [NHM, London]
Eristalis babytace Walker, 1849, List Dipt. Colln Br. Mus., 3: 629 (♂; 'Philippine Is.' [NHM, London]
Eristalis macquartii Doleschall, 1856, Natuurk. Tijdschr. Ned.-Indië, 10: 410 (o ?; 'Java') [?]

India: BI, JK; Nepal (Brunetti, 1908, 1915, 1923, Herve-Bazin, 1923e, 1924, Coe, 1964, Lambeck & Kiauta, 1973, Ghorpadé, 1973b, 2014c, 2015, Kapoor *et al.*, 1979, Datta & Chakraborti, 1984, Peck, 1988, Ghorpade & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti (1908: 72-73) included this in a key to six species of this genus and made notes on it, then he listed (Brunetti, 1915: 231) a record of a female of this species "from Cochin State, 1700-3200 ft., 16—24-ix-14 [*Gravely*], and cited de Meijere's paper recording this and others of this genus from Java, with a key. Brunetti (1923: 199-200, 414) noted that "This species and *argyrocephalus* are very closely allied, but the colour of the hind femora and the presence or absence of pubescence on the arista will separate them with certainty. . . Very common throughout the East." He listed localities of Sukna, Pusa, Bangalore, Trivandrum (Travancore), Parambikulam (Cochin State) both in present Kerala, Coorg, Hadagalli (Ceylon), Margherita (Assam), Myingyan (Burma), Maymyo (Upper Burma), and Sibsagar in the Indian subcontinent. Hervé-Bazin (1923e: 253, 1924: 297) gave a discussion and another possible synonym of this species, *albifrons* Macquart from 'Bengale, M. Duvaucel.' Coe (1964: 277) gave specimens taken in eastern Nepal. Lambeck & Kiauta (1973: 77) cited females taken at Chauni (1400m) in September and at Taudaha (1350m) in October, apparently new in Nepal. In my masters thesis (Ghorpade, 1973b) I had written "Another species encountered only once around Bangalore when two males were collected from niger flowers on my farm." It was keyed out as "arista bare; basal half of hind femora orange." Kapoor *et al.* (1979: 66) listed this from Nepal. Datta & Chakraborti (1984: 251) cited a female taken at Udhampur in September on *Lantana* flowers in Jammu & Kashmir (see also Ghorpadé & Shehzad, 2013: 17). Knutson *et al.* (1975: 357), Shah *et al.* (2014: 301), Ghorpadé (2014c: 10, 2015: 5), and Mitra *et al.* (2015: 64) listed it.]

Phytomia zonata (Fabricius, 1787)

Syrphus zonatus Fabricius, 1787, Mantissa Insect., 2: 337 (♀; 'China') [UZM, Copenhagen]
Syrphus zonalis Fabricius, 1794, Ent. Syst., 4; 294 (Unjustified nom. nov. for *zonata* F., 1787); Brunetti, 1908, *et seq.* [*lapsus calami*?]
Musca sinensis Gmelin, 1790, Syst. Nat., 5: 2872 (Unjustified nom. nov. for *zonata* F., 1787)
Eristalis rufitarsis Macquart, 1842, Mem. Soc. R. Sci. Agric. Arts, Lille, PL. 10, p. 58 (♀; 'Patrie inconnue') [MNHN, Paris ?]
Eristalis lata Macquart, 1842, Dipt. Exot., 2(2): 35 (♀; 'Patrie inconnue') [MNHN, Paris ?]
Eristalis andraemon Walker, 1849, List Dipt. Colln Brit. Mus., 3: 627 (♀; 'Sylhet and Sikkim') [NHM, London]
Eristalis datamus Walker, 1849, List Dipt. Colln Brit. Mus., 3: 628 (♀; '?') [NHM, London]
Eristalis babytace Walker, 1849, List Dipt. Colln Brit. Mus., 3: 629 (♀; 'Philippine Islands')[NHM, London]
Eristalis flavofasciatus Macquart, 1850, Dipt. Exot., Suppl., 4: 136 (sex ? 'Java') [MNHN, Paris ?]
Eristalis exterus Walker, 1852, *Insecta Saundersiana*, 3: 248 (♀; 'East Indies') [NHM, London]
Megaspis cingulata Snellen van Vollenhoven, 1863, Versl. Meded. K. Akad. Wet. Amst., 15: 12 (sex ?; 'Japan') [ZM, Amsterdam ?]

Nepal (Brunetti, 1908, 1910, 1913b, 1915, 1923, Hervé-Bazin, 1914, 1923e, 1924, Sack, 1932b, Coe, 1964, Lambeck & Kiauta, 1973, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Peck, 1988, Thompson, 1998, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Brunetti (1908: 72-73) included this in a key to six species of this genus, and (Brunetti, 1910: 171) noted this (as *Megaspis*) "generally common throughout the summer" in Sri Lanka. Then he mentioned Darjiling, 1000-3000 ft. (Brunetti, 1913b: 272). (Brunetti, 1915: 231) seeing specimen(s) of this species (as '*zonalis*') from Darjiling, cited de Meijere's paper recording this and others of this genus from Java, with a key, and also mentioning '*Eristalis externus* [*sic*], Walk.,' stating "a ♂ and ♀ under this name exist in the Indian Museum collection. They were identified by Bigot but, I think, incorrectly, owing to discrepancies in the size, the length of the abdomen and marks of the latter," In his FAUNA volume (Brunetti, 1923: 203-204) he gave a full description and mentioned specimens from north-east India; a key to six species of '*Megaspis*' (pp. 196-197) was also given. Hervé-Bazin (1914: 151, 1923e: 252-253, 1924:297) gave some notes and Lambeck & Kiauta (1973: 77) listed it from Chauni (1400m) in Nepal and Kapoor *et al.* (1979: 66) from Dobhan, Nepal. Knutson *et al.* (1975: 357), Peck (1988: 193), Ghorpadé (2014c: 10, 2015: 5), and Mitra *et al.* (2015: 64) listed it. See also Sack (1932b: 250) and Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic.]

Pseuderistalis aenous (Brunetti, 1907)

Helophilus aenous Brunetti, 1907b, Rec. Indian Mus., 1: 380, fig. 15, Brunetti, 1908, *ibid.*, 2: 66 (♀; 'Soondrijal, Nepal') [ZSI, Calcutta – examined]

Helophilus aeneus Brunetti, 1923, *Fauna Brit. India*, Dipt, 3: 206. *nom. emend.* (unjustified)

Nepal (Brunetti, 1907b, 1908, 1923, Knutson *et al.* 1975, Thompson, 2003, Ghorpadé, 2014c, 2015)

[NOTE: Brunetti (1907b: 380, Pl. XII, fig. 15, 1908: 66) illustrated this (as *aënous*) and described it (as *aënus*) based on a single female from Soondrijal, Nepal, which reminded him "very much of the European species *Eristalis sepulchralis*, L., and, more so, of the North American species *dimidiata*, Wied., and *saxorum*, Wied., but is distinctly smaller." I saw the holotype in ZSI, Calcutta in 1981. Brunetti (1923: 206, Pl. V, fig. 8) emended the species name that was misprinted and gave a description and figure. Knutson *et al.* (1975: 353; as *Helophilus aeneus*, and *aënus*, error) and Ghorpadé (2014c: 10, 2015: 5) listed it. Thompson (2003: 4, 11-12) in a recent revisionary paper on his 'subtribe' Eristalina, placed *Pseuderistalis* Shiraki, *Paramesembrius* Shiraki, *Klossia* Curran and *Catacores* Hull as new synonyms of *Kertesziomyia* Shiraki, stating "The genus *Kertesziomyia* (previously as *Pseuderistalis*) is well defined by having a postalar tuft but lacking the pile on posterior portions of the anepimeron and having no pattern on the eyes (as in *Eristalinus* [this including *Lathyrophthalmus* Mik, which is now recognized as a separate genus !], the only other genus with a postalar pile tuft). *Kertesziomyia* probably should be broken up into a number of subgenera, but this is left to other workers. Here I note only that *Kertesziomyia*, *Pseuderistalis*, *Paramesembrius*, and *Klossia* all fit our [*sic*] definition of *Kertesziomyia* [*Catacores* omitted, by oversight ?!], and therefore, are regarded as new synonyms. As *Kertesziomyia* was proposed as a genus and both *Pseuderistalis* and *Paramesembrius* as subgenera, the name *Kertesziomyia* must be used as the senior name for the enlarged group." He also included *Kertesziomyia* in a key (p. 4) to his genera of the 'subtribe' Eristalina. I am not adopting this synonymy and continue to use *Pseuderistalis* here, until further work confirms this treatment, especially based on molecular biology research. Knutson *et al.* (1975: 353; as *Helophilus*), and Ghorpadé (2014c: 10, 2015: 5; as *Pseuderistalis*) listed it.]

Pseuderistalis nigra (Wiedemann, 1828)

Eristalis niger Wiedemann, 1824, Analecta Ent., p. 38 (♀; 'Java') [UZM, Copenhagen]
Eristalis bomboides Walker, 1860, J. Linn. Soc. Lond., 4: 119 (♂♀; 'Makasar, Celebes') [NHM, London]
Eristalis obscurata Walker, 1860, J. Linn. Soc. Lond., 5: 239 (♂♀; 'Dorey, New Guinea') [NHM, London]
Eristalist tortuosa Walker, 1861, J. Linn. Soc. Lond., 5: 266 (♂; 'Tond, Celebes') [NHM, London]

Nepal (Brunetti, 1915, 1923, Nayar & Nayar, 1965, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Thompson & Rotheray, 1998, Ghorpadé, 2014c, 2015)

[NOTE: Brunetti (1915: 229) listed this as *Eristalis niger*, Wied., and wrote "The ♂ redescribed by Meijere from Sukabumi [*sic*], Java [*Kramer*]. A ♀, without data, is under this name in the Indian Museum, identified by Bigot, but I cannot be sure that it is this species." In his FAUNA volume (Brunetti, 1923: 163-164, 414) he redescribed it "mainly from a large ♀ in good condition in the British Museum from Singapore, and a ♂ and ♀ in the Indian Museum. . . The type ♂♀ of *bomboides*, type ♀ of *obscurata*, and type ♂ of *tortuosa* are all in the British Museum and are certainly conspecific. The synonymy is by Major Austen." Nayar & Nayar (1965: 241) listed '*Eristalis niger* Wiedemann' in their paper on syrphids of Agra, but this is most probably a misidentification, requiring confirmation. Knutson *et al.* (1975: 358), Kapoor *et al.* (1979: 66), and Ghorpadé (2014c: 10, 2015: 5) listed it. See Thompson & Rotheray (1998: 112) for a key to this genus in the Palaearctic.]

Pseudovolucella decipiens (Hervé-Bazin, 1914)

Arctophila decipiens Herve-Bazin, 1914, Annls. Soc. Ent. Fr., 83: 410 (♀; 'Komanotaira, Japan') [MNHN, Paris]
Arctophila jozana Matsumura, 1916, Thousand Ins. Japan, Add., 2: 205, Pl. XVI, fig. 19 (sex ?; 'Hokkaido and Honshu, Japan') [NIAS, Tsukuba ?]

Nepal (Peck, 1988, Shrestha & Aryal, 2000, Reemer & Hippa, 2008, Ghorpadé, 2014c, 2015)

[NOTE: Shrestha & Aryal (2000: 45-46) reported one specimen taken at Gathe Ban, 1557m in central Nepal visiting composite flowers, but this identification needs to be confirmed. Reemer & Hippa (2008: 85, 88) wrote "This is the only known non-Oriental species of *Pseudovolucella*." Peck (1988: 151), and Ghorpadé (2014c: 11, 2015: 5) listed it.]

Pseudovolucella eristaloides (Brunetti, 1913)

Sericomyia eristaloides Brunetti, 1913, Rec. Indian Mus., 8: 167 (♀; 'between Renging and Rotung (2200 ft.), N.E. Frontier of India' [ZSI, Calcutta – examined]

Pakistan ? (Brunetti, 1913a, 1923, Knutson *et al.*, 1975, Arif, 2001, Ghorpadé & Shehzad, 2013, Reemer & Hippa, 2008, Ghorpadé, 2014c)

[NOTE: Brunetti (1913a: 167) described this from a single female, and noted "Although with the general appearance of an *Eristalis*, this is a true *Sericomyia* in every character." In his FAUNA volume, Brunetti (1923: 292-294) fully described the single female taken by S. Kemp in November, and repeated "A true *Sericomyia* with the general appearance of *Eristalis*." Ghorpadé & Shehzad (2013: 7) gave a record from Pakistan which needs confirmation, and they added some notes. Arif (2001: 45-46, 124) had reported 1♂ taken on wild flowers at Peshawar in June 1999, as '*Sericomyia*.' Reemer & Hippa (2008: 92) also wrote "Brunetti's description, based on one female, strongly indicates that it is a *Pseudovolucella* species. All characters in the description apply also to *P. mimica* [Shiraki], while no differences between these taxa can be derived from it. Until the type can be studied, the question whether *P. eristaloides* and *P. mimica* are names for the same species has to remain unanswered." I had seen the single type in the ZSI, Calcutta in 1981. Knutson *et al.* (1975: 340) listed it as a *Sericomyia*, and Ghorpadé (2014c: 11, 2015: 5) as a *Pseudovolucella*.]

Pseudovolucella hingstoni Coe, 1964

Pseudovolucella hingstoni Coe, 1964, Bull. Brit. Mus. Nat. Hist. (Ent.), 15: 270 (♂; 'Phadam Chen, 9,000 ft., Sikkim) [NHM, London – examined]

Nepal (Coe, 1964, Knutson *et al.*, 1975, Reemer & Hippa, 2008, Ghorpadé, 2014c, 2015)

[NOTE: Coe (1964: 270, fig. 7) described this as new based on two specimens, one female taken in east Nepal in November. He separated this in a key to seven then known Oriental species of this genus (Coe, 1964: 271). Reemer & Hippa (2008: 89) cited one other female taken at Solukhum Goyom, above Sete, 3100m in Nepal in May 1997 by M. Hauser. The holotype was seen by me in NHM, London, labeled "Holotype / Type, male / Sikhim, Phadam Chen, 9000 ft., 30-iii-1924, Maj. R.W.G. Hingston / Everest Exp. Brit. Mus. 1924-386 / Pseudovolucella hingstoni Coe, 1963, type." Knutson *et al.* (1975: 339), and Ghorpadé (2014c: 11, 2015: 5) listed it.]

Pseudovolucella ochracea Hull, 1944

Pseudovolucella ochracea Hull, 1944, Ann. Mag. Nat. Hist., (11) 11: 32 (♂; 'Burma') [NHM, London]

Nepal (Hull, 1944a, Knutson *et al.* , 1975, Reemer & Hippa, 2008, Ghorpadé, 2014c, 2015)

[NOTE: Hull (1944a: 32-34) described this as new based on two males taken in Burma by Lt.-Col. Bingham in 1896. Reemer & Hippa (2008: 79-80) provided a key to separate the ten species of this genus. Knutson *et al.* (1975: 339) and Ghorpadé (2014c: 11, 2015: 5) listed it. See Thompson & Rotheray (1998: 114) for discussion and key to this genus in the Palaearctic.]

Tribe Merodontini

Eumerus aeneithorax Brunetti, 1915

Eumerus aeneithorax Brunetti, 1915, Rec. Indian Mus., 11: 244 (♂; 'Simla') [ZSI, Calcutta – examined]

India: CH ?, HP, PB ? (Brunetti, 1915, 1917, 1923, Knutson *et al.*, 1975, Awtar Singh *et al.*, 1985, Ghorpadé & Pathania,2014, Shah *et al.*, 2014, Ghorpadé, 2014c,e, Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 244-245) described this as new based on "a single perfect male taken by Capt. Evans, R.E., at Simla in August 1914, and generously presented by him, with other diptera, to the Indian Museum." This was repeated by Brunetti (1917: 88). Brunetti (1923: 257) then noted that he saw "Further specimens of each sex from Simla, ix.1898 (*Nurse*)." I consider it worth mentioning that Brigadier W. Harry Evans, a leading worker on Indian subregion butterflies (see Ghorpadé & Kunte, 2010) also picked up small sized Syrphidae a hundred years ago while generally hunting larger butterflies of his fancy ! This was the quintessential 'character' of the typical erstwhile British naturalist of those days gone by who sampled and made known the insect fauna of India, enthusiastically. This character and habit was far removed from current professional (are there really any amateurs here now ? the amateur 'collector' naturalist is almost extinct here now ! – see Ghorpadé, 1997) entomologists who only concentrate on their special select taxon and ignore additional sampling of any other insect families, just through lack of interest (and laziness ?), and possession of that human 'character,' not of time and opportunity. I examined the holotype present in ZSI, Calcutta in March 1981 when I visited there to study types. Awtar Singh *et al.* (1985: 194) listed this species from Chandigarh, as a rare species taken on wild weeds there in November. Chandigarh being in the foothills below the Simla Himalaya, this ID could be correct, but needs confirmation. See also Ghorpadé (2014e: 6) and Ghorpadé & Pathania (2014: 6). Knutson *et al.* (1975: 340), Shah *et al.* (2014: 295), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) who listed it. It is interesting that Misra & Verma (1975) recorded larvae of an unidentified species of this genus infesting potato tubers in Simla. It would be useful to consult staff of the Central Potato Research Institute (CPRI) at Simla if syrphid damage to tubers is frequent ?

The genus *Eumerus* in our subcontinent is represented by a large number of about two dozen species (and more than 40 Oriental ones in total) which need a careful revision, that is still unfortunately pending. This group perhaps represents the basal stock of Syrphidae (?), close to the peculiar, ornamented, bizarre, flies of the subfamily Microdontinae (see Reemer & Ståhls, 2013). But see my notes under *Spheginobaccha macropoda* above (pp. 10-11). Most of the below listed species need an ID check and confirmation, or otherwise, of their occurrence in this quasi-Palaearctic part of our subcontinent.]

Eumerus albifrons Walker, 1852

Eumerus albifrons Walker, 1852, Insecta Saundersiana, 1: 224 (♂; 'East Indies') [BMNH, London]

Eumerus halictiformis Brunetti, 1915, Rec. Indian Mus., 11: 241 (♂♀; 'Puri, Orissa Coast') [ZSI, Calcutta – examined]

India: HP, JK (Brunetti, 1915, 1923, Singh *et al*., 1955, Knutson *et al*., 1975, Patnaik & Bhagat, 1976, Patnaik *et al*., 1977, Abrol, 1993, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1923: 258) noted that the type of his *halictiformis* "agrees exactly with Walker's type" [of *albifrons*] "in British Museum, without data." He also gave Coimbatore and Kangra Valley as other locations for this species. I noted two type specimens of *halictiformis* present in ZSI, Calcutta in March 1981 when I visited there to study types. Singh *et al.* (1955: 714) gave Kangra Valley, 4500 ft. Brunetti (1915: 241-242) had described *halictifornis* as new based on a male and female taken at Puri on the Orissa coast in August by Annandale. Patnaik & Bhagat (1976) and Patnaik *et al.* (1977) recorded this from Puri District, Orissa, but that was misidentified for a *Paragus* species as the photograph in the former paper amply testifies to. It was assumed to be a 'predator' of the sorghum aphid which was another doubtful claim ! Abrol (1993) recorded it as a pollinator in Jammu & Kashmir. Knutson *et al.* (1975: 340; from 'Madras'), Shah *et al.* (2014: 295), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus ammophilus Paramonov, 1927

Eumerus ammophilus Paramonov, 1927, Trudy fiz.-mat. Vidd. Ukr. Akad. Nauk, 4(4): 323 and Zbirn. Prats zool. Muz. Kiev, 2: 79 (sex?; 'Repetek, Transcaspia' in Turkmenian USSR) [?]

? Eumerus ammophilus var. *quadrinotatus* van Doesburg, 1955, Beaufortia, 5(47): 51 (sex ?; 'Shyok-Tal, Shokpa Kunglang, ca 3750m, Karakorum') [ZM, Amsterdam]

Pakistan ?; India: JK (van Doesburg, 1955, Peck, 1988, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: van Doesburg Sr (1955: 51) noted that his new 'variety' *quadrinotatus* differed from "*ammophilus s.s.* by also having distinct red side-markings on the third abdominal segment." It remains to be checked if this 'variety' is synonymous or distinct, by examination of male terminalia. It was recorded from Shyok-Tal, 3750m, on the Karakorum mountains. Ghorpadé & Shehzad (2013: 17) listed it as possible in Pakistan. Peck (1988: 153), Shah *et al.* (2014: 295), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus aurifrons (Wiedemann, 1824)

Pipiza aurifrons Wiedemann, 1824, Analecta Ent., p. 32 (♂; 'Ostindien') [UZM, Copenhagen]

Eumerus aurifrons var. *similis* Keiser, 1958, Revue Suisse de Zoologie, 65(1): 216 (♀; 'Deiyannewela, Kandy,' Sri Lanka) [NM, Basel]

India: BI, CH ?, JK, PB (Brunetti, 1915, 1923, Curran, 1926, Beeson, 1953, Keiser, 1958, Knutson *et al*., 1975, Awtar Singh *et al.*, 1985, Ghorpadé & Shehzad, 2013, Ghorpade & Pathania, 2014, Shah *et al.*, 2014, Ghorpadé, 2014c,e, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 240) had noted : "Dr. Meijere makes *splendens*, W., a synonym of this [*aurifrons* Wied.] . . . This may be the species described by me as *nepalensis*" (see below, *op. cit., q.v.*). Brunetti (1923: 252-253) described this from several of each sex in the Pusa collection and gave locations as Pusa (Bihar), Chapra (Bengal) [*sic*], Bombay, and Ceylon, besides from Java and the Philippines, the flies found on gum-saturated earth, under mango bark and on stable wall. Curran (1926: 115) studied the type and gave a key to Oriental 'forms' related to *aurifrons* Wied. Beeson (1953: 340) wrote its larvae breed in fermenting sap of *Albizia lebbek* and other forest trees. Awtar Singh *et al.* (1985: 194) listed this species from Chandigarh, as a rare species taken on wild weeds there in March. See Ghorpadé & Shehzad (1913: 7) and Ghorpadé (2014e: 6) for more notes. Ghorpadé & Pathania (2014: 6) listed it as recorded from the Punjab Doab. Knutson *et al.* (1975: 340), Shah *et al.* (2014: 295), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus halictoides Brunetti, 1915

Eumerus halictoides Brunetti, 1915, Rec. Indian Mus., 11: 242 (♂; 'Darjiling') [ZSI, Calcutta – examined]

India: HP (Brunetti, 1915, 1917, 1923, Knutson *et al*., 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 242-243) had noted : "Very near *halictiformis* [now *albifrons*] but certainly distinct. . . The species is also slightly larger and more robust." He described it from a type ♂ from Darjiling (West Bengal) [which is the holotype, *vide* Brunetti (1912: vii)], and a type ♀ from Simla (now in Himachal Pradesh), both of which are present in the ZSI, Calcutta as I noted and checked in March 1981 there. Brunetti (1917: 88) gave Simla, 9-v-09. Brunetti (1923: 258) in a footnote stated that the head of the holotype ♂ was " now missing" but I made no mention of this in my personal notes on examination of the types in 1981. Knutson *et al*. (1975: 341), Shah *et al*. (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al*. (2015: 64) listed it.]

Eumerus jacobsoni Becker, 1913

Eumerus jacobsoni Becker, 1913, Annu. Mus. Zool. Acad. Sci. St. Petersb., 17: 603 (sex ?; 'Pers.-Beludshistan. Kirman zwischen Dech-i-Pabid und Chasyk . . .' [?]

Afghanistan (Bańkowska, 1968, Peck, 1988, Ghorpadé & Shehzad, 2013), Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 198), Peck (1988: 158), and Ghorpadé (2014d: 6) noted it from Afghanistan and Ghorpadé & Shehzad (2013: 17) thought it possible in Pakistan. Ghorpadé (2014c: 11) listed it in his check-list.]

Eumerus kashmerensis Kohli, Kapoor & Gupta, 1988

Eumerus kashmerensis Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 119 (♂; 'Srinagar (J & K)') [IARI, New Delhi – examined]

India: JK (Kohli *et al*., 1988, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Kohli *et al.* (1988: 120) noted : "The species comes close to the [*sic*] *perplexus* Brun. but differs in the characters of 3rd antennal segment in being not rounded, the middle tibiae and tarsi not wholly orange and in the characters of male terminalia" [Figs 21-29]. I observed the holotype ♂ in the Pusa Collection at IARI, New Delhi, which is labelled "Srinagar (J & K), 5.v.1982, M.L. Agarwal, Eumerus kashmerensis Kohli *et al*. Holotype." Male terminalia are in a vial on the pin; wings are lost except for base of left wing; antennae also lost. However, these were illustrated by Kohli *et al.* (1988: figs 21, 23). Validity or otherwise of this species awaits a revision of this speciose genus in our subcontinent. Shah *et al*. (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al*. (2015: 64) listed it.]

Eumerus nepalensis Brunetti, 1908

Eumerus nepalensis Brunetti, 1908, Rec. Indian Mus., 2: 76 (♀; Chonebal, Nepal) [ZSI, Calcutta – examined]

Afghanistan; India: CH ?, HP, JK; Nepal (Brunetti, 1908, 1915, 1923, Bańkowska, 1968, Knutson *et al*., 1975, Kapoor *et al*., 1979, Awtar Singh *et al*. 1985, Abrol 1993, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d,e, 2015, Mitra *et al*., 2015).

[NOTE: Brunetti (1908: 76-77) had noted : "Described from the one type-specimen in the Indian Museum collection. It is near *argyropus*, Dol., but distinct by the wholly clear wing." I confirmed the type in the ZSI, Calcutta collection when I visited there in 1981. *E. argyropus* Doleschall, 1857 was preoccupied by Loew, 1848 and thus Shiraki published a new name *doleschalli* in 1930. But these are now synonyms of *argentipes* Walker, 1861, all collected in the Moluccas in Indonesia. About *nepalensis* Brunetti (1915: 239) wrote : "It is probable that my *nepalensis* will sink to synonymy, but it is not certain which species it is identical with, as three or four appear very closely allied if allowances for variation are made. These are *macrocerus*, W., *aurifrons*, W., (*splendens*, W.), *nicobarensis*, Sch., and *niveipes*, Meij. Specimens agreeing with the description of *nepalensis* are in the Indian Museum from Mergui, Margherita, Pallode and Travancore . . . and from Mergui, Nepal (the type specimen of *nepalensis*) [this is incorrect, note Brunetti's (1923: 252-253) correction], and Sibu, Sarawak." Brunetti (1915: 240) ultimately mentioned the chances in favour of *aurifrons*, W., being the senior synonym. Awtar Singh *et al.* (1985: 194) listed this species from Solan, as a rare species taken on wild weeds there in November. Brunetti's (1915: 239) comments on the difficulty in *Eumerus* species taxonomy deserve mention here. He had written "I had anticipated drawing up a table of oriental species in this genus, but from the descriptions only this is quite impracticable, the species being very closely allied, whilst the few characters that appear mostly useful taxonomically, *viz*., the width and shape of the frons, the structure of the hind tarsi and the degree of pubescence or bareness of the eyes, are ignored by all the older writers. The presence or absence of a infuscation at the wing tip, the intensity or entire absence of the pale stripes on the thorax, and the proportion of tawny colour in the legs are all characters subject to considerable variation." Bańkowska (1968: 199) and Ghorpadé (2014d: 6) gave records from Afghanistan. Abrol (1993) noted it as a pollinator in Jammu & Kashmir. Ghorpadé & Shehzad

(2013: 17) thought it possible in Pakistan. Knutson *et al.* (1975: 342), Kapoor *et al.* (1979: 64), Shah *et al.* (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus nicobarensis Schiner, 1868

Eumerus nicobarensis Schiner, 1868, *in: Reise der österreichischen Fregatte Novara, Dipt.*, p. 368 (♀; 'Nicobar is.') [NM, Vienna]

Eumerus nepalensis Brunetti, 1915, Rec. Indian Mus., 11: 240 (♀; 'Sibu, Sarawak, Borneo') [ZSI, Calcutta]

Afghanistan; India: BI, JK (Brunetti, 1915, 1923, Bańkowska, 1968, Knutson *et al.*, 1975, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 251-252) gave a literal translation of Schiner's original description; and then went on to add, giving differences from *aurifrons*, Wied. : "Four ♂ ♂ and two ♀ ♀ (one headless) in the Indian Museum agree very well with Schiner's description. . . Mergui; Margherita; Pallade [*sic*], Travancore . . . These specimens were incorrectly attributed by me firstly to *argyropus*, Dol., and subsequently to my *nepalensis*, of which the only specimen known to me now is the type. The Sarawak specimen (Sibu, Sarawak, 2.vii.1910 (*Beebe*)) referred by me to *nepalensis* and redescribed (Brunetti, 1915: 240) is also *nicobarensis* ♀. . . I have subsequently seen further specimens of this species from Pusa, 14.viii.1907, 8.iii.1908, and 17.iii.1908, "under mango bark"; Chapra, Bengal [*sic*]." I did not find the type of *nepalensis* Brunetti, 1915 in ZSI, Calcutta. This species is evidently a tropical rain forest dweller known from NE. India and the southernmost Western Ghats. Its record from NW. India is suspicious and mostly based on misidentification(s). Bańkowska (1968: 199) and Ghorpadé (2014d: 6) gave records from Afghanistan. Ghorpade & Shehzad (2013: 17) thought it possible in Pakistan. Knutson *et al.* (1975: 342), Shah *et al.* (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus perpensus Brunetti, 1917

Eumerus perpensa Brunetti, 1917, Rec. Indian Mus., 13: 88 (♀; 'Phagu,' Simla District, Himachal Pradesh) [ZSI, Calcutta – examined]

India: HP (Brunetti, 1917, 1923, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1917: 88-89) described this "from a single perfect ♀ in the Indian Museum from Phagu, 18—21-v-16 taken by N. Annandale and S. Kemp. Brunetti (1923: 261) also listed a ♂ from Simla, viii.1898 (*Nurse*), besides the holotype ♀ from Phagu which I checked for and found in the ZSI, Calcutta. Knutson *et al.* (1975: 342), Shah *et al.* (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus perplexus Brunetti, 1917

Eumerus perplexa Brunetti, 1917, Rec. Indian Mus., 13: 89 (♀; 'Simla') [ZSI, Calcutta – examined]

India: HP (Brunetti, 1917, 1923, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1917: 89) described this from a "unique ♀ in the Indian Museum, Simla, 12—13-v-13 (*Annandale*), and gave diagnostics from his *perpensus*. Brunetti (1923: 261) had noted : "Barely longer than *perpensus*, but a more stoutly built species, and apparently distinct though the differences are difficult to define." These diagnostics were given in his description. The holotype ♀ from Simla was noted by me at the ZSI, Calcutta. Knutson *et al.* (1975: 342), Shah *et al.* (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus pulverulentus Brunetti, 1923

Eumerus pulverulentus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 258 (♂; 'Pusa') [NHM, London]

Pakistan; India: BI, JK, RJ (Brunetti, 1923, Knutson *et al.*, 1975, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 258-259) had noted "Described from two ♂ ♂ and nine ♀ ♀ from Pusa; all bred, 30.iv.1908, in stem of *Euphorbia* sp., "C. No. 696," and 5.vi.1907, in stem of "Sig." (Fig ?), "C. No. 535." Type ♂ and ♀ sent to the British Museum, cotype ♂ and ♀♀ in the Pusa collection. One ♀ from Abu (*Nurse*). This species is strikingly distinct from all others by the very elongate narrow antennae and by the median stripe on the 4th abdominal segment. The yellow-margined scutellum also separates it from the majority of the Oriental species." In October 2012 I found one ♂ and four ♀ 'co-types' in the IARI, New Delhi collection labeled "Pusa, Bengal, stem of *Euphorbia* sp., 30.iv.1908, C. No. 696 No. L, *E. pulverulentus* Brun. Cotype, Brunetti det." Also a label with D 9011 to D 9015 on each of the five specimens. Ghorpadé & Shehzad (2013: 7) gave a record from Pakistan. Knutson *et al.* (1975: 342), Shah *et al.* (2014: 296), Ghorpadé (2014c: 11) and Mitra *et al.* (2015: 64) listed it.]

Eumerus punctifrons Loew, 1857

Eumerus punctifrons Loew, 1857, Verh. Zool.-Bot. Ver. Wien, 7: 85 (sex ?; 'Syrien' = Syria) [?]

Afghanistan (Bańkowska, 1969, Peck, 1988, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1969: 281) listed a female specimen taken at Kama, 800m in Nengrahar province of Afghanistan in March. Peck (1988: 161) and Ghorpadé (2014c: 11, 2014d: 6) also recorded it from Afghanistan.]

Eumerus quadrinotatus van Doesburg, 1955

Eumerus quadrinotatus van Doesburg, 1955, Beaufortia, 5(47): 51 (sex ?; 'Shyok-Tal, Shokpa Kunglang, *ca* 3750m, Karakoram' [*sic*]) [ZM, Amsterdam ?]

Pakistan ?; India : JK (van Doesburg, 1955, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: See my notes under *E. ammophilus* above (p. 40). Shah *et al.* (2014) omitted to list this species in their paper.]

Eumerus reichardti Stackelberg, 1952

Eumerus reichardti Stackelberg, 1952, Trudy Zool. Inst., Leningr., 12: 383 (sex ?; 'Sarykol mountain ridge, East Pamir') [ZIRAS, St Petersburg ?]

Afghanistan (Bańkowska, 1968, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 198) listed specimens taken in east Afghanistan, wherefrom it was also recorded by Peck (1988: 161) and Ghorpadé (2014c: 11, 2014d: 6). Ghorpadé & Shehzad (2013: 17) thought it posible in Pakistan.]

Eumerus rufoscutellatus Brunetti, 1913

Eumerus rufoscutellatus Brunetti, 1913, Rec. Indian Mus., 9: 269 (♂; 'Singla, Darjiling District') [ZSI, Calcutta – examined]

India: CH ?, PB ? (Brunetti, 1913b, 1923, Knutson *et al.*, 1975, Awtar Singh *et al.*, 1985, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1913b: 269-270, Pl. xiv, fig. 13) described it from a male in inferior condition from Singla, Darjiling District. Brunetti (1923: 255) noted "in inferior condition through immersion in spirit, from Singla, Darjiling District. A species conspicuous by its densely yellow-haired scutellum and its large size [12mm]." I had seen the single type in ZSI, Calcutta in 1981. It is here included only on the basis of Awtar Singh *et al.* (1985: 194), who listed it from Chandigarh as a rare species taken on wild weeds in November; but I question the accuracy of their identification which must be checked and confirmed or corrected. Knutson *et al.* (1975: 342), Ghorpadé (2014c: 11), and Mitra *et al.* (2015: 64) listed it.]

Eumerus sexvittatus Brunetti, 1915

Eumerus sexvittatus Brunetti, 1915, Rec. Indian Mus., 11: 245 (♀; 'Bhowali, Kumaon District, 5700ft, Western Himalayas') [ZSI, Calcutta – examined]

India: UK (Brunetti, 1915, 1923, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 245) described it "from one ♀ from Bhowali, Kumaon District, 5700 ft., October 1909 [*Imms*]." I have seen the single type labelled "E. 6-vittatus Brun." in ZSI, Calcutta. Brunetti (1923: 260) gave a full description. Knutson *et al.* (1975: 342), Shah *et al.* (2014: 296), Ghorpadé (2014c: 11), and Mitra *et al.* (2015: 64) listed it.]

Eumerus strigatus (Fallén, 1817)

Pipiza strigata Fallén, 1817, *Syrphici Sveciae*, p. 61 (sex ?; 'Vestrogothia; et in Scania' = prov. Västergötland and prov. Skåne) [?]

Paragopsis griseofasciatus Matsumura, 1916, Thousand Ins. Japan, Add., 2: 250, Pl. 17, fig. 25 (sex ?; 'Hokkaido, Sapporo, Japan) [?]

Afghanistan (Sack, 1932b, Bańkowska, 1968, 1969, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 198, 1969: 281), Peck (1988; 163), and Ghorpadé (2014c: 11, 2014d: 6) recorded it from Afghanistan. Ghorpadé & Shehzad (2013: 17) thought it possible in Pakistan. See

also Sack (1932b: 389) and Thompson & Rotheray (1998: 109) for discussion and key to this genus in the Palaearctic.]

Merodon albifasciatus Macquart, 1842
Merodon albifasciatus Macquart, 1842, Dipt. Exot., 2(2): 71 (♀; 'Indes Orientales') [MNHN, Paris ?]

India ? (Brunetti, 1923, Hervé-Bazin, 1924, Knutson *et al.*, 1975, Ghorpade, 2014c, Mitra *et al*., 2015)

[NOTE: Brunetti (1923: 218) reproduced Macquart's description, and noted "*Type* in Paris Museum. The species requires absolute confirmation as Indian." Hervé-Bazin (1924: 298) noted he could not find the type in the Paris museum. Knutson *et al.* (1975: 343; 'India or Java'), Ghorpadé (2014c: 11), and Mitra *et al.* (2015: 64) listed it, from 'India.' Since *Merodon* is a dominantly Palaearcic genus, north-west India could be the most likely provenance for this species which is without a specific locality, and hopefully the type can be located and identified correctly.]

Merodon pruni (Rossi, 1790)
Syrphus pruni Rossi, 1790, Fauna Etrusca, 2: 293 (sex ?; 'in provinciis Floretina et Pisana' = Firenze and Pisa, Italy) [?]
Merodon pallidus Macquart, 1842, Dipt. Exot., 2(2): 70 (♀; 'Bagdad,' Iraq) [MNHN, Paris ?]

Pakistan (Brunetti, 1923, Hervé-Bazin, 1924, Knutson *et al*., 1975, Peck, 1988, Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d, Shehzad, unpubl. data).

[NOTE: Only records listed by Brunetti (1923: 218) for '*Merodon pallidus*, Macq.' are a ♂ and a ♀ from Quetta in Balochistan (now in Pakistan) taken by Col. Nurse in June and August there. He wrote "A dusty-looking species which cannot possibly be confounded with any other described herein." Brunetti's key to '*Merodon*' (1923: 212) included species now recognized as belonging to *Mallota* and *Mesembrius* also ! Only this and the above species were true *Merodon*. Hervé-Bazin (1924: 298) noted he could not find the type in the Paris museum. Ghorpadé & Shehzad (2013: 7) gave records from Pakistan. Knutson *et al.* (1975: 343, 'W. Pakistan'), Peck (1988: 172), and Ghorpadé (2014c: 11) listed it.]

Merodon tarsatus Sack, 1913
Merodon tarsatus Sack, 1913, Abh. Senckenb. Naturforsch. Ges., 31(4): 437 (sex ?; 'Pamir' = in Tajikistan of erstwhile USSR) [?]
? Merodon smirnovi Paramonov, 1927, Zp. Fiz.-mat. Vidd. Vseukr. Akad. Nauk., 4(4): 320 (sex ?; 'Ak-Tash, prope Tashkent, Turkestan' = Uzbekistan) [?]

Afghanistan (Sack, 1932b, Bańkowska, 1968, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 198) recorded specimens of *strigatus* from east Afghanistan. *Merodon smirnovi* Paramonov, 1927 is sometimes cited as a synonym, but Peck (1988: 173, 174) treated it as a distinct species. It was described from Turkmenistan. See also Ghorpadé & Shehzad (2013: 17) and Ghorpadé (2014d: 6). See Sack (1932b: 295) and Thompson & Rotheray (1998: 109) for discussion and key to this genus in the Palaearctic.]

Psilota Unnamed sp. 1 [undet.]
Pakistan (Shehzad, unpubl.).

[NOTE: I am informed by Dr Anjum Shehzad (National Insect Museum, Islamabad, Pakistan) that he has a *Psilota* from Murree tentatively identified by him as *Psilota cyanea* Hill, 1921. Thompson & Vockeroth (1989: 455), however, listed this as a junior synonym of *Psilota victoria* Curran (1925: 7) which was a *nom. nov.* for *P. cyanea* Hill 1921 (from Queensland, Australia !), not Brunetti, 1915, which latter was described as new based on two females taken at Gangtok, 6150 ft., Sikkim, in September (holotype) and from Kurseong in the same month in 1909. I confirmed these two specimens as present in the ZSI, Calcutta in 1981, with an additional Brunetti determination label as '*Triglyphus* (*Psilota*)' ! Dr Chris Thompson informed me (*in litt.*) that Brunetti's *cyanea* is a species of *Heringia* Rondani (of the Tribe Pipizini, *q.v.*). So the Murree (Pakistan) specimen(s) need to be checked and confirmed as this genus and species, or correctly identified.]

Psilota Unnamed sp. 2 [undet.]
Nepal (Sack, 1932b, Kapoor *et al*., 1979, Thompson & Rotheray, 1998).

[NOTE: Kapoor (1979: 55, 64) reported a single male '*Psilota* sp.' specimen taken at Kirtipur, 10.ii.1978 by Yeeta Rajbhandari on soybean in Nepal, noting "This is the first record of this genus from the whole of the Indian subcontinent." This specimen again needs to be re-examined for correct identity.

See also Sack (1932b: 25) and Thompson & Rotheray (1998: 114) for discussion and key to this genus in the Palaearctic.]

Tribe Milesiini

Blera himalaya Thompson, 2000

Blera himalaya Thompson, 2000, Entomol. News, 111(3): 181 (♂; 'Simla, The Glen, 6,000ft, Himachal Pradesh) [BMNH, London]

India: HP (Sack, 1932b, Barkalov & Mutin, 1991, Thompson & Rotheray, 1998, Thompson, 2000, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Thompson (2000: 183) also cited one ♂ and one ♀ paratypes with label data : "N. E. India, Partabnagar, 7,000 ft., [2,133 m], 31 October 1944, T. Jermyn" which is again an error of museum technician's labeling ! Partabnagar is probably actually either in Himachal Pradesh or in Uttarakhand in NW. India and the "N.E. India" added is a mistake (see Ghorpadé, 2007: 5 for more details). Shah *et al.* (2014: 290), Ghorpadé (2014c: 11), and Mitra *et al.* (2015: 64) listed it. This genus was revised recently by Barkalov & Mutin (1991). See also Sack (1932b: 363) and Thompson & Rotheray (1998: 120, 121) for discussion and key to this genus in the Palaearctic.]

? Brachypalpus Unnamed sp. 1 [undet.]

India: HP (Brunetti, 1907a, Sack, 1932b, Thompson & Rotheray, 1998, Ghorpadé, 2014c).

[NOTE: Brunetti (1907a: 169) wrote : "there is a single ♂ from Kodiali (8,400 feet) which I am unable to place generically. It is nearest to *Brachypalpus*, but lacks the enlarged posterior femora with spines beneath." This specimen is never again mentioned by Brunetti in any of his later works on Indian Syrphidae though he (Brunetti, 1908: 86) named and described *Brachypalpus dives* (now a *Brachypalpoides*) from "one ♂ in perfect condition in the Indian Museum collection" from Kohima ('Assam'; now in Nagaland) which also had an "insufficiently thickened posterior femora." He wrote of *dives* : "I am not certain of the position of this species here, but the only difference it shows from *Brachypalpus* is its insufficiently thickened posterior femora. It is a magnificent species." I found the type in Box 16 in the ZSI, Calcutta when I visited in 1981. Ghorpadé (2014c: 11) listed it. See also Sack (1932b: 354, 436) and Thompson & Rotheray (1998: 120) for discussion and key to this genus in the Palaearctic.]

Brachypalpus Unnamed sp. 2 [undet.]

India: JK (Hippa, 1978b, Ghorpadé, 2014c).

[NOTE: Hippa (1978b: 85) cited an unnamed species (# 2), a ♀ seen from Kashmir (but which country and which depository is not specified). Ghorpadé (2014c: 11) listed it.]

Brachypalpoides Unnamed sp. 1 [undet.]

India: HP (Thompson & Rotheray, 1998, Ghorpadé, 2014c, Thompson, *in litt*.)

[NOTE: Dr Chris Thompson (*pers. comm*.) mentioned an undescribed species from this area, which I had listed (Ghorpadé, 2014c: 12). See Thompson & Rotheray (1998: 120) for a key to this genus in the Palaearctic.]

Cheiroxylota dimidiata (Brunetti, 1923)

Xylota dimidiata Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 232 (♀; 'Dungagali, 8000 ft., Hazara District') [NHM, London]

Pakistan; India: UK; Nepal (Brunetti, 1923, Coe, 1964, Knutson *et al*., 1975, Aslamkhan *et al*., 1997, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1923: 232) described this "from a unique ♀ from the Pusa collection, from Dungagali, 8000ft., Hazara District, 21—24.v.1915 (*Fletcher*), this taken by him to the BMNH, London. Coe (1964: 277-278) cited two females from east Nepal (as '*Xylota*'). Claussen & Weipert (2003: 376) reported a male from Maharigaon, 345m, Karnali Province, west Nepal and treated it as *Chalcosyrphus* (*Cheiroxylota*) ! *Cheiroxylota* Hull, 1949, is sometimes treated as a subgenus of *Chalcosyrphus* Curran, 1925 (*cf* Hippa, 1978: 115). Ghorpadé & Shehzad (2013: 9) gave Pakistani records of this species, as '*Xylota*.' Knutson *et al.* (1975: 359), Ghorpadé (2014c: 12), and Mitra *et al*. (2015: 65) listed it.

Recently, a remarkable new species of the genus *Chalcosyrphus* Curran has been described from north Burma (Hauser & Hippa, 2015) which is a first record of this genus of the subtribe Xylotina of Milesiini in this subcontinent, to which *Brachypalpus* and *Cheiroxylota* also belong.]

Criorhina bicolorata Hull, 1950

Criorrhina pallipilosa subsp. *bicolorata* Hull, 1950, Ann. Mag. Nat. Hist., (3) 12: 610 (♀; 'Gulmarg, Kashmir, 8500 ft.) [NHM, London]

India: JK (Hull, 1950, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 1915).

[NOTE : This was taken by Lt.-Col. F.W. Thompson in the summer of 1913 and described by Hull (1950), as a "new subspecies" of his *pallipilosa* Hull (1944a; 34-35, 1950: 610), differing only "in the colour of the pile upon the third and fourth and fifth segments, which is light reddish orange varying to pale yellow in the typical form, and in this variety the pile of these segments is almost entirely black with a little reddish pile in the centre of the fourth and fifth segments and the apical half of the third segment." See Hull (1950: 610) for notes on the female of *pallipilosa* and differences from his *rubropilosa* Hull (1950: 608-610) and what he described as a new 'subspecies,' *bicolorata* Hull (1950: 610-611), all from the same locality, Gulmarg (Kashmir). Dissection and study of male terminalia of these three forms will confirm their synonymy or distinctness. Knutson *et al.* (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina excavata Curran, 1929

Criorhina excavatus Curran, 1929, Ann. Ent. Soc. Amer., 22: 498 (♂; 'Deoban, Chakrata, India') [FRI, Dehra Dun – examined]

India: UK (Curran, 1929, Knutson *et al.*, 1975, Arnaud & Owen, 1981, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE : Curran (1929: 499) noted : "This species is readily separated from *pallidipes* by the shape of the posterior femora and tibiae and the shining black genitalia of the male." The holotype ♂ was found in the collections of the Forest Research Institute at Dehra Dun in September 1974 by me, and then 38 years later when I visited again in September 2012. The head was then found to be lost (!) but the specimen carried the following labels : "Deoban, Chakrata, Students coll., 17.v.1921 / 66 / Criorhina excavatus Curran, Det. C.H. Curran / Criorhina excavatus Curran TYPE ♂ [red card]." Photographs of its dorsal, ventral and lateral aspects were taken by me. The Forest Research Institute, Dehra Dun, had sent some of its Diptera, including Syrphidae and Tachinidae, etc., to Dr Curran at the American Museum of Natural History, New York, for identifications, and several of these specimens were found to be new by Curran and then named and originally described by him. Most of the holotypes were returned by Curran to the FRI, Dehra Dun and are now held there. Curran (1929: 497) gave a key to Indian species of this genus. Knutson *et al.* (1975: 359), Arnaud & Owen (1981: 97), Shah *et al.* (2014: 291), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina imitator Brunetti, 1915

Criorhina imitator Brunetti, 1915, Rec. Indian Mus., 11: 236 (♀; 'Onari, Garhwal Distr., 11,000 ft., W. Himalayas,') [ZSI, Calcutta – examined]

Pakistan; India: JK, UK (Brunetti, 1915, 1923, Singh *et al.*, 1955, Mani & Singh, 1962, Knutson *et al.*, 1975, Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE : Brunetti (1915: 236-237, Pl. xiii, fig. 14) described this "from one ♀ in the Indian Museum from Onari, Garhwal Distr., 11,000 ft., W. Himalayas, 27-vi-14 (*Tytler*). In the FAUNA volume (Brunetti, 1923: 283-285, fig. 54) he gave a full description and some notes on mimicry for which see Ghorpadé & Shehzad (2013: 8) and also for Pakistan records. One single ♀ holotype was noted in the ZSI, Calcutta collection by me in March 1981. Singh *et al.* (1955: 714) gave Kashmir, 8000-9000 ft and Onari, Andarban, Garhwal Himalayas, 11000 ft. Mani & Santokh Singh (1962: 363) listed *Criorrhina imitator* Brunetti from "Onari, Andarban, Garhwal Himalaya 3352m" and also gave "Kashmir, 3050m." Knutson *et al.* (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina interrupta Brunetti, 1923

Criorrhina interrupta Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 287 (♂; 'Dungagali, Hazara District, 8000 ft.') [BMNH, London]

Pakistan (Brunetti, 1923, Knutson *et al*., 1975, Aslamkhan *et al*., 1997, Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE : Brunetti (1923: 287-288, Pl. V, fig. 11) described this "from a unique ♂ in the Pusa collection taken at Dungagali, Hazara District, 8000 ft., 21-24.v.1915 (Fletcher), in Pakistan now, this taken by him to the BMNH, London. He gave diagnostics from *C. dentata* Brunetti (now a *Matsumyia*) from Simla District, which "It closely resembles." Arif (2001: 51-52, 54, 124) reported 7♂ 4♀ taken from tobacco, berseem, rice fields, in grass and on several flowers at Khaza Khel, Bahrain, Mingora, Kabbal, all in Swat in October 1998, April and June 1999. See Ghorpadé & Shehzad (2013: 8) for further notes. Ghorpadé (2014c: 12) listed it.]

Criorhina pallidipes Curran, 1929

Criorhina pallidipes Curran, 1929, Ann. Ent. Soc. Amer., 22: 498 (♂; 'Deoban, Chakrata, India') [FRI, Dehra Dun – examined]

India: UK (Curran 1929, Knutson *et al*. 1975, Arnaud & Owen, 1981, Shah *et al*., 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE : Curran (1929: 498) described this from a single male from Deoban, Chakrata. See notes under *C. excavata* above for diagnostics. I found the holotype ♂ in the collections of the Forest Research Institute at Dehra Dun in September 1974 and again when I visited there again in September 2012. It carried the following labels : "Deoban, Chakrata, Students coll., -.v.1921 / 65 / Criorhina pallidipes Curran, Det. C.H. Curran / Criorhina pallidipes Curran TYPE ♂ [red card]." Photographs of its frontal, dorsal, ventral and lateral aspects were taken by me. Knutson *et al*. (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina pallipilosa Hull, 1944

Criorhina pallipilosa Hull, 1944, Ann. Mag. Nat. Hist., 11(11): 34 (♂; 'Gulmarg, 8500 ft., Kashmir') [NHM, London]

India: JK (Hull, 1944a, 1950, Knutson *et al.*, 1975, Shah *et al*., 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE : Hull (1944a: 34-35) described this from four males taken by Lt.-Col. F.W. Thompson in the summer of 1913, and he noted it was "related to *imitator* Brunetti." Hull (1950: 610) later described the female and gave diagnostics from *rubropilosa* Hull. See also notes under *C. bicolorata* above. Knutson *et al.* (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.*, (2015: 75) listed it.]

Criorhina rubropilosa Hull, 1950

Criorrhina rubropilosa Hull. 1950, Ann. Mag. Nat. Hist., (3) 12: 608 (♀; 'Gulmarg, Kashmir, 8500 ft.') [NHM, London]

India: JK (Hull, 1950, Knutson *et al*., 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE : This was taken by Lt.-Col. F.W. Thompson in the summer of 1913 and described by Hull (1950: 608-610) who noted it was "A handsome fly, the face obtusely conical, the thoracic pile almost wholly white, the abdominal pile white, black and red. Related to *pallipilosa* Hull. The face is not long and acutely conical as in that species." Knutson *et al.* (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina simioides (Brunetti, 1908)

Deineches simioides Brunetti, 1908, Rec. Indian Mus., 2: 83 (♂; 'Inde') [ZSI, Calcutta – examined]

India ? (Brunetti, 1908, 1923, Knutson *et al*., 1975, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1908: 84) wrote : "Described from one ♂ in the Indian Museum collection. No distinct locality is given on the specimen, the label bearing the statement 'Deineches simioides, Big., sp. nov., Inde.' 'Inde' being a general expression of that author's to include Malay species as well as Indian ones. Owing to the bad condition of the specimen, I would not have described this species, except that, in spite of its state, the specific characters are sufficiently obvious and the generic characters agree perfectly with Walker's description and plate in Ins. Saunds. Dipt. as Indian ones. Moreover, the genus has not been recorded from the Orient before, having been established for a species from New South Wales." Brunetti (1923: 282-283, fig. 55) transferred it to *Criorrhina* [*sic*] and noted : "The species was described by me under the manuscript name given it by Bigot. It almost certainly comes from British India." I have seen the single holotype ♂ labeled 'Deineches simioides Brun.' in the ZSI, Calcutta collection. Knutson *et al.* (1975: 360; as '*simiodes*'), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina spinitarsis Curran, 1929

Criorhina spinitarsis Curran, 1929, Ann. Ent. Soc. Amer., 22: 499 (♂; 'Rishikesh, Dehra Dun, India') [FRI, Dehra Dun – examined]

India: UK (Curran 1929, Knutson *et al.* 1975, Arnaud & Owen, 1981, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE : Curran (1929: 499) wrote : "Similar to *imitator* Brunetti but the middle basitarsus bears six or seven spines sub-basally, each of which is longer than the thickness of the tarsus, and the femora are yellow pilose." I found the holotype ♂ in the collections of the Forest Research Institute at Dehra Dun in September 1974 and when I visited again in September 2012. It carried the following labels : "Rhikesh [*sic*], Students coll., 18.xii.1918 / [blank blue label] / 63 / Criorhina spinitarsis Curran TYPE ♂ [red card]." Photographs of its frontal, dorsal, ventral and lateral aspects were taken. Knutson *et al.* (1975: 360), Arnaud & Owen (1981: 98), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina tripilosa Coe, 1964

Criorhina tripilosa Coe, 1964, Bull. Br. Mus. (Nat. Hist.), Ent., 15(8): 279 (♀; 'Kumaon, Barasu, 5,000-6,000 ft., 5.v.1958 (*F. Schmid*)') [NM, Basel]

India: UK (Coe, 1964, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.* 2015).

[NOTE : Coe (1964: 279-280) wrote in detail of its characters and compared it with related species, including mentioning the "striking sexual dimorphism in *pallipilosa* . . ." He then summarized : "The striking and clearly differentiated sequence of black, yellow and orange in the coloration of the body-pile of *tripilosa* contrasts most obviously with the predominantly grey body-pile of *pallipilosa* and its subspecies *bicolorata* and of *rubropilosa*, apart from the considerably more thickened hind femora of *tripilosa* with their very dense long black hairs." He then appended a note in square brackets – "While it was hoped to include a specific key to the numerous species of Oriental *Criorhina* in the present paper, this has proved impracticable because less than half the described species are in the Brit. Mus. (Nat. Hist.), and of the others some cannot be made available for study, and many descriptions omit to mention characters that would be of vital importance in a key." Knutson *et al.* (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Criorhina vivida Brunetti, 1923

Criorrhina vivida Brunetti, 1923, *Fauna Br. India*, Dipt., 3: 285 (♀; 'Kashmir') [BMNH, London]

Pakistan; India: JK (Brunetti, 1923, Singh *et al.*, 1955, Knutson *et al.*, 1975, Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1907a: 169) wrote : "Described from a single (type) ♀ from Kashmir, vi.1901 (*Col. Nurse*), presented to the British Museum. A ♀ in the British Museum from N.W. India in bad condition may be identical . . ." "Two ♂♂ in the same collection from the Runjit Valley, Sikkim, v.1894 (Bingham) represent, I think, the male sex of *vivida* or a closely allied new species." Singh *et al.* (1955: 714) gave Kashmir. See notes by Ghorpade & Shehzad (2013: 8) from Pakistan. Knutson *et al.* (1975: 360), Shah *et al.* (2014: 292), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it. See also Sack (1932b: 358) and Thompson & Rotheray (1998: 119) for discussion and key to this genus in the Palaearctic.]

Korinchia himalayensis van Steenis & Hippa, 2012

Korinchia himalayensis van Steenis & Hippa, 2012, Tijdschr. Ent., 155: 229 (♂; 'Nepal, 27°56'N, 85°oo'E.') [CNC, Ottawa]

Nepal (Thompson & Rotheray, 1998, van Steenis & Hippa, 2012, Ghorpadé, 2014c, 2015)

[NOTE: van Steenis & Hippa (2012: 229-231, figs 69-80) described it based on a holotype male and a paratype female taken in Malaise Traps by the Canadian Nepal Expedition in May 1967. Another paraype female was found in the NHM, London collection from Rongshar Valley, Tibet, taken in June 1924 by Maj. R.W.G. Hingston on the British Everest Expedition, all these from 3000-3050m altitude. Ghorpadé (2014c: 12, 2015: 5) listed it. See Thompson & Rotheray (1998: 112) for a key to this genus in the Palaearctic.]

Lycastris albipes Walker, 1857

Lycastris albipes Walker, 1857, Trans ent. Soc. Lond (n.s.), 4: 155 (♀; 'Hindostan') [NHM, London]
Xiphopheromyia glossata Bigot, 1892, Wien ent. Ztg, 11: 161 (o ? 'Sabateo, India') [ZSI, Calcutta ?]

India: HP, UK (Brunetti, 1907b, 1908, 1923, Hervé-Bazin, 1914, Coe, 1964, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: Brunetti (1907b: Pl. XI, figs 14-15) gave figures of the fly and a wing and then (Brunetti, 1908: 85) mentioned one in ZSI, Calcutta from Mussoorie which agreed with Walker's description except that "the pubescence is yellowish insead of white." Brunetti (1923: 279, fig. 53) wrote : "*L. albipes* is a variable species, the length of the produced rostrum varying from less than the height of the eyes to nearly 1½ times as long. The yellow anterior margin (sometimes resolved into two elongate spots) of the 2nd abdominal segment may be present or absent, and the colour of the abdomen itself is also variable. The insect very closely resembles the bees *Bombus vallestris*, Smith, and *B. flavescens*, Smith." He erroneously made his *L. flavohirta* a synonym, which Coe (1964: 283) held to be a valid species and explained that Brunetti's action "can be understood because he had at that time only Walker's teneral female type of *albipes* to compare with *flavohirta*." Coe decribed the male of *albipes* for the first time and the female also again. Coe gave NHM, London specimens as from Simla, 7000ft, taken by T. Jermyn in October 1945 and two male co-types of *Xyphophromyia* [*sic*] *glossata* Bigot from Sabatoo. Hervé-Bazin (1914: 151) listed one male from 'Inde.' Knutson *et al.* (1975: 361), Shah *et al.* (2014: 298), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Lycastris flavohirta Brunetti, 1907

Lycastris flavohirta Brunetti, 1907, Rec. Indian Mus., 1: pl. xi, figs 16 & 17; ibid., 2: 85 (♂; 'Darjiling, India') [ZSI, Calcutta]

India: HP ?; Nepal (Brunetti, 1907b, 1908, 1923; Coe, 1964; Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: Brunetti (1907b: Pl. XI, figs 16-17) gave figures of abdomen and wing and then (Brunetti, 1908: 85-86) a description based on "one ♂ in my collection taken by me at Darjiling, 10—15-ix-05 (type) and a ♂ in the Indian Museum collection also from Darjiling, taken 25-ix-06." Coe (1964: 282-284) wrote that Brunetti erroneously "sank *flavohirta* as a synonym of *albipes*. His action in thus combining two such well defined species can be understood because he had at that time only Walker's teneral female type of *albipes* to compare with *flavohirta*." And he continued "Brunetti described *flavohirta* from two males . . . My recent capture in East Nepal of a single female of *Lycastris* led me to study the genus, with the result that I find *flavohirta* to be an undoubtedly distinct species, of which my Nepalese specimen is the hitherto undescribed female." These two species are also allopatric; *albipes* is West Himalayan and *flavohirta* flies in the East Himalaya. Kapoor *et al.* (1979: 67) listed it from east Nepal. The ranges given in Ghorpadé (2014c: 12) need to be corrected – *albipes* only in HP and UK of India, and *flavohirta* only in WB of India and Nepal. I did not find this type or of any other *Lycastris* spp. in the ZSI, Calcutta in 1981. Knutson *et al.* (1975: 361), Shah *et al.* (2014: 298), Ghorpadé (2014c: 12), and Mitra *et al.* (2015: 65) listed it.]

Matsumyia dentata (Brunetti, 1908)

(?) *Criorhina dentata* Brunetti, 1908, Rec. Indian Mus., 2: 87 (♂; 'Kodiali, Simla District') [ZSI, Calcutta – examined]

India: HP (Brunetti, 1908, 1917, 1923, Shiraki, 1949, Knutson *et al.*, 1975, Hippa, 1978a, Thompson & Rotheray, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: Brunetti (1908: 87) was unsure of its placement in *Criorhina*, and wrote "This species may require the erection of a new genus, as it varies from typical *Criorhinae* in several particulars, but I know of no other genus in which it can be placed," and mentioned the dissimilar characters. He illustrated the frontal and lateral aspects of the face, the abdomen and hind leg of the male holotype. Brunetti (1917: 89) again wrote that "This species may possibly require the erection of a new genus to receive it," and gave the altitude of the type-locality, Kodiali, as 8,000ft. In the FAUNA volume (Brunetti, 1923: 286-287, figs 56-57) he again gave a description and figures of head and hind leg, placing it in *Criorrhina* [*sic*]. It is now placed in *Matsumyia* Shiraki (1949), along with five other Oriental species that were earlier placed in *Criorhina*, *Penthesilea* or *Brachypalpus*. I saw the holotype in the ZSI, Calcutta type collection in 1981. Hippa (1978a: 16) explained the '*Criorhina* group of genera,' *viz.*, *Criorhina* Meigen, *Matsumyia* Shiraki, and *Sphecomyia* Latreille. Knutson *et al.* (1975: 359), Shah *et al.* (2014: 291), Ghorpadé (2014c: 13), and Mitra *et al.* (2015: 65) listed it. See Thompson & Rotheray (1998: 119) for a key to this genus in the Palaearctic.]

Milesia balteata Kertész, 1901

Milesia balteata Kertész, 1901, Természetr. Füz., 24: 414 (♂♀; 'Sikkim') [ZSI, Calcutta – destroyed]

Milesia himalayensis Brunetti, 1908, Rec. Indian Mus., 2: 82 (♂♀; 'Sibsagar, Assam and Sikkim') [ZSI, Calcutta]

Sphyxea himalayensis Bigot *nom. nud.* (*vide* Brunetti, 1908, Rec. Indian Mus., 2: 82, Brunetti, 1913b, Rec. Indian Mus., 11: 268)

Pakistan : Balochistan ?; Nepal (Brunetti, 1908, 1913b, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Arif, 2001; Hippa, 1990, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: This East Himalayan and NE. Indian species is mentioned here only because Arif (2001) apparently identified specimen(s) from Pakistan (see Ghorpadé & Shahzad, 2013: 8). This is highly doubtful and requires confirmation by examination of specimens, if and where deposited. Arif (2001: 69-70, 125) had reported 6♂ taken in grasses under forest plantation and sesamum fields at Makran, Zhob and Ziarat (Balochistan) in March and September 1998 and March 1999. Peck (1988: 210) gave five Palaearctic species of *Milesia*, so the questionable species listed in this paper may just be misidentified for any of these Palaearctic species, or are undescribed, and this needs to be researched carefully. Brunetti (1908: 80) mentioned Kertész's description of this from Sikkim, and later (Brunetti, 1913b: 268) wrote "A good series of both sexes in bad condition, Darjeeling [*sic*], 1000—3000 ft., Singla and Sevook, 1000 ft., Darjiling District, iv-1013." Kapoor *et al.* (1979: 67) listed it from Nepal. Hippa (1990: 136-137, figs 82, 88, 97) gave all details and figures and mentioned that the types are destroyed, so not seen by him. I also could not find types of this species of *Milesia*, or of *himalayensis* in the ZSI, Calcutta in 1981. Hippa cited specimens seen only from NE. India and Burma, and also Nepal where a female was taken by Dr Amnon Freidberg at Sundarijel on 3 May 1980 [USNM, Washington, DC]. Knutson *et al.* (1975: 362), Ghorpadé (2014c: 13), and Mitra *et al.* (2015: 65) listed it.]

Milesia brunettii Hervé-Bazin, 1923

Milesia brunettii Hervé-Bazin, 1923, Bull. Soc. Ent. Fr., p. 26 (♀; 'Laos. Himalaya') [MNHN, Paris]

Nepal (Hervé-Bazin, 1923, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Hippa, 1990, Ghorpadé, 2014c)

[NOTE: Hervé-Bazin (1923: 26) described this based on females (?) from Laos and 'Himalaya,' and then gave a note stating that Brunetti's figure 12 on Pl. XIV (1913b: 268) was an error, and not of *ferruginosa* but of *brunettii* which Brunetti had cited as *Milesia ? macularis*, W., var., without a description. See Hippa (1990: 167) for this error, and material examined from Suka Chudi, Nepal taken in March [in USNM, Washington, DC]. See also Brunetti (1915: 248). Kapoor *et al.* (1979: 67) listed it from Nepal. Knutson *et al.* (1975: 362), and Ghorpadé (2014c: 13) listed it.]

Milesia ferruginosa Brunetti, 1913

Milesia ferruginosa Brunetti, 1913, Rec. Indian Mus., 9: 268, Pl. XIV, fig. 12 ? (♀; 'Darjiling, 1000-3000ft') [ZSI, Calcutta – examined; and NHM, London ?]

India: UK; Nepal (Brunetti, 1913b, 1915, 1923; Sack, 1932b, Knutson *et al*., 1975; Hippa, 1990, Thompson & Rotheray, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1913b: 268-269) described this based on three females from Darjiling and Singla, and a further three females from the Kumaon District taken by Dr. Imms in May and June 1912. I have seen the types in the ZSI, Calcutta in 1981. Brunetti (1915: 248) mentioned this species' description and figure. Hippa (1990: 123-125, figs 69, 73-75) gave description and figures and cited specimens seen - 1♀ from Singla, 1500 ft., Darjeeling district, April 1913, Lord Carmichael's collection [*sic*] which he wrote is the "holotype, in London." Also from Kury Kharuk, 8000 ft, taken in May at N. Tal [= Naini Tal ?], NE India [this is a mistake of labeling, see Ghorpadé, 2007: 5), also from Runjit Valley in Sikkim, taken by C.T. Bingham in May, and 1 ♀ taken at Kousanie 6075 ft., in Kumaon by Tytler [in ZSI, Calcutta], as well as 3 males from Sundarijel, Nepal, taken in May 1980 by Amnon Freidberg [in USNM, Washington, DC]. Knutson *et al.* (1975: 363), Shah *et al.* (2014: 299), Ghorpadé (2014: 13), and Mitra *et al.* (2015: 65) listed it. See also Sack (1932b: 424) and Thompson & Rotheray (1998: 112, 118) for discussion and key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS

Milesia macularis Wiedemann, 1824

Milesia macularis Wiedemann, 1824, Analecta Ent., p. 34 (♂; 'Java') [?]

Milesia simillima Hull, 1950, Ann. Mag. Nat. Hist, (3)12: 606 (♀; 'Java, Soekaboemi') [BMNH, London]

Pakistan: Khyber Pakhtunkhwa ? (Brunetti, 1913b, 1915, 1923, Hervé-Bazin, 1924, Knutson *et al.*, 1975, Arif, 2001; Hippa, 1990, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: This Malay archipelago species is mentioned here only because Arif (2001) apparently identified specimen(s) from Pakistan (see also Ghorpadé & Shehzad, 2013). This is highly doubtful and requires confirmation by examination of specimens, if and where deposited. Arif (2001: 65-66, 125) had reported 1♂ taken in wild vegetation at Kulachi (Peshawar) in June 1999. Brunetti's (1913b: 268) doubtful citation of this species based on a single female from Singla was a misidentification for *M. brunettii,* as Hervé-Bazin (1924) and Hippa (1990: 167) indicated, and Brunetti (1915: 248) had doubted. Hippa (1990: 171-179, figs 107, 111-115) described and illustrated it with citations of specimens from Sumatra, Java and Sumbawa, and doubted Walker's records from the Malay peninsula and Borneo. Knutson *et al.* (1975: 363), Ghorpadé (2014: 13), and Mitra *et al.* (2015: 65) listed it.]

Milesia semifulva de Meijere, 1904

Milesia semifulva de Meijere, 1904, Bijdr. Dierk., 17: 99 (♂; 'Darjeeling') [NMA, Amsterdam]

Milesia brunnea Hervé-Bazin, 1923, Bull. Soc. Ent. Fr., p. 26 (♂; 'Laos') [MNHN, Paris]

Milesia decora Brunetti, 1923, *Fauna Brit. India, Dipt.*, 3: 274 (♀; 'Lower ranges, N. Khasi hills, Assam') [NHM, London]

Milesia gigas Macquart, 1834, Querin, 1834, Rossi, 1790 : *homonyms*, see Ghorpade *et al.*, 1911: 83.

Pakistan: Balochistan ? (Knutson *et al.*, 1975, Hippa, 1990, Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: This Oriental species flying in NE. India and eastwards is mentioned here only because Arif (2001) apparently identified specimen(s) from Pakistan (see also Ghorpadé & Shehzad, 2013: 8). This is highly doubtful and requires confirmation by examination of specimens, if and where deposited. Arif (2001: 64-65, 125) had reported 1♂ taken in grasses under forest plantation at Lasbela in September 1998, as '*Milesia gigas.*' Hippa (1990: 106-107, figs 50, 61-62, 64-66) described and illustrated it and cited specimens seen from Darjiling, Gopaldhara (as 'Gopalahora'), Khasi Hills, and Burma. Knutson *et al.* (1975: 363), Ghorpadé (2014: 13), and Mitra *et al.* (2015: 65) listed it.]

Milesia sexmaculata Brunetti, 1915

Milesia sexmaculata Brunetti, 1915, Rec. Indian Mus., 11: 248 (♂; 'Trivandrum, Travancore State') [ZSI, Calcutta – examined]

Pakistan: Khyber Pakhtunkhwa ? (Knutson *et al.*, 1975, Arif 2001, Saleem *et al.*, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: This peninsular Indian species is mentioned here only because Arif (2001) and Saleem *et al.* (20o1) apparently identified specimen(s) from Pakistan (see also Ghorpadé & Shehzad, 2013: 8). This is highly doubtful and requires confirmation by examination of specimens, if and where deposited. Arif (2001: 66-67, 125) had reported 1♂ taken from a guava tree at Peshawar in February 1999. Hippa (1990: 106-107, figs 50, 54, 56) described and illustrated it and cited specimens seen from Kerala and Tamil Nadu in southern India. The record from "Kurseong" in West Bengal is certainly incorrect, possibly because of mislabeling. Note (Hippa, 1990: 94) that P. Caius who is named as the collector also collected in Kodaikanal in May 1921. The specimen in the Paris museum needs to be checked for its label and mislabeling. See also my notes under *Allograpta bouvieri* below. Ghorpadé (2014: 13), and Mitra *et al.* (2015: 65) listed it.]

Milesia verticalis Brunetti, 1923

Milesia verticalis Brunetti, 1923, , *Fauna Br. India, Dipt.*, 3: 269 (♂♀; 'Tura, Garo hills, Assam') [ZSI, Calcutta – examined]

Milesia vesparia Shiraki, 1930, Mem. Fac. Agric. Taihoku imp. Univ., 1: 118 (♂♀; 'Shinchiku, Horisha, Rono, Karenko, Fuhosho, Kosempo in Formosa) [?]

Milesia turgidiverticis Yang & Cheng, 1993, Wuyi Sci. J., 10: 45 (sex ? 'Fujian, China') [?]

Pakistan: Khyber Pakhtunkhwa ?, Balochistan ? (Brunetti, 1923, Knutson *et al.*, 1975, Arif, 2001, Saleem *et al.*, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, Misra *et al.*, 2015).

[NOTE: This Oriental species flying on the Khasi Hills in NE. India is mentioned here only because Arif (2001) and Saleem *et al.* (2001) apparently identified specimen(s) from Pakistan (see also Ghorpadé & Shehzad, 2013: 8). This is highly doubtful and requires confirmation by examination of specimens, if and where deposited. Arif (2001: 68, 125) had reported 1♂ taken in grasses under forest plantation at Lasbela in September 1998.

Hippa (1990: 94, figs 50, 52, 55-56) described and illustrated it and cited specimens seen from the Garo Hills in Meghalaya, NE. India. Brunetti (1923: 269-270) described this based on "7 ♂♂ and a unique ♀ from above Tura, Garo Hills, Assam, 3500-3900 ft., 15.vii-30.viii.1917 (*Kemp*)." I saw two type specimens in the ZSI, Calcutta in 1981. Ghorpadé (2014: 13), and Mitra *et al.* (2015: 65) listed it.] **]**

Spilomyia saltuum (Fabricius, 1794)
Syrphus saltuum Fabricius, 1794, Ent. Syst., 4: 287 (Neotype ♂; 'Sicily, Italy') [UZM, Copenhagen]
Spilomyia saltuum (Fabricius) : van Steenis, 2000: 161 (*neotype design., comb. conf.)*

Afghanistan (Bańkowska, 1968, Ghorpadé, 2014c,d)

[NOTE: van Steenis (2000) revised the West Palaearctic species of this genus and designated a neotype for this species, since the original syntypes from Italy collected by Dr Allioni were lost, only the name label remaining. I myself had collected one specimen of an unidentified species of this rare genus here from the western Himalaya in the early 1970s which specimen is now in the USNM collection in Washington, DC, U.S.A., me having presented it and other Indian Syrphidae to Dr F.C. Thompson then. Aijaz Ahmad Wachkoo ('Shoorida') recently displayed online photos of a specimen of the same undetermined species (?) of *Spilomyia* collected in Indian Kashmir, which van Steenis opined was close to *manicata* (Rondani, 1865), and probably "the first specimen from the Oriental region," but see Bańkowska (1968: 206) and Ghorpadé (2014c: 13, 2014d: 6).

Spilomyia sulphurea Sack, 1910
Spilomyia sulphurea Sack, 1910, Beil. Programm Wohler-Realgymn. Frankfurt a. M., p. 19 (sex ?; 'Honshu, Kyoto) [?]

Afghanistan (Sack, 1932b, Bańkowska, 1968, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 206) mentioned specimens taken at Achmede Dewane, 2700m, Bashgul-Tal, Nuristan in July in east Afghanistan, and this was listed by Ghorpadé (2014c: 13, 2014d: 7). See also Sack (1932b: 427) and Thompson & Rotheray (1998: 118) for discussion and key to this genus in the Palaearctic.]

Syritta fasciata (Wiedemann, 1830)
Xylota fasciata Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 103 (♀; 'Nubien' = Sudan) [ZMHU, Berlin]

India: GJ, UK (Lyneborg & Barkemeyer, 2005, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Lyneborg & Barkemeyer (2005: 98-104) wrote that this "is the *Syritta* species which is most often misidentified . . . Belonging to the subgroup of 4 species with a very thin to nearly obsolete spurious vein, it is easily separated . . . by the different curvature of the apical marginal vein (M1). The slender body–shape distinguishes it from *S. pipiens*, but a dissection of the genitalia is often necessary for a safe identification. The fourth species in the subgroup, *S. stylata* new species has a [*sic*] almost obsolete spurious vein, and its genitalia . . . have larger cerci and surstyli."]

Syritta indica (Wiedemann, 1824)
Eumerus indica Wiedemann, 1824, Analecta Ent., p. 33 (♂♀; 'India Or.') [ZMUC, Copenhagen]
Syritta rufifacies Bigot, 1883, Annls Soc. Ent. Fr., (6) 3: 538 (♂; 'Pondicherry, India' [UZM, Oxford ?]
Syritta femorata Sack, 1913, Ent. Mitt., 2: 8 (♂; 'Tainan, Formosa') [DEI, Eberswalde]

India: BI ?, UP ? Nepal (Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Lyneborg & Barkemeyer, 2005, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al*., 2015).

[NOTE: Lyneborg & Barkemeyer (2005: 127-129) placed this in their *indica* species-group, characterized by spurious vein well sclerotised, hind femur without a subbasal posteroventral spina, but with a number of setula-bearing tubercles and whitish setae, hind femur unmodified, *i.e.*, withut a lamina on or excavation into the ventral surface. They distinguished *indica* from its sister-species *proximata* by the profile of the terminal abdominal segment, "in *S. indica* with a hump on tergum 4 located at one-sixth of tergal length from the posterior margin, and a continuous brown posterior fascia on tergum 4." Brunetti (1908: 77) gave an interesting discussion of this genus and wrote "In a subsequent paper I hope to deal with this genus." He was unsure if there were only three or eight or ten good species in the Orient. In a later paper (Brunetti, 1915: 237-239) he gave more notes and took this as a goodspecies with *orientalis* Macq., *lutescens* Dol., *illucida* Wlk., and *laticincta* Big., *nom. nud.*, as synonyms. He also recognized *pipiens* L., *amboinensis* Dol., and *rufifacies* Big., which he thought "possibly synonymous with *orientalis*. In his FAUNA volume (Brunetti, 1923: 244-248) he recognized only three species from the Indian sub-continent : *pipiens* L., *orientalis*

Macq., and *rufifacies* Big., gave a key to separate them and full descriptions and figures. This species he listed as a synonym of *pipiens* L., noting (pp. 245-246, Pl. V, figs 14-15) "This species is common and generally distributed in both hills and plains in India. . . A widely distributed species: from North America and Europe to Asia and Africa. Of flies of this genus he wrote "the insects occurring almost anywhere amongst flowers and leaves, in hedges and fields; the ♂♂ are frequently seen hovering." Of *rufifacies* Big. (pp. 247-248, Pl. V, fig. 18) he wrote it "differs from *pipiens* and *orientalis* by the hind femora being wholly orange or brownish for from one-third to two-thirds of their length from the base, while the rest is black." He mentioned several specimens in good condition in the Indian Museum from most parts of India including Satara District and United Provinces [= Uttar Pradesh]. Kapoor *et al.* (1979: 67) listed it from Nepal. Knutson *et al.* (1975: 365), Shah *et al.* (2014: 304), Ghorpadé (2014c: 13, 2015: 6), and Mitra *et al.* (2015: 65) listed it.]

Syritta latitarsata Macquart, 1842

Syritta latitarsata Macquart, 1842, Mém. Soc. Sci. Agric. Lille, 1841(1) 135, and Dipt. Exot., 2(2): 75 (sex ?; 'Sénégal') [MNHN, Paris – lost ?]

Pakistan (Lyneborg & Barkemeyer, 2005, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Lyneborg & Barkemeyer (2005: 197-200) described this as an Afrotropical species extending to the southern periphery of the Palaearctic. They mentioned one female taken 32km E. Karachi in May 1984 deposited in the AMNH, New York. See also Ghorpadé & Shehzad (2013: 9) and Ghorpadé (2014c: 13).]

Syritta orientalis Macquart, 1842

Syritta orientalis Macquart, 1842, Dipt. Exot., 2(2): 76 (♂; 'Pondicheri') [MNHN, Paris]

Senogaster ? lutescens Doleschall, 1856, Natuurk. Tijdschr. Ned.-Indië, 10: 410 (sex ?; 'Djokjokarta, Java') [?]

Syritta ? amboinensis Doleschall, 1859, Natuurk. Tijdschr. Ned.-Indië, 17: 97 (sex ?; 'Amboina, Moluccas') [?]

Syritta illucida Walker, 1859, 1859, J. Linn. Soc. Lond., 4: 121 (♀; 'Mak.' = Makasar, Celebes, Indonesia) [NHM, London]

Syritta laticincta 'Bigot': Brunetti, 1915, Rec. Indian Mus., 11: 238 (sex ?; Karachi and Calcutta) [ZSI, Calcutta] *nom. nud.*

Spheginobaccha christiani Sodhi & Awtar Singh, 1991, Acta zool., Cracov, 34: 319 (♂; 'Nainital') [DZPU, Chandigarh – lost ? or in IARI, New Delhi ?]; Ghorpadé, 2014b, Colemania, 41: 9 (as *n. comb., n. syn.*)

Pakistan; India: BI ? CH, DL, HP, HR, PB, UK; Nepal (Brunetti 1908, 1915, Anand *et al.*, 1967, Alam *et al.*, 1969, Knutson *et al.*, 1975, Anand, 1986, Sodhi & Awtar Singh, 1991, Aslamkhan *et al.*, 1997, Mitra *et al.*, 2004b, Parui *et al.*, 2006, Ghorpadé & Shehzad, 1913, Shah *et al.*, 2014, Ghorpadé, 2014c, unpubl., Mitra *et al.*, 2015, Shehzad, unpubl.).

[NOTE: Brunetti (1908: 77, 1915: 237-239) gave notes on Oriental species of this genus; see notes under *indica* above. About *orientalis* Macq. (pp. 246-247, Pl. V, figs 16-17) he placed *illucida* Wlk., *lutescens* Dol., and doubtfully *amboinensis* Dol., as synonyms, giving extended notes and noting specimens seen from Pusa in Bihar and from localities in Bengal and Burma. Lyneborg & Barkemeyer (2005: 157-159) wrote : "*S. orientalis* is a variable species, especially with regard to colour of the hind femora and of tergum 2. It is a widely distributed species ranging from India and Sri Lanka through Indonesia, continental SE Asia and the Philippines to Australia in the south and the Hawaiian islands in the east . . . can be distinguished by a combination of the presence of a well sclerotised spurious vein and of a cone-shaped subbasal spina on the posteroventral surface of the hind femur; however, in the female this spina is minute." Brunetti (1908: 77) gave notes (see under *indica* above) on this and others of this genus here. Awtar Singh *et al.* (1985: 194) listed this species from Chandigarh, Pinjore, Kasauli, Solan and Ambala throughout the year, a common species visiting flowers of marigold, chrysanthemum, *Ageratum* sp., and grass. Anand *et al.* (1967) and Anand (1986: 199) noted it on cucurbits at Delhi. Mitra *et al.* (2004b: 122-123) noted a "large number of individuals . . . active on the pale yellow coloured flowers" of *Ephedra geardiana* (Ephedraceae) in Himachal. Parui *et al.* (2006: 99) cited three females taken at the FRH, Ropar, Indian Punjab by Bulganin Mitra in June. Ghorpadé & Shehzad (2013: 9) gave notes on occurrence in Pakistan. I (Ghorpadé, 2014b: 9) had corrected Sodhi & Awtar Singh's (1991) misidentification of their *christiani* as a *Spheginobaccha* and synonymised that under *Syritta orientalis* based on the illustrations provided. The holotype was not found in the Punjabi University, Chandigarh, nor in the IARI, New Delhi when I visited these institutions in late 2012. I found 3 ♂ 1 ♀ from Nepal in a collection made by Amnon Freidberg in May 1980, labeled Sundarijel and Behaktapur, Nagarkot Road, 1800m [USNM, Washington, DC]. Knutson *et al.* (1975: 365), Shah *et al.* (2014: 304), Ghorpadé (2014c: 13), and Mitra *et al.* (2015: 65) listed it.]

Syritta pipiens (Linnaeus, 1758)

Musca pipiens Linnaeus, 1758, Syst. Nat., Ed. 10, p. 594 (sex ?; 'Europe' = Sweden vide Thompson *et al.*, 1982: 159) [NHM, London]

Afghanistan; Pakistan; India: CH ?, HP, JK, PB, UK; Nepal (Brunetti, 1908, 1915. 1923, Bańkowska, 1968, 1969, Alam *et al.*, 1969, Lambeck & Kiauta, 1973, Lambeck & van Brink, 1973, 1975b, Knutson *et al.*, 1975, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Peck, 1988, Thompson *et al.*, 1990, Claussen & Weipert, 2003, Mitra *et al.*, 2004a,b, Lyneborg & Barkemeyer, 2005, Parui *et al.*, 2006, Sajjad & Saeed, 2010, Sajjad *et al.*, 2010, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d,e, 2015, unpubl., Mitra *et al.*, 2015, Shehzad, unpubl.).

[NOTE: Brunetti (1908: 77) gave notes on this and other species of this genus here. Brunetti (1915: 237-239) gave more notes on other Oriental species; see my notes under *indica* above. Bańkowska (1968: 206, 1969: 285) listed specimens taken in Afghanistan. Lambeck & Kiauta (1973: 75) mentioned three females taken at Chauni (1400m) in September-October in Nepal. Lambeck & van Brink (1973: 96, 1975b: 26-27) listed one male from Moghul Gardens in Kashmir valley and described karyotypes of specimens from Nepal. Kapoor *et al.* (1979: 67) listed it from Nepal. Datta & Chakraborti (1984: 252-253, fig. 14) listed specimens taken in Jammu & Kashmir on several flowering plants and illustrated its male terminalia. Awtar Singh *et al.* (1985: 194) listed this species from Chandigarh and nearby localities, but this really was *orientalis* in my opinion (*q.v.*). Peck (1988: 215) gave Afghanistan also in its range as did Ghorpadé (2014d: 7). Lyneborg & Barkemeyer (2005: 95-98) gave a detailed account of this dominantly Holarctic species. Thompson *et al.* (1982: 159) gave information on the types. Thompson *et al.* (1990) gave a diagnostic key and illustrations to this species to separate it from the Afrotropical *S. flaviventris* Macquart, newly recorded as an immigrant, a synanthrophic flower fly, in Texas State (U.S.A.) and in Mexico. Claussen & Weipert (2003: 376, 378) listed specimens taken in Karnali Province of Nepal. At Kalatop (2,350m) Mitra *et al.* (2004b: 123) found a "large number of individuals . . . active on the long stalked white flowers" of *Anthemis cotula* (Compositae) in Himachal. Parui *et al.* (2006: 99) cited three females taken at the FRH, Ropar, Indian Punjab by Bulganin Mitra in June. Ghorpadé & Shehzad (2013: 9) gave Pakistani records. Ghorpadé (2014e: 7) gave notes on occurrence in the Indian Punjab. Knutson *et al.* (1975: 365), Shah *et al.* (2014: 304), Ghorpadé (2014c: 13), and Mitra *et al.* (2015: 65) listed it.]

Syritta proximata Lyneborg & Barkemeyer, 2005

Syritta proximata Lyneborg & Barkemeyer, 2005, *The genus Syritta*, p. 129 (♂; 'Bangalore') [USNM, Washington, DC]

India: DL ?, HP ?, RJ (Lyneborg & Barkemeyer, 2005, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Lyneborg & Barkemeyer (2005: 95-98) named and described this "remarkable, and in India, widely distributed [*sic*] species. It was present in collections under the names of *S. orientalis* Macquart or *S. rufifacies* Bigot . . . *S. proximata* seems to be restricted to India and Sri Lanka." Incidentally, the holotype selected was collected by myself labeled "India, Karnataka, Bangalore, 916m, 5.X.1980, leg Ghorpade [A 899]." The 27 ♂♀ Paratypes listed were taken in the Indian States of Andhra Pradesh, Delhi (?), Kerala, Karnataka, Madya Pradesh, Pondicherry, Rajasthan, Tamil Nadu andWest Bengal (?), besides Sri Lanka as well. The Andhra locality "Fayndupalem" is an error for Rayudupalem. The Rajasthan locality "Udsipur" is correctly Udaipur. The Central Indian Satpura Hills locality "Pachmarti" is actually Pachmarhi, and the "Anamalai Hills, Chinchona" location should correctly be spelt Anaimalai Hills, Cinchona. The Delhi and Rajasthan specimens need to be checked and confirmed, especially as the "India, N.E. [!], Delhi, XI.1966, leg Jermyn (BMNH)" labeling is incorrect – see Ghorpadé (2007: 5). So this species may not really be a NW. Frontier resident ? Mitra *et al.* (2004a: 32-33) listed this from the Kalatop-Khajjiar WLS in Himachal, but the ID needs to be confrmed after studying those three specimens. Ghorpadé (2014c: 13), and Mitra *et al.* (2015: 65) listed it.]

Syritta vittata Portschinsky, 1875

Syritta vittata Portschinsky, 1875, Horae Soc. ent. ross., 11(1): 27 (♀; 'Du gouvernement d'Astrakhan') [ZIL, St Petersburg]

Pakistan (Sack, 1932b, Thompson & Rotheray, 1998, Lyneborg & Barkemeyer, 2005, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Lyneborg & Barkemeyer (2005: 200-202) wrote : "Widely distributed from S Russia through the Central Asiatic republics to Iran and Pakistan." A pair was identified fom "Pakistan, Baluchistan Prov., Sariab 15 km S Quetta, 15.v.1984, leg McGinley (USNM)." Ghorpadé & Shehzad (2013: 9) and Ghorpadé (2014c: 13) listed it. See also Sack (1932b: 369) and Thompson & Rotheray (1998: 118) for discussion and key to this genus in the Palaearctic.]

Temnostoma nigrimanus Brunetti, 1915

Temnostoma nigrimana Brunetti, 1915, Rec. Indian Mus., 11: 246 (♂; 'Garhwal District, 11,000ft., Western Himalayas') [ZSI, Calcutta - examined]

Pakistan ?; India: UK (Brunetti, 1915, 1923, Sack, 1932b, Knutson *et al.*, 1975, Thompson & Rotheray, 1998, Arif, 2001, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 246-247, Pl. xiii, fig. 15) described and illustrated this based on two males from an unspecified locality at 11,000 ft. in the Garhwal District, Western Himalayas, taken by an unknown collector in June 1914. He noted that there "is a considerable general resemblance at first sight between this species and my *Milesia ferruginosa*, which is not rare in the Kumaon District." This was repeated by Brunetti (1923: 262-263, fig. 50) in his FAUNA volume. I saw these two types in the ZSI, Calcutta when I visited there in 1981. Arif (2001: 46-47, 50, 124) reported 4♂ 2♀ taken in grass along roadsides at Panjgur in March 1998, as '*Temnostoma nigrimannus*.' Knutson *et al.* (1975: 365), Ghorpadé & Shehzad (2013: 9), Shah *et al.* (2014: 305), Ghorpadé (2014c: 13), and Mitra *et al.* (2015: 65) listed it. See also Sack (1932b: 432) and Thompson & Rotheray (1998: 118) for discussion and key to this genus in the Palaearctic.]

Xylota nursei Brunetti, 1923

Xylota nursei Brunetti, 1923, *Fauna Brit. India, Dipt.*, 3: 240 (♂; 'Simla') [BMNH, London]

Pakistan ?; India: HP (Brunetti, 1923, Sack, 1932b, Knutson *et al.*, 1975, Hippa, 1978b, Thompson & Rotheray, 1998, Arif, 2001, Saleem *et al.*, 2001, Saeed *et al.*, 2010, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 240) described this based on a single male taken at Simla in August 1898 by Col. Nurse and presented by him to the British Museum, London. Hippa (1978b: 64, fig. 29E) placed it in his *sylvarum*-group. Knutson *et al.* (1975: 367), Ghorpadé & Shehzad (2013: 9), Shah *et al.* (2014: 305), Ghorpadé (2014c: 14), and Mitra *et al.* (2015: 65) listed it. Arif (2001: 61-62, 125) reported 2♂ 1♀ taken in berseem, sunflower and tobacco fields at Pawaki, Nowai Kalai and Hayatabad, all in Peshawar in February and July 1988 and February 1999. Mutin & Gilbert (1999) attempted a phylogeny of *Xylota* Meigen which may be consulted. Thompson (1975) discussed phylogeny, etc., of The *Xylota* Group in the Tribe Milesiini [*sic*], gave a 'tree' for included genera and also a key to these in an interesting paper in those early years of a re-look at Syrphidae phylogeny (before molecular biology had entered), especially of the subfamily Eristalinae, which was his chosen specialty. It may also be noted here that Brunetti (1923: 243) mentioned a *Xylota aequalis, Walk.* and copied Walker's description, but failed to state that this was actually an *Epistrophe,* also listed by him in the FAUNA (p. 90) as a *Syrphus* ! See also Sack (1932b: 371) and Thompson & Rotheray (1998: 120) for discussion and key to *Xylota* in the Palaearctic.]

Xylota Unnamed sp. 1 [undet. n. sp. (*ignava* group)]
India: JK (Hippa, 1978b, Ghorpadé, 2014c).

[NOTE: Hippa (1978b: 65) wrote "The species from Kashmir is more robust than the other two [*ignava* Panzer, 1798 and *flavitibia* Bigot, 1883], but otherwise very close to *X. ignava* and possibly only a subspecies of it." *X. ignava* is widespread in the Palaearctic and known from eastern Tibet, and the southern former Soviet provinces of Uzbek, Kazakh and others to Tajikistan which is just north of Kashmir. Ghorpadé (2014c: 14) listed it.]

[SPECIES INCERTAE SEDIS :

Xylota swatensis Arif, 2001, **nom. nud.**

Xylota swatensis Arif, 2001, *Taxonomic Studies of Syrphidae (Diptera) of Pakistan*, p. 57. (♂; 'Kabbal, Swat') [IMUA, Faisalabad] **nom. nud.**

Pakistan : Khyber Pakhtunkhwa (Kabbal, Swat) (Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Arif (2001: 57-59, 125) reported 1♂ taken in tobacco field at Kabbal (Swat) in June 1999. Stated as close to *Xylota dimidiata.* The name was chosen after the "Swat Valley which is a famous valley in N.W.F.P. of Pakistan." This is probably misidentified and specimens need to be examined for correct identity. See also Ghorpadé & Shehzad (2013: 3). Ghorpade (2014c: 7) listed it.] **]**

Xylotina nepalensis (Hippa, 1978)

Chalcosyrphus (Xylotina) nepalensis Hippa, 1978, Acta Zool. Fenn., 156: 144, figs 47L, 58 (♂; '2 mls. S.E. of Sikha, 7000-8000 ft.') [NHM, London]

Nepal (Hippa, 1978b, Ghorpade, 2014c, 2015)

[NOTE: Hippa (1978b: 144, figs 47L, 58) described this based on a single male taken 2mi. SE. Sikha, 7000-8000 ft., Nepal, on May 23, 1965 by J. Quinlan [misspelt as 'Guinlan' ?]. He placed it in his new 'subgenus' *Xylotina* (Hippa, 1978: 117-118) and discussed this taxon in detail (pp. 118-120). Ghorpadé (2014c: 14) listed it.]

Xylotina ornata (Brunetti, 1915)
Merodon ornatus Brunetti, 1915, Rec. Indian Mus., 11: 232 (♂; 'Bhowali (5700 ft.), Kumaon District, Western Himalayas') [ZSI, Calcutta – examined]

India: UK (Brunetti, 1915, 1923, Knutson *et al*., 1975, Hippa, 1978b, Thompson & Rotheray, 1998, Shah *et al*., 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 232) described this based on a single female taken at Bhowali (5700 ft.) in Kumaon District, Western Himalayas, by A.D. Imms in June 1909. I saw this type pinned in Box 17 in the ZSI, Calcutta in 1981. In his FAUNA volume, Brunetti (1923: 236-237, fig. 49) redescribed it fully, illustrated its abdominal dorsum and remarked that it "was described as a *Merodon* as a *lapsus calami*." Hippa (1978b: 117-120) treated this as a subgenus of *Chalcosyrphus* Curran, 1925 and recorded it from Burma also, giving diagnostic characters. Knutson *et al.* (1975: 368), Shah *et al.* (2014: 290; as '*Chalcosyrphus*'), Ghorpadé (2014c: 14), and Mitra *et al.* (2015: 65) listed it. See Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic.]

Xylotina Unnamed sp. 1 [Undet. n.sp.]
Nepal (Hippa, 1978b, Ghorpadé, 2014c).

[NOTE: Hippa (1978b: 118) included this as an undescribed species from Nepal based only on a female. Ghorpadé (2014c: 14) listed it.]

Tribe Rhingiini

Cheilosia gagatea Loew, 1857
Musca gagatea Loew, 1857, Verh. Zool.-bot. Ver. Wien, 7: 601 (sex ?; 'Steiermark' (= Styria, Austria)') [?]

Afghanistan; Pakistan ? (Bańkowska, 1968, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 206) listed specimens taken in NE. Afghanistan (see also Ghorpade, 2014d: 7), but Peck (1988: 103) did not give this country in its range. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan.]

Cheilosia grossa (Fallén, 1817)
Eristalis grossa Fallén, 1817, *Syrphici Sveciae*, p. 53 (sex ?; 'in horto Lundae' (= Lund, Sweden) [?]
? Musca corydon Harris, 1780, Expos. Eng. Ins., p. 106 (sex ?; 'not given (= England)') [NHM, London]

India: UK (Brunetti, 1915, 1923, Knutson *et al*., 1975, Peck, 1988, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 206) identified a male and female taken at Binsar in the Kumaon District by A.D. Imms in May 1912, as this "rather widely distributed European species" but with a doubt and gave discrepancies from Verrall's description. He then repeated (Brunetti, 1923: 46) "Various other species of *Chilosia* [*sic*] are Indian, but are mostly represented by unique or indifferently preserved speciens, so that in such a critical genus it would be worse than folly to set them up as new. *C. grossa* Fallen, was recorded by me (1915: 206) with a doubt from two specimens in the Forest Zoologist's collection from the Western Himalayas (Binsor [*sic*], Kumaon District, 28.v.1912, ♂ ♀ [*Imms*]), but no further specimens have come before me, and the various discrepancies from normal *grossa* suggest that the identification of the species requires further confirmation." Peck (1988: 121) cited *Musca corydon* Harris, 1780 as a "doubtful species of *Cheilosia*" and it could be a synonym of *grossa* Fallen, 1817 ? In my Indian subregion Check-list (Ghorpadé, 2014c: 14), I had used *corydon* (Harris, 1780) and not *grossa* (Fallén, 1817), but probably the opposite is more correct ? This species *grossa* needs to be added to my checklist (Ghorpadé, 2014d: 14) as it was omitted, in error. Knutson *et al.* (1975: 329), Peck (1988: 104), Ghorpadé, 2014c: 14; as *corydon* Harris), and Mitra *et al.* (2015: 66; as *corydon* (Harris)) listed it.

On my collecting forays on the Himalayas I found this a fairly frequent genus of syrphid flies of a speciose Holarctic genus, at higher altitudes, and the 20 or so specimens I had collected during my doctoral years at Delhi, on frequent sojourns on the Himalayas from there, were given to Dr F.C.

Thompson (USNM) when I was a Smithsonian Postdoctoral Fellow at Washington, DC in 1982-1983, and these will hopefully be determined and reported on in the near future, and could include some unnamed species. Incidentally, I found three specimens of *Cheilosia* in the FRI (Dehra Dun) collection during my visit in September 1974, two were of *grossa* and another an undetermined specimen. Then on my return visit to FRI, Dehra Dun in Sept.-Oct. 2012 I found Imms' pair again, determined as '*Chilosia grossa* Fln' by Brunetti. Also another ♂ specimen from 'U.P., Almora, Kali Val, 10,500', 13.vii.1923, R.N. Parker' determined as '*Chilosia*' by C.H. Curran. Then, a digitized spreadsheet was received from Dr V.V. Ramamurthy of IARI, New Delhi, of the "Pusa Collection" of Syrphidae lodged there, in September 2010. But, surprisingly, there was not even one specimen of *Cheilosia* in that collection of a little more than 3,500 Syrphidae!]

Cheilosia hasegawai Shiraki, 1968

Cheilosia hasegawai Shiraki, 1968, *Fauna Jap., Syrphidae*, 2: 85, figs 21, 52 (♂; 'Mt. Ontake, Nagano Pref., Japan) [NSM, Tokyo ?]

Nepal (Shrestha & Aryal, 2000, Ghorpadé, 2014c, 2015)

[NOTE: Shrestha & Aryal (2000: 46) recorded one specimen from Tallo Gaon in Dhapakhel, Lalitpur District in central Nepal, visiting composite flowers. The identity needs to be confirmed by re-examining the single specimen (unsexed) in the NHM, Kathmandu, if available. Ghorpadé (2014c: 14, 2015: 6) listed it.]

Cheilosia himalayensis (Brunetti, 1915)

Eriozona himalayensis Brunetti, 1915, Rec. Indian Mus., 11: 217 (♂; 'Kumaon District, Western Himalayas') [Syntypes : ZSI, Calcutta - examined, BMNH, London]

India: UK (Brunetti, 1915, 1923, Knutson *et al*., 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 217-218) described this as a *Eriozona* (!) from "several ♂♂ from the Kumaon District, 20-6-14 to 20-7-14" , Western Himalayas and stated "This species evidently mimics the bee *Bombus haemorrhoidalis*, Smith." In his FAUNA volume Brunetti(1923: 105) redescribed it again as an *Eriozona,* and added it was also collected by Tytler from Onari, Garhwal District, 11,000 ft. I saw the holotype, pinned in Box 15 in ZSI, Calcutta in 1981 and noted it was a *Cheilosia*. Hervé-Bazin (1924: 291-292) mentioned this was a "*Chilosia*," close to *illustrata (*Harris, 1780). Knutson *et al.* (1975: 329) gave "Onari, Garhwal District, India" also as a type-locality which was wrong, as this was only mentioned later by Brunetti (1923: 105) as collected at Onari 11,00o ft., by Tytler as stated above. Knutson *et al.* (1975: 329), Shah *et al.* (2014: 290), Ghorpadé, 2014c: 14), and Mitra *et al.* (2015: 66) listed it.]

Cheilosia laticornis Rondani, 1857

Cheilosia laticornis Rondani, 1857, Dipt. Ital. Prodromus, 2: 160 (sex ?; 'in parmensi apennino' (= region of Parma, Italy) [?]

Cheilosia latifacies Loew, 1857, Verh. Zool.-bot. Ver. Wien, 7: 593 (sex ?; 'Brussa' = Bursa, Turkey) [?]

Afghanistan (Bańkowska, 1968, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 206) listed specimens (of *latifacies*) taken in NE. Afghanistan; Ghorpadé (2014c: 14, 2014d: 7) cited this (as *laticornis*). Peck (1988: 107) gave *latifacies* fom Afghanistan in his Palaearctic checklist. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan.]

Cheilosia nigroaenea Brunetti, 1915

Chilosia nigroaenea Brunetti, 1915, Rec. Indian Mus., 11: 204 (♂; 'Matiana, Simla District') [ZSI, Calcutta]

India: HP; Nepal (Brunetti, 1915, 1917, 1923, Coe, 1964, Knutson *et al*., 1975, Kapoor *et al*., 1979, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al*., 2015).

[NOTE: Brunetti described this from a male holotype from Matiana and a female from Simla, both taken in May 1910 by Annandale. This was repeated by Brunetti (1917: 83, 1923: 45-46) giving notes on '*Chilosia*' species as included under *grossa* above. I did not find these types in the ZSI, Calcutta when I visited there in 1981. Coe (1964: 266) listed specimens taken in eastern Nepal, and Kapoor *et al.* (1979: 62) listed it from Nepal. Knutson *et al.* (1975: 330) listed it from Simla and Nepal. Shah *et al.* (2014: 291), Ghorpadé (2014c: 14, 2015: 6), and Mitra *et al.* (2015: 66) listed it.]

Cheilosia pilipes (Bigot, 1884)

Cartosyrphus pilipes Bigot, 1884, Annls Soc. Ent. Fr., (6) 3: 551 (sex ?; 'Inde') [UM, Oxford ?]

India ? (Brunetti, 1923, Knutson *et al*., 1975, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1923: 43) gave Bigot's description in his FAUNA volume, based on one specimen from 'India,' type in Bigot collection. He gave volume 3 as that where the original description was made, but Brunetti (1923: 43) gave volume 4 ! Knutson *et al.* (1975: 330), Ghorpadé (2014c: 14) and Mitra *et al.* (2015: 66) listed it.]

Cheilosia plumbiventris Brunetti, 1915
Chilosia plumbiventris Brunetti, 1915, Rec. Indian Mus., 11: 205 (♀; 'Simla') [ZSI, Calcutta]

India: HP (Brunetti, 1915, 1917, 1923, Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti described this "from a single ♀ in the Indian Museum from Simla 7-v-10 [Annandale]. He wrote : "The shining lead colour of the abdomen will easily distinguish this species." He repeated this in his paper on Simla Diptera (Brunetti, 1917: 83). He gave a detailed redescription (Brunetti, 1923: 44) in his FAUNA volume. I did not find the type in the ZSI, Calcutta when I visited there in 1981. Knutson *et al.* (1975: 330), Shah *et al.* (2014: 291), Ghorpadé, 2014c: 14), and Mitra *et al.* (2015: 66) listed it.]

Cheilosia songarea (Becker, 1894)
Chilosia songarea Becker, 1894, Nova Acta Acad. Caesar. Leop. Carol.,62(3): 447 (sex ?; 'Lepsa (Songarei)' (= Lepsa, Kazakhstan) [ZM, Amsterdam ?]

Pakistan ?; India: JK (Sack, 1932b, van Doesburg, 1955, Thompson & Rotheray, 1998, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: van Doesburg (1955: 47) listed two males and four females of this from "Aghil-Gebirge, Polu, 5220m. 19/29.VII.1935. Bei Blüten. A. Peter leg." This was from the Fourth Dutch Karakorum Expedition, 1935 but no mention if it was in Pakistan or India. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Shah *et al.* (2014: 291), Ghorpadé, 2014c: 14), and Mitra *et al.* (2015: 66) listed it. Barkalov & Ståhls (2015) is an update of this genus in Asia and could be consulted for details. See also Sack (1932b: 38) and Thompson & Rotheray (1998: 115, 116) for discussion and key to this genus in the Palaearctic.]

Cheilosia Unnamed sp. 1 [undet.]
India: HP (Brunetti, 1907a, Ghorpadé, 2014c).

[NOTE: Brunetti (1907a: 169) noted a "*Chilosia* sp. I ♂" from Matiana. Pethaps he later described this as *nigroaenea* (Brunetti, 1915; *op. cit.*) ?]

Cheilosia Unnamed sp. 2 [undet.]
India: JK (Lambeck & van Brink, 1973, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Lambeck & van Brink (1973: 93) listed a female taken at Nagin Lake near Srinagar, Kashmir Valley, which they could not identify to species but gave notes. They remarked "Brunetti (1923) studied several more *Cheilosia* species from India; however, since they were mostly represented by single or badly preserved specimens, he was unable to describe them. A revision of the Indian and Himalayan *Cheilosia* species, based on a larger material, at least with illustrations of the heads in profile, is certainly urgent." See also my notes under *Cheilosia grossa* above, and in Ghorpadé & Shehzad (2013: 18).]

Cheilosia Unnamed sp. 3 [undet.]
India: UK (Chaturvedi, 1981)

[NOTE: Chaturvedi (1981) listed an unnamed *Cheilosia* on umbelliferous flowers in the Valley of Flowers, Garhwal Himalaya.]

Cheilosia Unnamed sp. 4 [undet.]
Nepal (Ghorpade, unpubl.)

[NOTE: During my postdoctoral tenure as a Smithsonian fellow, I found a collection from Nepal made by my Israeli colleague, Dr Amnon Freidberg, in May 1980, in which I found 6 ♂ 2 ♀ of an undetermined *Cheilosia* taken at Sundarijel, Thankot and the Royal Botanical Garden at Godavari.]

Endoiasimyia indiana Bigot, 1882
Endoiasimyia indiana Bigot, 1882, Annls Soc. Ent. Fr., (6) 2: (Bull.), p. 136 (♀; 'Inde') [NHM, London ?]

India ? ; Nepal (Brunetti, 1923, Hervé-Bazin, 1923e, Hull, 1943, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Thompson & Rotheray, 1998, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Brunetti (1923: 153-154) gave a full redescription "from the unique *type* in the Bigot collection, which is in inferior condition but has the generic and specific characters sufficiently obvious." About the genus he wrote "Entirely like *Chilosia* [*sic*] in facies, differing practically only in the arista, which is conspicuously plumose on both upper and under sides from base to tip, and in the absence of eye-margins. The eyes are pubescent, the face strongly produced into a central bump and again above the mouth-opening. Venation as in *Chilosia*; tip of 4th vein just appreciably recurrent at extreme tip." He gave the original description citation as "Ann. Soc. Ent. France, (6) iii, p. 229, ♀ (1883)," but the genus description citation as "(6) ii, Bull. p. cxxxvi (1882)." Hervé-Bazin (1923e: 255) mentioned this species while discussing *Volucella*. Kapoor *et al.* (1979: 62) listed it from Nepal. Hull (1943: 10) studied the type of this binomen and wrote "I can see no important difference between this genus and *Hiatomyia* Shannon erected in 1922. The face of *Endoiasimyia* is strongly tuberculate but on the whole the fly is not greatly different from the American species." Thompson (1972b: 99-104) did not deal with *Hiatomyia* in any detail in his revision of Neotropical Milesiinae [now Eristalinae] except placing it as the most derived genus of Cheilosiini, probably sister to *Cheilosia*, and with *Portevinia*, *Ferdinandea* and *Rhingia* as basal genera, all having a basal arista. See his remarks on the tribe Cheilosiini under *Rhingia angusticincta* below (*q.v.*, *loc. cit.*). Knutson *et al.* (1975: 330), Ghorpadé (2014c: 14, 2015: 6), and Mitra *et al.* (2015: 66) listed it. See Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic.]

Ferdinandea isabella Hull, 1942

Ferdinandea isabella Hull, 1942, J. Wash. Acad. Sci., 32: 241 (♀; 'Gulmarg, 8500 ft., Kashmir, India') [NHM, London]

Pakistan ?; India: JK (Hull, 1942, Coe, 1964, Knutson *et al.*, 1975, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Hull (1942: 241) described this based on a single female taken at Gulmarg, 8500 ft., Kashmir, in summer 1913 by Lt.-Col. F.W. Thomson. It was separated in a key to *Ferdinandea* species by him (p. 239) and in a later key by Coe (1964: 267-268) to the six then known species of this genus. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Knutson *et al.* (1975: 331), Shah *et al.* (2014: 297), Ghorpadé (2014c: 14), and Mitra *et al.* (2015: 66) listed it.]

Ferdinandea longifacies Coe, 1964

Ferdinandea longifacies Coe, 1964, Bull. Br. Mus. (Nat. Hist.), Ent., 15(8): 266 (♂; 'East Nepal, Taplejung District, above Sangu, c. 9,200 ft.') [BMNH, London]

India: UK; Nepal (Coe, 1964, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: Coe (1964: 267-268) gave a key to the Oriental species of *Ferdinandea* Rondani and mentioned "It is worthy of note that all my series of male paratypes were taken [in 'Naini Hills' around Naini Tal ?] resting on a stony forest path during the brief period when the sun had attained the meridian and its rays reached the spot through a gap in the foliage overhead. The male holotype was captured under similar conditions higher up in the forest, where in the shade away from the path the single female taken was flying slowly around the base of a young oak tree which has sappy exudations low down on the trunk." He entered a museum label error as "N.E. India" for Naini Hills, 7-8,000 ft. (see Ghorpadé, 2007: 5). Knutson *et al.* (1975: 331), Kapoor *et al.* (1979: 62), Shah *et al.* (2014: 297), Ghorpadé (2014c: 14, 2015: 6), and Mitra *et al.*, 2015: 66) listed it.]

Ferdinandea montana Hull, 1942

Ferdinandea montana Hull, 1942, J. Wash. Acad. Sci., 32: 240 (♂; 'Gulmarg, 8500 ft., Kashmir, India') [BMNH, London]

Pakistan ?; India: JK (Hull, 1942, Coe, 1964, Knutson *et al.*, 1975, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Hull (1942: 240-241) described this based on a single male and three females taken at Gulmarg, 8500 ft., Kashmir, in summer 1913 by Lt.-Col. F.W. Thomson. It was separated in a key to *Ferdinandea* species by him (p. 240) and later by Coe (1964: 267-268) to the six then known species of this genus. Claussen & Weipert (2003: 367, figs 82, 87-89) separated it in a key to Oriental species and illustrated its male terminalia. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Knutson *et al.* (1975: 331), Shah *et al.* (2014: 297), Ghorpadé (2014c: 14), and Mitra *et al.*, 2015: 66) listed it.]

Ferdinandea nepalensis Claussen & Weipert, 2003

Ferdinandea nepalensis Claussen & Weipert, 2003, *ur Schwebfliegenfauna Nepals*, p. 365 (♂; 'Maharigaon, nördl., 3400m') [SJW, Plaue]

Nepal (Sack, 1932b, Thompson & Rotheray, 1998, Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015).

[NOTE: Claussen & Weipert (2003: 365-367, figs 81, 83-86) modified Coe's key to the Oriental species of *Ferdinandea* Rondani and mentioned this was close to *montana* Hull and separated it by diagnostic characters, illustrations and a key. The holotype male was taken on an *Euphorbia* plant in June, north-east of Jumla in western Nepal. Ghorpadé (2014c: 14, 2015: 6) listed it. See also Sack (1932b: 419) and Thompson & Rotheray (1998: 115) for discussion and key to this genus in the Palaearctic.]

Rhingia angusticincta Brunetti, 1908
Rhingia angusticincta Brunetti, 1908, Rec. Indian Mus., 2: 59 (♂; 'Simla') [ZSI, Calcutta - examined]

Pakistan; India: HP (Brunetti, 1907a, 1908, 1917, 1923, Singh, 1953, Knutson *et al.*, 1975, Claussen & Weipert, 2003, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1907a: 169) wrote "One of each sex of a new species of this genus which I am describing in a subsequent paper on this group." Brunettti (1908: 59) then described this based on a male and a female taken at Simla and Theog by Annandale. He also mentioned another male from Darjiling probably conspecific but differing in a darker thorax and all tibiae with "a distinct broad black ring." I examined these types at ZSI, Calcutta in 1981 and the holotype ♂ was labelled "Between Kufri and Simla, c. 8000 ft., 4.v.07, N.A. / 3201/15 / Rhingia angusticincta Brunetti TYPE ♂, det. Brun.. 1923." The Allotype ♀ was labelled "Theog, c. 8000ft., Simla hills, 27.IV.07, S.2. H.I.B. / 3022/15 / Rhingia angusticincta Brun. Type ♀ / TYPE / Rhingia angusticincta Brun. Type ♀, det. Brun. 1923." He later (Brunetti, 1917: 85) gave "Theog, 27-iv-07; between Kufri and Simla, 4 (? 14)-v-10." Brunetti (1923: 133-134, P. III, fig. 16) wrote it "resembles *laticincta*, the points of difference being as follows: the snout is distinctly shorter; the abdominal transverse bands are extremely narrow, and not interrupted, this being the main, but a constant difference." He also mentioned seeing "a specimen from Dungagali, 21-24.v. 1915 (*Fletcher*)," which is now in Pakistan. Claussen & Weipert (2003: 373, figs 93, 106-108, 114) gave illustrations and included it in their key to Indian subcontinent species of this genus. Singh (1953) recorded a species (undetermined) of this genus as a useful pollinator. Knutson *et al.* (1975: 331), Shah *et al. (*2014: 302), Ghorpadé (2014c: 14), and Mitra *et al.*, 2015: 66) listed it.

Thompson (1972: 101, Diagram 2) presented a phylogenetic 'tree,' and wrote of the tribe Cheilosiini thus "The two-segmented aedeagus is a specialization that precisely defines the tribe Cheilosiini. The only other milesine [= Eristalinae now] groups which have a two-segmented aedeagus are the *Criorhina* and *Tropidia* groups of Milesini. The two-segmented aedeagus of these groups is clearly of a different basic type. The presence of thoracic bristles and the lack of hind femoral spines in the Cheilosini will also distinctly separate the cheilosines from the Milesini . . . The tribe Cheilosini can be divided into two subtribes based on the position of the arista, pilosity of metasterna, and size of the alula. . . The subtribe Cheilosina has the arista inserted basad, metasterna pilose and the alula not reduced. The tribe Cheilosini is predominantly northern in distribution. Only the genus *Rhingia* is found extensively outside of the Holarctic region. . . I would consider *Rhingia* as the most primitive member of the subtribe Cheilosina."]

Rhingia binotata Brunetti, 1908
Rhingia binotata Brunetti, 1908, Rec. Indian Mus., 2: 59 (♂; 'Darjiling') [NHM, London]
Rhingia binotata var. *quadrinotata* Hervé-Bazin, 1914, Insecta, 41: 151 (♂; 'Inde') [MNHN, Paris]

Nepal (Brunetti, 1908, 1913a, 1915, 1923, Hervé-Bazin, 1914, 1924, Coe, 1964, Nayar & Nayar, 1965, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Claussen & Weipert, 2003, Ghorpade, 2014c. 2015, Mitra *et al.*, 2015)

[NOTE: Brunetti (1908: 59) described this based on "one ♂ in perfect condition, captured by [him] at Darjiling, 13-x-05." In the FAUNA volume (Brunetti, 1923: 131, Pl. III., fig. 14) he gave a description and illustration, and mentioned more specimens, "A second ♂ comes from Kurseong, 3.vii.1908 (*Annandale*). The ♀ subsequently received at the Indian Museum from the banks of the Siyom Rver, near Yekshi, 3.ii.1912, taken on the Abor Expedition. A fourth specimen from Darjiling, 1908." Earlier, Brunetti (1913a: 166, 1915: 226) had given the same information about additional specimens and the first female specimen. Hervé-Bazin (1924: 292) commented that Brunetti omitted mention of the new variety *quadrinotata* Hervé-Bazin (1914: 151) named by him for a male with a small pale round spot on each side of the third tergum. I saw the female (allotype ?) in ZSI, Calcutta, with labels "Banks of Shiyom R., near Yekshi, 3.2.12 / Rhingia binotata Typ ♀ / TYPE / 1991/HI / Rhingia binotata Brun Type ♀, det. Brun. 1923." Coe (1964: 266) cited specimens taken in east Nepal, and it was listed from Nepal by Kapoor *et al.* (1979: 62). Nayar & Nayar (1965) listed, curiously, this species from Agra which is on the Upper Gangetic Plain and Rhingia is a hill taxon ! Claussen & Weipert (2003: 373) included it in their key to Indian

subcontinent species of this genus. Knutson *et al.* (1975: 331), Kapoor *et al.* (1979: 62), Ghorpadé (2014c: 14, 2015: 6), and Mitra *et al.*, 2015: 66) listed it.]

Rhingia creutzburgi Claussen & Weipert, 2003

Rhingia creutzburgi Claussen & Weipert, 2003, *Zur Schwebfliegenfauna Nepals*, p. 367 (♂; 'Malikasthan, ca, 15km. Simikot, 4100m, Bajura Distr., Karnali Prov.') [SJW, Plaue]

Nepal (Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015)

[NOTE: Claussen & Weipert (2003: 367-369, 373, figs 92, 97-99, 112) described this based on a male and female taken at Malikasthan, Bajura, 410m, *ca.* 15km S. Simikot, Karnali Province of Nepal in July by Creutzburg. Facial profile and male terminalia were illustrated and a key provided to separate this and other Indian subcontinent species of *Rhingia*. Ghorpadé (2014c: 14, 2015: 6) listed it.]

Rhingia fasciata Brunetti, 1908

Rhingia laticincta var. *fasciata* Brunetti, 1908, Rec. Indian Mus., 2: 58, Pl. xi, fig. 8 (♂; 'Darjiling, 7,000 feet') [NHM, London ?]

India: HP, PB ; Nepal (Brunetti, 1907b, 1908, 1923, Nayar, 1968a, Knutson *et al.*, 1975, Claussen & Weipert, 2003, Ghorpadé & Pathania, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1907b: Pl. xi, fig. 8; 1908: 58, 1923: 133, Fig. 28b) described this from four specimens of both sexes taken by him at Darjiling (7000 ft.), 10—15.x.1905, and illustrated its abdomen and mentioned differences from *laticincta* and that he was "not at all sure that it is not specifically distinct, for which reason [he had] given it a name." I did not find these specimens in the ZSI, Calcutta, so they must be in the BMNH, London where Brunetti deposited his personal collection which he had presented to the BMNH in 1927. Nayar (1968a: 127) identified "a specimen [sex not given] labelled India : Kalatop, 2440m, 28.9.1962, coll. (Miss) A. Walters." Ghorpadé & Pathania (2014: 7) listed it from the Punjab Doab. Knutson *et al.* (1975: 331), Shah *et al. (*2014: 302), Ghorpadé (2014c: 14, 2015: 6), and Mitra *et al.*, 2015: 66) listed it.]

Rhingia laticincta Brunetti, 1907

Rhingia laticincta Brunetti, 1908, Rec. Indian Mus., 2: 58 (♂; 'Darjiling') [ZSI, Calcutta - examined]

India: HP, PB, UK; Nepal (Brunetti, 1908, 1917, 1923, Coe, 1964, Nayar 1968a, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Claussen & Weipert, 2003, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Ghorpadé, 2014d).

[NOTE: Brunetti (1908: 58, Pl. xi, fig. 7; 1917: 85, 1923: Fig. 28a) described this from specimens taken at Darjiling and Mussoorie, and illustrated its abdomen. He had four specimens which were taken in Darjiing District (9,000-12,000 ft) by Burkill, who is known for his work on insect pollinators in this subcontinent. Brunetti also noted specimens from Mussoorie, Simla, Phagu and Kurseong taken in May. Nayar (1968a: 127) identified a male and female taken on the Dalhausie --Khajjair [*sic*] road (2038-2129m) in September 1962. I found the types in ZSI, Calcutta and the holotype ♂ was labeled "Darjeeling Dist. at 9000 to 12000', I.H. Burkill / Impat yellow [= yellow coloured *Impatiens* flower ?] , 25.9.06 / 2163/15 / Rhingia laticincta Brunetti TYPE ♂ / TYPE" and with third antennal segments lost. The Allotype ♀ was labeled "MUSSOOREE / 953/14 / Rhingia laticincta Brunetti TYPE ♀ / TYPE" and left antenna lost, some legs lost. The other two male and female specimens were not found in the ZSI, Calcutta, so they must be in the BMNH, London. Coe (1964: 266) mentioned four females collected in eastern Nepal and Claussen & Weipert (2003: 369, 373, figs 93, 100-101, 115) gave illustrations, included it in key to species, recording this from western and eastern Nepal and gave details of specimens in the BMNH, London. Kapoor *et al.* (1979: 62) listed it from Nepal. Ghorpadé & Pathania (2014: 7) listed it from the Punjab Doab. Knutson *et al.* (1975: 331), Shah *et al. (*2014: 302), and Ghorpadé (2014c: 14, 2015: 6) listed it, but Mitra *et al.*, 2015: 66) did not, in error ?]

Rhingia longifacies Claussen & Weipert, 2003

Rhingia longifacies Claussen & Weipert, 2003, *Zur Schwebfliegenfauna Nepals*, p. 370 (♂; 'Hochtal, Gothichaur, 2900m, Karnali Prov.') [SJW, Plaue]

Nepal (Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015)

[NOTE: Claussen & Weipert (2003: 370-371, 373, figs 91, 94-96, 111) described this based on a single male from Hochtal Gothichaur, 2900m, in Karnali Province of Nepal and separated it in a key to Indian subcontinent species of this genus. Ghorpadé (2014c: 14, 2015: 6) listed it.]

Rhingia semicinerea Brunetti, 1923

Rhingia semicinerea Brunetti, 1923, *Fauna Brit. India, Dipt.*, 3: 134 (♂; 'Naini Tal') [ZSI, Calcutta – examined]

India: UK (Brunetti, 1923, Knutson *et al.*, 1975, Claussen & Weipert, 2003, Shah *et al.*, 2014, Ghorpadé, 2014c).

[NOTE: Brunetti (1923: 129-130) described this from "a single ♂ in tolerably good condition, in Indian Museum, from Naini Tal, June 1893, received from the Lucknow Museum," and separated this from the other five Indian species in a key. I examined the types in ZSI, Calcutta and the holotype ♂ was labelled "Rhingia semicinerea Brun. Type ♂, det. Brun. 1923 / Rhingia semicinerea Brunetti TYPE ♂ / Naini Tal, May and June 1893, Lucknow Mus. / TYPE / 1994/HI." Claussen & Weipert (2003: 373) separated it in a key to Indian subcontinent species. Knutson *et al.* (1975: 331), Shah *et al. (*2014: 302), and Ghorpadé (2014c: 14) listed it, but Mitra *et al.*, 2015) did not, in error ?]

Rhingia siwalikensis Nayar, 1968

Rhingia siwalikonsis [*sic,* misprint, *lapsus calami*] Nayar, 1968, Agra Univ. J. Res. (Sci.), : 126 (♂; 'Kalatop, 11.2km from Dalhausie [*sic*], 2440m, N.W. Himalaya') [ZSI, Calcutta - examined]

India: HP; Nepal (Sack, 1932b, Nayar, 1968a, Knutson *et al.*, 1975, Thompson & Rotheray, 1998, Claussen & Weipert, 2003, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Nayar's (1968a) paper was riddled with typos resulting from poor proofreading; the correct spelling was given on p. 131 (Fig. 5). I examined the types now deposited in the ZSI, Calcutta and the holotype ♂ was labeled "HOLOTYPE [red card] / Rhingia siwalikensis sp. nov. Det. J.L. Nayar / Coll. J.L. Nayar, 25.ix.1962 / Kalatop ( ) miles from Dalhousie, 8000 ft / 3734/H6." The Paratype ♂ had the same labels except for PARATYPE / and 3735/H6." I had made illustrations of head profile and abdomen and had noted "good n. sp. of *Rhingia*." Claussen & Weipert (2003: 371-373, figs 90, 102-105, 109, 113, 118) mentioned 4 males and a female of this species taken at Ghorapani, 2855m in the Annapurna region of central Nepal in October. Knutson *et al.* (1975: 332; as '*siwalikonsis*'), Shah *et al. (*2014: 302), Ghorpadé (2014c: 14, 2015: 6), and Mitra *et al.*, 2015: 66) listed it. See also Sack (1932b: 126) and Thompson & Rotheray (1998: 115) for discussion and key to this genus in the Palaearctic.]

Tribe Volucellini

Graptomyza brevirostris Wiedemann, 1820

Graptomyza brevirostris Wiedemann, 1820, Nova Dipt. Gen., p. 17 (♀; 'Batavia, Djakarta, Java') [UZM, Copenhagen]

Pakistan ? ; India: CH, JK, PB; Nepal (Brunetti, 1913a, 1915, 1923, Kertész, 1914, Curran, 1942, Kapoor *et al.*, 1979, Datta & Chakraborti, 1984; Awtar Singh *et al.*, 1985, Knutson *et al.*, 1975, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé & Pathania, 2014, Ghorpadé, 2014c,e, 2015, Mitra *et al.*, 2015).

[NOTE: Brunetti (1913a: 167) noted a female taken at Rotung, 1400 ft., on the bank of Dihang River in Assam in December. Brunetti (1915: 226) mentioned the Rotung specimen was taken by Mr. Kemp on the "N.E. Front., India" and that de Meijere recorded it from Java. In the FAUNA volume (Brunetti (1923: 138-139) gave a detailed description of the female and listed specimens from parts of NE. and S. India, Burma, Sri Lanka and the Nicobar Islands, and gave a key to seven Indian species all from these above areas only, and none from NW. India. Kertész (1914: 76-77) gave a key to separate a dozen species present in the Hungarian National Museum, including this species. Kapoor *et al.* (1979: 63) listed this from Nepal. Datta & Chakraborti (1984: 246) took a female on *Herpestis* sp. flower in September at Udhampur in Kashmir. Awtar Sngh *et al.* (1985: 193) mentioned this was a "very rare species" taken on flowers of Chandni and Marigold at Chandigarh and Chat in September. Curran (1942: 4-5) presented a key to Oriental species of this genus, which included this species. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Ghorpadé & Pathania (2014: 7) and Ghorpadé (2014e: 7) gave notes from the Indian Punjab, and record from the Punjab Doab. Knutson *et al.* (1975: 333), Shah *et al.* (2014: 297), Ghorpadé (2014c: 15, 2015: 6), and Mitra *et al.* (2015: 66) listed it.]

Graptomyza flavonotata Brunetti, 1917

Graptomyza flavonotata Brunetti, 1917, Rec. Indian Mus., 13: 86 (♀; 'between Kufri and Phagu, Simla District') [ZSI, Calcutta - examined]

India: HP (Brunetti, 1917, 1923; Knutson *et al.*, 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1917) omitted to mention the sex of this unique holotype, but later (1923) he gave it as a female specimen taken by Annandale and Kemp in May. I saw the type in the ZSI, Calcutta in 1981. However, Knutson *et al.* (1975: 33) gave "♂" which is a mistake. Knutson *et al.* (1975: 333), Shah *et al.* (2014: 297), Ghorpadé (2014c: 15), and Mitra *et al.* (2015: 66) listed it.]

Graptomyza nigripes Brunetti, 1913

Graptomyza ventralis var. *nigripes* Brunetti, 1913, Rec. Indian Mus., 8: 167 (♀; 'Sadiya') [ZSI, Calcutta - examined]

India: UK (Brunetti, 1913a, 1923, Knutson *et al.* 1975, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1913a: 167) described this as a new variety of *ventralis* Wiedemann from Sadiya ['Assam'], based on a female taken in June. Then, Brunetti (1923: 144) listed more specimens of this "variety," which he still maintained as such, from Kasauli, in present Uttarakhand, collected by Barrow in June. Then he gave more specimens from north-east India : Kurseong 5,000 ft., Sadiya, Assam (holotype), Gangtok 6150 ft., Sikkim, above Tura 3500-3900 ft., Garo Hills (now Meghalaya). I examined type material in ZSI, Calcutta in 1981, and made a doubtful note then – "Coorg ?" Knutson *et al.* (1975: 334), Ghorpadé (2014c: 15), and Mitra *et al.* (2015: 66) listed it. See Thompson & Rotheray (1998: 113, 114) for a key to this genus in the Palaearctic.]

Volucella flavoscutellata Sack, 1928

Volucella flavoscutellata Sack, 1928, Entomologists' mon. Mag., 64: 107 (♀; 'Sangcha, N. Kumaon, Himalaya, India') [NHM, London]

Pakiatan ? ; India: JK ?, UK (Sack, 1928, Coe, 1964, Knutson *et al.*, 1975, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, unpubl., Mitra *et al.*, 2015).

[NOTE: This has been misspelt '*flavoscutella*' by me and in other publications by oversight. Sack (1928: 107) described this from a single female taken at Sangcha in northern Kumaon by H.G. Champion in 1924. Richards (1928) wrote that it "was taken in company with the workers of a bumble-bee much resembling it in colour," *Bombus rufofasciatus* Smith, var. *championi* Richards. Coe (1964: 269) included it, correctly as '*flavoscutellata*,' in his key to Oriental *Volucella*. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Knutson *et al.* (1975: 335; as '*flavoscutella*'), Shah *et al.* (2014: 305; as '*flavoscutella*'), Ghorpadé (2014c: 15, as '*flavoscutella*'), and Mitra *et al.* (2015: 66; as '*flavoscutella*') listed it.]

Volucella inanis (Linnaeus, 1758)

Musca inanis Linnaeus, 1758, Syst. Nat., Ed. 10, 1: 595 (LT ♂; 'Europa' = Sweden) [NHM, London]

Afghanistan; Pakistan? (Bańkowska, 1968; Thompson *et al.*, 1982, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bankowska (1968: 196) reported material from E. Afghanistan taken at Achmede Dewane, 2700-2800m, at Peschawurde, 2200m, Bashgul-Tal in Nuristan, and at Pagmangebirge, 2400m, all in July. Peck (1988: 129) listed this from Afghanistan. Ghorpadé (2014d: 7) gave records from Afghanistan. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Thompson *et al.* (1982: 156) gave notes on the Lectotype. Ghorpadé (2014c: 15) listed it.]

Volucella lividiventris Brunetti, 1908

Volucella lividiventris Brunetti, 1908, Rec. Indian Mus., 2: 62 (♂♀; 'Sikkim') [ZSI, Calcutta - examined]

India ? Nepal ? (Brunetti, 1908, 1923, Hervé-Bazin, 1923e, Coe, 1964, Knutson *et al.*, 1975, Peck, 1988, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Brunetti (1908: 62) described this from four specimens from Sikkim in the Indian Museum. In the FAUNA volume (Brunetti, 1923: 152, fig. 33) he repeated the description and gave a figure of the facial profile, stating "Very near *ruficauda*, but distinct." I found two type specimens pinned in Box 16 in the ZSI, Calcutta, in 1981. Hervé-Bazin (1923e: 255) listed it from Sikkim and Tibet, in the "Zone intermédiare." Coe (1964: 269) included it in his key to Oriental *Volucella*. Knutson *et al.* (1975: 335), Ghorpadé (2014c: 15, 2015: 6 ?), and Mitra *et al.* (2015: 66) listed it.]

Volucella peleterii Macquart, 1834

Volucella peleterii Macquart, 1834, Hist. nat. Ins. Dipt., 1: 495 (♂; 'Java') [MNHN, Paris ?]

Volucella signata Brunetti, 1923, *Fauna Brit. India, Dipt.*, 3: 146 (♂; 'above Tura, Garo Hills, 3500-3900 ft, Assam') [ZSI, Calcutta - examined]

Pakistan ?; India: JK (Brunetti, 1923, Hervé-Bazin, 1923e, Knutson *et al.* 1975, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, unpubl., Mitra *et al.*, 2015, Shehzad, unpubl.).

[NOTE: Brunetti (1923: 146) described a new species, *signata*, based on males from the Khasi Hills and it is suggested that this is only a junior synoym of *peleterii* (Knutson *et al.*, 1975: 336), which requires research. This actual identity problem needs to be solved and things are very confusing. I have seen a specimen from Indian Kashmir that appears to be this species. I also saw the type of *signata* in ZSI, Calcutta in 1981. Hervé-Bazin (1923e: 255; as "*Peleterii* Macquart") listed it from the "Zone tropicale." Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan and Shehzad (pers. comm.) infoms me he has specimens from Pakistani Kashmir. Knutson *et al.* (1975: 336), Ghorpadé (2014c: 15), and Mitra *et al.* (2015: 66) listed it.]

Volucella pellucens (Linnaeus, 1758)

Musca pellucens Linnaeus, 1758, Syst. Nat., Ed. 10, p. 595 (LT ♀; 'Europe,' restricted to Sweden by Thompson *et al.*, 1982: 159) [NHM, London]

India: JK, UK (Brunetti, 1915, 1923; Hervé-Bazin, 1923e, Knutson *et al.*, 1975, Thompson *et al.*, 1982, Peck, 1988, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, unpubl., Mitra *et al.*, 2015).

[NOTE: Thompson *et al.* (1982: 159) gave notes on the Lectotype. Brunetti (1915: 226, 1923: 150) gave a description based on one male from Takula, Kumaon District, W. Himalayas in the Forest Zoologist's collection. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Knutson *et al.* (1975: 336), Shah *et al.* (2014: 305), Ghorpadé (2014c: 15), and Mitra *et al.* (2015: 66) listed it.]

Volucella ruficauda Brunetti, 1907

Volucella ruficauda Brunetti, 1907, Rec. Indian Mus., 1: Pl. xi, fig. 13; Rec. Indian Mus., 2: 61 (♂; 'Sikkim') [ZSI, Calcutta - examined]

Pakistan ?; India: JK (Hervé-Bazin, 1923e, Coe, 1964, Knutson *et al.*, 1975, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c, unpubl., Mitra *et al.*, 2015, Shehzad, unpubl.)

[NOTE: Brunetti (1907b: Pl. XI, fig. 13; 1908: 61-62; 1923: 152) described this based on several specimens in the Indian Museum from Sikkim. I found two type specimens pinned in Box 16 in theZSI, Calcutta, in 1981. Hervé-Bazin (1923e: 255) listed it from Sikkim in the "Zone intermédiare." Coe (1964: 269) included it in his key to Oriental *Volucella*. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan and Shehzad (*pers. comm.*) infoms me he has specimens from Pakistani Kashmir. Knutson *et al.* (1975: 336), Ghorpadé (2014c: 15), and Mitra *et al.* (2015: 66) listed it.]

Volucella varipila Coe, 1964

Volucella varipila Coe, 1964, Bull. Br. Mus. (Nat. Hist.), Ent., 15(8): 268 (♂; 'East Nepal, Khumbu, Khumdzung, c. 12,700 ft.') [ZSBS, Munich]

Pakistan ?; India: JK; Nepal (Coe, 1964, Kapoor *et al.*, 1979, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: Coe (1964: 269) described this based on specimens taken at Khumbu, Khumdzung in east Nepal in June-July, and gave a key to Oriental species of *Volucella*, besides mentioning a male of this species taken at Killanmarg [Indian Kashmir], 10,500 ft., in July 1932 by T. B. Fletcher, now in BMNH, London. Kapoor *et al.* (1979: 63) listed this from Nepal. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Knutson *et al.* (1975: 334), Shah *et al.* (2014: 305), Ghorpadé (2014c: 15), and Mitra *et al.* (2015: 66) listed it.]

Volucella zonaria (Poda, 1761)

Conops zonaria Poda, 1761, Insect. Mus. Graecensis, p. 118 (sex ?; 'ad Graecium' = environs of Graz, Austria) [?]

Afghanistan; Pakistan ? (Hervé-Bazin, 1923e, Sack, 1932b, Bańkowska, 1968, 1969, Peck, 1988, Thompson & Rotheray, 1998, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d,e).

[NOTE: Bańkowska (1968, 1969) examined specimens from E. Afghanistan taken at Achmede Dewane, 2700-2800m, at Peschawurde, 2200m, Bashgul-Tal in Nuristan, and at Pagmangebirge, 2400m, all in July, and at Kabul in June. Ghorpadé (2014d: 7) gave records from Afghanistan. Ghorpadé & Shehzad (2013: 18) thought it possible in Pakistan. Hervé-Bazin (1923e: 255) listed it from "Perse" [= Iran] in his "Zone paléarctique." Ghorpadé (2014c: 15) listed it. See also Sack (1932b: 240) and Thompson & Rotheray (1998: 113) for discussion and key to this genus in the Palaearctic.]

Subfamily SYRPHINAE

Tribe Bacchini

Baccha maculata Walker, 1852

Baccha maculata Walker, 1852, Insecta Saundersiana, 3: 223 (♂; 'East Indies') [NHM, London]

Baccha austeni de Meijere, 1908, Tijdschr. Ent., 51: 325 (♂♀; 'Gunung Salak, nr Buitenzorg (Bogor), Java') [ZMA, Amsterdam]

Baccha tenera de Meijere, 1908, Tijdschr. Ent., 51: 325 (♂♀; 'Tankuban Prahu, Java') [ZMA, Amsterdam]

Baccha eronis Curran, 1928, J. Fed. Malay St. Mus., 14: 248 (♂; 'Lubok Tamang, 3500 ft, Pahang') [NHM. London]

India: HP, UK; Nepal (Brunetti, 1908, 1917, 1923, Curran, 1928, Coe, 1964, Knutson *et al.*, 1975, Peck, 1988, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015).

[NOTE: Brunetti (1907b: Pl. XI, fig. 6; 1908: 51) described this based on a single female taken at Bhim Tal, 4500 ft., in Kumaon, Lower Himalayas. He also took specimens at Kobe in Japan and at Darjiling and Lucknow of what he considered to be either the same species or "may be two additional new species." Later (Brunetti, 1917: 83) he mentioned more specimens of this species (as '*Bacha*', in error or *lapsus calami* ?) taken between Kufri to Phagu on the Simla Hills in May. In his FAUNA volume Brunetti (1923: 119-120, fig. 22) he gave a description and figure of wing and mentioned several specimens from the Simla Hills and Mussoorie, besides NE. India, and made his *tinctipennis* a synonym, of which he was certain (but see below). Brunetti (1923: 113-127) had also dealt with a dozen species of "*Baccha*" which also included what are now some *Allobaccha* or *Asiobaccha* and also a *Spheginobaccha* of the Microdontinae ! Curran (1928: 244- 256; see for notes) also dealt with some nine Malayan species but was the first to separate *Allobaccha* (p. 251) as a new 'subgenus.' He placed only *virtuosa* Curran, *eronis* Curran, *nigricoxa* Curran, and d*ispar* Walker in the 'subgenus' *Baccha* Fabricius, with bare humeri. In the Oriental Syrphidae Catalog (Knutson *et al.* 1975) only *virtuosa* was retained in *Baccha s str.*, and *eronis* made a synonym of *maculata* Walker. '*Baccha*' *dispar* and *nigricoxa* were placed in Curran's new 'subgenus' *Allobaccha* (with pubescent humeri) but as maybe needing revision. In those times predacious syrphids with a petiolate abdomen were all lumped as *Baccha* but are now separated correctly in different genera. See Vockeroth (1969: 11-16) for a discussion of previous classifications and his classical revision of the tribe Syrphini. This work had revolutionized Syrphini classification and nomenclature and put me myself on the path to my own careful revisionary work on Indian subcontinent and other east Orienal Syrphini for my doctoral research, with Vockeroth's cooperative specialist guidance and that of Chris Thompson and Lloyd Knutson as well, ever since I had begun work as a postgraduate researcher in 1973 (see also Ghorpadé, 1994, and other papers of mine cited in the references below).

I found '*Baccha maculata*' to actually be a "lumped" species. Knutson *et al.* (1975: 323) placed the above three Oriental species in synonymy as synonyms, which needs clarification and confirmation, after comparing types. These synonymised Indian species are not conspecific, as discussed below, *q.v*. Knutson *et al.* (1975: 323), Peck (1988: 55), Shah *et al.* (2014: 290), Ghorpadé, 2014c: 15, 2015: 6), and Mitra *et al.* (2015: 66) listed this species.]

[SPECIES INCERTAE SEDIS :

Baccha plumbicincta Brunetti, 1915

Baccha plumbicincta Brunetti, 1907, Rec. Indian Mus., 11: 222 (♀; 'Cherrapunji, Assam ') [ZSI, Calcutta - examined]

India: HP, UK (Brunetti, 1908, 1917, 1923, Curran, 1928, Knutson *et al.*, 1975, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: This is a north-east Indian species but included here as another example of a good *Baccha s. str.* species listed as an 'unplaced species of *Baccha*' by Knutson *et al.* (1975: 324). Was described based on a single female from Cherrapunji 4,400 ft., now in Meghalaya. I examined the type of this species in ZSI (Calcutta), a ♀ labeled " Baccha plumbicincta Brun. Type ♀, det. Brun. 1923 / Cherrapunji, Assam, 4400 ft., 2-8.x.14, S.W. Kemp / 1982/HI," and I had then noted "Definitely a *Baccha s. str.*, *maculata* group. T1 all black; abdomen a little broad for a *Baccha*, black; grey, narrow transverse bands, facial and antennal tubercle not developed, antennae brownish black, pleurae and legs all yellow, tb3 with brown median ring." Ghorpadé (2014c: 15) included this as a good species in his Check-list, with type label data., *q.v*. Knutson *et al.* (1975: 324), and Mitra *et al.* (2015: 66) listed it.] **]**

Baccha tinctipennis Brunetti, 1907

Baccha tinctipennis Brunetti, 1907, Rec. Indian Mus., 1: Pl. XI, Fig. 6; 1908, *ibid*., 2: 51 (♀; 'Bhim Tal, 4,500 ft., Kumaon, Lower Himalayas') [ZSI, Calcutta - examined]; Brunetti, 1917, Rec. Indian Mus., 13: 83 (as "*Bacha*")

India: HP, UK (Brunetti, 1908, 1917, 1923, Curran, 1928, Knutson *et al.*, 1975, Shah *et al.*, 2014).

[NOTE: Described based on a single female from the Kumaon Himalaya and identified as this species from Kufri to Phagu, Simla Himalaya, taken in May 1916. Brunetti (1923: 119-120) synonymised this under *maculata* Walker writing that this synonymy was "certain." Curran (1928: 249) corrected Brunetti's (1923: 120) notes on the length of its body and wings as given by Walker. I had examined the type of this species in ZSI (Calcutta), a ♀ labeled "TYPE / Baccha tinctipennis Brunetti TYPE ♀ / BHIM TAL, 4500 ft., KUMAON, 22-27-ix-06, N.A. ' 970/15" and had noted "Antennae all yellow, petiole of DC < petiole of S4 cell, legs all yellow, T1 all white, T2 all black." Ghorpadé (2014c: 15) omitted to list this as a good species in his Check-list, and this was an error. Knutson *et al.* (1975: 323), and Shah *et al.* (2014: 290) listed it as a synonym of *maculata* Walker. See also Sack (1932b: 216) and Thompson & Rotheray (1998: 97) for discussion and key to this genus in the Palaearctic.]

Baccha Unnamed sp. 1 [undet.]

Nepal (Coe, 1964, Ghorpadé, 2014c, 2015).

[NOTE: Coe (1964: 257) listed a "*Baccha* sp. near *maculata* Walker, 1 ♂" from above Sangu, c. 6,300 ft., Taplejung District, from old mixed forest in eastern Nepal in October 1961. Perhaps it could be an unnamed and undescribed species ? Included here for completeness of *Baccha maculata* group species records, though this is an Oriental element.]

Tribe Melanostomini

Melanostoma melanoides Lambeck & Kiauta, 1973

Melanostoma orientale (Wiedemann, 1824) form *melanoides* Wiedemann, 1973, Ent. Bericht., 33: 74 (♀; 'Lughla, 2800m, Nepal') [NCABR, Utrecht]

India: JK; Nepal (Lambeck & Kiauta, 1973, Lambeck & van Brink, 1973, Ghorpadé, 2014c, 2015)

[NOTE: Lambeck & Kiauta (1973: 74-75) found a female in Lughla (Nepal), "captured in the vicinity of running water," which looked melanistic and had deviant characters from *orientale* which made them give this a new name, even if just as a "form" of *orientale* Wied. In the same year Lambeck & van Brink (1973: 92) reported on a couple of males from Kashmir which they wrote "are apparently melanistic and completely devoid of yellow markings on the abdominal tergites, thus resembling the female specimen from Nepal referred to as form *melanoides*" by Lambeck & Kiauta (1973). They also reported some other specimens in their collection "from southern India (Anamalai [*sic*] Hills near Coimbat0re, 1050m) which have even darker legs; those specimens have tergite 2 completely black, but have distinct pairs of yellow spots on tergites 3 and 4 and may belong to *M. ceylonense* de Meijere, 1908 recorded from mountainous areas in Ceylon . . ." I have similar specimens of a 'melanistic' *Melanostoma* which I collected on the Nilgiri Hills in Tamil Nadu at Longwood Sholah (*ca* 2000m) and in my forthcoming revision of Oriental *Melanostoma* species will give it a name, either already published or a new species. Lambeck & van Brink (1973: 92) had concluded "The oriental species of *Melanostoma* are in need of a revision. However in order to solve the pending problems concerning the identity of some taxa, long series of material from different localities will have to be taken into consideration." Ghorpadé (2014c: 15, 2015: 6) listed it.]

Melanostoma mellinum (Linnaeus, 1758)

Musca mellina Linnaeus, 1758, *Syst. Nat*., Ed. 10, 1: 594 (♀; 'Sweden' *vide* Thompson *et al.*, 1982: 157) [LS, NHM, London]

Scaeva dubia Zetterstedt, 1838, Isis (Oken's), 1: 37 (LT ♀; 'Juckasjärvi, Sweden' design., by Andersson, 1970, Ent. Scand, 1: 239) [MZ, Lund]; Haarto & Ståhls, 2014: 105 (as *n. syn*.)

Melanostoma inornatum Matsumura, 1919, Ent. Mag., Kyot0, 3(3-4): 132 (sex ?; 'Hokkaido, Sapporo') [?]

Melanostoma ochiainum Matsumura, 1919, Ent. Mag., Kyot0, 3(3-4): 136 (sex ?; 'Saghalien, Ochiai') [?]

Melanostoma ogasawarae Matsumura, 1919, Ent. Mag., Kyot0, 3(3-4): 137 (sex ?; 'Honshu, Iwate') [?]

Melanostoma interruptum Matsumura, 1919, Ent. Mag., Kyot0, 3(3-4): 138 (sex ?; 'Hokkaido, Sapporo and Honshu, Iwate') [?]

Melanostoma sachalinense Matsumura, 1919, Ent. Mag., Kyot0, 3(3-4): 139 (sex ?; 'Saghalien, Toyohara') [?]

Afghanistan; India: HP ? (Brunetti, 1907a, 1913, 1915, 1917, Sack, 1922, Bańkowska, 1968, 1969, Andersson, 1970, Lambeck & van Brink, 1973, Thompson *et al*., 1982, Datta & Chakraborti, 1984, Peck, 1988, MacGowan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Haarto & Ståhls, 2014, Ghorpadé, 2014c,d, Mitra *et al*., 2015).

[NOTE: Knutson *et al.* (1975: 325) did not include this in their Oriental Catalog. It has been confirmed from Afghanistan in March and May to July by Bańkowska (1968, see also Ghorpadé, 2014e) but not yet recorded from Pakistan. Brunetti (1907a: 168) determined 2 ♂ from Theog and Simla as this species, and then (Brunetti, 1913: 164) called it a "common and widely distributed Palaearctic species" and that it was "common in many Himalayan localties." But in 1915 (p. 207-208) he wrote "as regards those supposed to be *mellinum* there is ample room for doubt as to their identity. In fact *mellinum* in typical form may possibly not occur in the East at all, although as it is so abundant throughout the whole of Europe it will be curious if it is not found on the Himalayas." Brunetti (1917: 85) listed *dubium* as distinct and noted that he erroneously recorded it from Matiana. See also MacGowan *et al.*, (1997), and my notes under *Platycheirus albimanus* below. Sack (1922: 259) recorded it from Taiwan. Thompson & Skevington (2014: 109) figure (Fig. 2) treated *M. dubium* and *M. scalare* as distinct and more closely related to each other than either is to *M. mellinum*, which is contrary to the findings of Haarto & Ståhls (2014) who synonymised *dubium* under *mellinum* ! The former also suggested a *Melanostoma*-group (Melanostomines) distinct from a *Baccha*-group (Bacchines), and it appears that a lot of research is still needed to clear all these problems with the tribes Melanostomini (and Bacchini ?) of subfamily Syrphinae.]

Melanostoma orientale (Wiedemann), 1824

Syrphus orientale Wiedemann, 1824, Analecta Ent., p. 36 (♂; 'Ind. Or.') [UZM, Copenhagen ?]

Pakistan; India: CH, HP, JK, PB, UK; Nepal (Brunetti 1915, 1917, 1923, Sack, 1922, Hervé-Bazin, 1924, 1926, Curran, 1930, 1931b, Coe, 1964, Nayar & Nayar, 1965, Siddiqui & Krishnaswamy, 1972, Lambeck & van Brink 1973, 1975a, Ghosh, 1974, Hamid *et al*., 1974, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981b, 2014c,d,e, 2015, unpubl., Mathur 1983, Agarwala *et al*., 1983, Datta & Chakraborti 1984, Awtar Singh *et al*., 1985, Aslamkhan *et al*., 1997, Claussen & Weipert, 2003, Mitra *et al.*, 2004a,b, Parui *et al*., 2006, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Mitra *et al*., 2015).

[NOTE: This again appears to be a 'widespread' but 'lumped' species. Requires careful study of material from the entire area of its supposed distribution. It is a higher altitude and northern latitudes species. Brunetti (1915: 207-208) wrote "However, it seems to me highly probable that *orientale* is not specifically distinct from *mellinum*, a species it is more akin to than *scalare*. The principal alleged difference is the grey-dusted frons and face in *orientale*, but numerous specimens occur in which this is much less conspicuous than usual, thereby closely approximating to *mellinum*. . . The females in *orientale* are more easily recognized by the dust spots on the frons being more closely approximate, so that the vertex and the lower part of the frons are more clearly demarcated, but a near approximation to this is not infrequently met with in *mellinum* ♀." Brunetti (1917: 85) wrote "The specimens originally referred by me to *scalare* are certainly *orientale*, Wied." He gave Theog, Simla and Matiana as localities where this was taken, in April. In 1923 (FAUNA, p. 50) he wrote "Described from a good number of specimens from various sources [including 'Peshawur' in Pakistan, 'various locs.' in Simla and in Naini Tal] . . . Apparently the commonest and most widely distributed species of the genus in the East, occurring throughout all the warm weather in the plains [?] and hills. I am still undecided whether *orientale* is specifically distinct from the common European *mellinum* . . ." Sack (1922: 259, fig. 1) gave a short description of Taiwan specimens and a figure of female head profile of female. Hervé-Bazin (1924: 289) mentioned Brunetti's omission of data in de Meijere (1908, 1911) papers, and then he (Hervé-Bazin, 1926: 62-63) recorded it from Tonkin and Laos and gave notes on its differences from *scalare, mellinum, unittavitatum* [*sic*], *pedium* and *ceylonense*. Curran (1930: 257-258, 1931b: 359) recognized and treated species of *Melanostoma* from the Malay peninsula and north Borneo (Sarawak) [= Malaysia] and provided a key to separate these - *algens* Curran, *gedehensis* de Meijere, *normalis* Curran, *orientale* Wiedemann, *quadrifasciatum* Curran, *talamaui* de Meijere, and *univitattum* Wiedemann. All of these were listed by Knutson *et al.* (1975: 325). Curran (1931b: 358) wrote "I have attempted to prepare a key for the separation of the known species of *Melanostoma* from India and Malaya. However, I have no representatives of two of the species described by de Meijere and the resultant table may prove inadequate in the last two or three couplets. Earlier Curran (1930: 256) had also written "The females of many of the species can only be placed in their proper genera [*Melanostoma* or *Platycheirus*] through familiarity with the species." Coe (1964: 258) included it from Sangu, 6.200 ft., Taplejung District in eastern Nepal "from blooms of *Guizotia abyssinica* . . . and wild cherry" and " from mixed vegetation by stream in deep gully from December to February." I examined 1♂ 8 ♀ in CNC, Ottawa taken from Godavari Botanical Garden, Thankot and Kathmandu in Nepal in May by Amnon Freidberg. Nayar & Nayar (1965: 241) listed it from Agra (U.P.), which is peculiar. Lambeck & van Brink (1973 : 92) took it at Nagin

Lake near Srinagar in Kashmir (India) and made some notes on its identity as being this species "for having the frons and face distinctly pollinose," which as according to Brunetti (1915) "this feature seems to be the most obvious distinction between this species and the palearctic [*sic*] *M. mellinum* (Linnaeus, 1758). They mentioned that their specimens were melanistic and could be *melanoides* (*q.v.*) and that other specimens they have from the Anaimalai Hills in southern India could be *M. ceylonense* de Meijere recorded from the Sri Lanka mountains (*q.v.*). They concluded - "The oriental species of *Melanostoma* are in need of a revision [there are 10 recognised Oriental species (Thompson & Skevington, 2014: 106), but I had put down 11 species + 1 Palaearctic in my Oriental—Papuan Conspectus photocopy]. However in order to solve the pending problems concerning the identity of some taxa, long series of material from different localities will have to be taken into consideration." I have more than 1,500 specimens of *Melanostoma* in my collection and this revision is possible in the near future. Siddiqui & Krishnaswamy (1972: 14) gave it (as '*Melanostoma* sp.') rarely found feeding on *Adelges* spp. in Pakistan and NW. Himalayas, and as a 'casual visitor.' Ghosh (1974: 196) recorded *Lipaphis erysimi* as prey of this species. Hamid *et al.* (1974: 79) noted it on *Acyrthosiphon pisum* in Pakistan, as '*Melanostoma* sp.' Lambeck & van Brink (1975a: 8-10) described karyotypes from specimens taken at Srinagar in Indian Kashmir and concluded "Thus, the specific controversy *orientale* versus *mellinum* seems not to be solved by our karyological information." Then Lambeck & van Brink (1975b: 20) described karyotpes of Nepalese specimens and hinted that their *orientale* specimens from Kashmir and Nepal were probably two different species. Knutson *et al.* (1975: 325) gave its distribution as "throughout Oriental region" in their catalog while Kapoor *et al.* (1985: 54) listed five females from Godavari near Kathmandu in central Nepal, taken in April on *Juniperus* plants. Ghorpadé (1981b: 66) listed *Lipaphis erysimi* as prey at Jullundur (Punjab), citing Rao (1969b) and Ghosh (1974). Mathur (1983: 231) listed it from Jullundur (Punjab, India) where "Very few specimens were collected. The larvae fed on *L. erysimi,*" the mustard and radish aphid. Agarwala *et al.* (1983: 240) give two aphid species as prey in Sikkim in December. Datta & Chakraborti (1984: 241-242) listed many specimens collected in Kashmir (India) on flowers of *Cannabis* sp., *Justicia simplex, Digitaria sanguinalis, Cynodon* sp., *Rubus elipticus, Ammania* sp., *Solanum nigrum, Sida* sp., and *Lantana camara* in September and October. They also reported a *Melanostoma* sp., only females taken in September, also on flowers of *Eleusine indica* and *Chrysanthemum* sp., which they "left for confirmation in future when male specimens will be available for studies," but without any word on differences from *orientale*, unfortunately. Awtar Singh *et al.* (1985: 193) listed this as common from Chandigarh, Dhanas, Pinjore and Kasauli throughout the year on *Calendula* sp., *Chrysanthemum* and grass flowers. Aslamkhan *et al.* (1997) gave it from Pakistan, and Claussen & Weipert (2003) from Nepal. Mitra *et al.* (2004a: 33) mentioned two males from the Kalatop-Khajjiar WLS in Himachal, and as visiting rosy-purple spotted tubular *Digitalis pur* (Scrophulariaceae) flowers at Kalatop, near Dalhousie (Mitra *et al.*, 2004b: 121). Parui *et al.* (2006: 97) cited a male from Nangal, Ropal, Punjab. Shah *et al.* (2014: 298) listed it from Pakistan, and Himachal Pradesh, Jammu & Kashmir and Uttarakhand in "Western Himalaya." Ghorpadé & Shehzad (2013: 9) gave records from Pakistan, and Ghorpadé & Pathania (2014: 7) and Ghorpadé (2014e: 7) from the Punjab Doab. Finally, I (Ghorpadé, 2014c,e) listed it from Nauni in Himachal and examined specimens from Chandigarh taken on *Nasturtium* flowers in the DZPU collection, but this species was not recorded from Afghanistan or Pakistan (Ghorpadé & Shehzad, 2013, Ghorpadé, 2014d). Shah *et al.* (2014: 298) and Mitra *et al.* (2015: 66) listed it. See also my notes under *melanoides* and *scalare* (*loc. cit.*).]

Melanostoma pedium (Walker, 1852)
Syrphus pedius Walker, 1852, *Insecta Saundersiana*, Dipt., 3: 234 (♂; 'East Indies') [NHM, London]
Syrphus cothonea 1852, *Insecta Saundersiana*, Dipt., 3: 235 (♀; 'East Indies') [NHM, London]

India: HP, UK (Brunetti 1923, Knutson *et al.* 1975, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 52) listed this as a separate species but wrote : "A species requiring confirmation as to its validity." He also treated *cothonea* Walker as a synonym. A revision needs to decide the status of this name and even though I (Ghorpadé, 2014c: 15) recognised it and listed it from Himachal Pradesh, Uttarakhand, West Bengal and Karnataka (!), these were from published data and cannot be considered infallible. The type locality is "East Indies" and could mean either the Indonesian archipelago or even NE. India. Knutson *et al.* (1975: 325) listed it as '*pedius*' in their catalogue and Shah *et al.* (2014: 298) gave only Himachal Pradesh and Java and listed it as a separate species. Mitra *et al.* (2015: 66) also listed it.]

Melanostoma scalare (Fabricius, 1794)
Syrphus scalare Fabricius, 1794, Ent. Syst., 4: 308 (sex ?; 'Kiliae' = Kiel, Denmark) [UZM, Copenhagen]

Afghanistan; Pakistan ?; Nepal ? (Brunetti 1907a, 1915, 1917, Sack, 1932, Bańkowska, 1969, Knutson *et al.* 1975, Peck, 1988, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d, 2015, Mitra *et al.*, 2015).

[NOTE: Brunetti (1907a: 168) had written "A series of thirteen females from Simla, Theog and Matiana also appear to be the true *scalare*." But he later (Brunetti, 1915: 207) corrected himself - "examples referred to *scalare* are only *orientale* . . ." Brunetti (1917: 85) then wrote "The specimens originally referred by me to *scalare* are certainly *orientale*, Wied." He gave Theog, Simla and Matiana as localities where this was taken, in April. However, Bańkowska (1969: 282-283), and Ghorpadé, 2014d: 8) listed a female from northern Afghanistan, Herat Province, taken in September. Peck (1988: 67) also gave Afghanistan and the Oriental region (!). Sack (1932: 29, fig. 2) reported specimens from Lombok and Flores (Indonesia), gave a brief description and a figure of the female abdomen. Ghorpadé & Shehzad (2013: 19) listed it as possible in Pakistan. Mitra *et al.* (2015: 66) also listed it. See also my notes under *ceylonense* below.]

Melanostoma univittatum (Wiedemann, 1824)
Syrphus univittatus Wiedemann, 1824, Analecta Ent., p, 36 (♂; 'Ind. Or.') [UZM, Copenhagen]
Syrphus planifacies Macquart, 1848, Dipt. Exot., Suppl., 3: 43 (♀; 'Java') [MNHN, Paris]
Syrphus cyathifer Walker, 1856, J. Linn. Soc. Lond., 1: 125 (♀; 'Sarawak, Borneo) [NHM, London]

India: BI, HP, UK; Nepal (Brunetti, 1913a, 1915, 1923, Sack, 1922, 1932a,b, Hervé-Bazin, 1926, Curran, 1930, 1931a,b, Coe, 1964, Nayar & Nayar, 1965, Nayar, 1968a, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Thompson & Rotheray, 1998, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, unpubl., Mitra *et al.*, 2015).

[NOTE: Brunetti (1915: 208-209) wrote in some detail about this species which Wiedemann had described based only on a male, since no females were described until then. He went on "As regards *planifacies*, Macq. I think it my also be regarded as the ♀ of *univittatum*. The sole disagreement in Macquart's description is the colour of the thorax and frons, which he says is greenish black." Specimens in the "Indian Museum" (= ZSI, Calcutta) had them aeneous black and some exhibited "a distinctly greenish tinge." The males came from many localities including Kathmandu and the females from Bhim Tal. So he ended "the localities of both sexes thus supporting the view that they are the same species. Its range of distribution is evidently very wide." Brunetti (1923: 50-51) gave a description and figure of head profile, listing it from many localities including "Katmandu, Nepal, Bhim Tal, 4450 ft., Pusa, not uncommon, and three rather small specimens of *planifacies*, Macq., from Dehra Dun. Sack (1922: 260, fig.2) described *M. planifacies* Macq. and illustrated head profile of both sexes. Curran (1928: 257) gave a description and wrote that it was "Readily distinguished from all other species by the absence of a distinct facial tubercle." Sack (1922, 1932: 229) recorded it from Taiwan, Lombok, and Flores (as '*planifacies*'). Hervé-Bazin (1926: 62) recorded it from 'Annam' and Laos. Curran (1931a) gave localities for this species in Malaya and then (Curran 1931b: 358-359) gave a key to *Melanostoma* species from "India and Malaya" and separated *univittatum* as having a "Face with only a trace of a tubercle." Nayar & Nayar (1965: 241) listed it from Agra. Nayar (1968a: 126) mentioned a male from Dalhausie—Khajjair [*sic*] Road, 2038-2129m taken in September which "extends its range to the foothills of N.W. Himalaya," Knutson *et al.* (1975: 325) gave its distribution as "throughout S.E. Asia." Kapoor *et al.* (1979: 61) listed it from eastern Nepal, based on Coe (1964: 258) who mentioned a female from River Sabhaya, c. 1,800 ft., below Tumlingtar, Arun Valley. I examined one female in CNC, Ottawa taken from the Godavari Botanical Garden in Nepal in May by Amnon Freidberg. Shah *et al.* (2014: 298) listed this in their paper on syrphids of Western Himalaya, and Mitra *et al.* (2015: 66) also listed it. See also Sack (1932b: 157) and Thompson & Rotheray (1998: 105) for discussion and key to this genus in the Palaearctic. See also Dirickx (2001) for notes on this genus.]

Melanostoma Unnamed sp. 1 [undet.]
India: HP (Brunetti, 1915).

[NOTE: Brunetti (1915: 208, pl. xiii, fig. 3) wrote in some detail about "an apparently undescribed form . . . with a facial profile intermediate between *orientale* and *univitttatum*, in which the central bump though distinct is much less conspicuous than in *orientale* . . ." and "by the 1st pair of abdominal spots being larger than in *orientale*, oval, and carried over the side of the 2nd segment below the base. Also the hind femora are all yellow, the hind tibiae bearing only an indistinct median dark band which is frequently absent."]

Melanostoma Unnamed sp. 2 [undet.]
India: JK (Datta & Chakraborti, 1984).

[NOTE: Datta & Chakraborti (1984: 242) listed an unnamed species which they "left for confirmation in future when male specimens will be available for studies." See my notes under *orientale*, *op. cit.*]

Melanostoma Unnamed sp. 3 [undet.]
Pakistan (Hamid *et al.*, 1974, Ghorpade, 1981b)

[NOTE: Hamid *et al.* (1974) recorded *Acyrthosiphon pisum* as prey in Pakistan for an undetermined *Melanostoma* sp., and this was cited by Ghorpadé (1981b: 66).]

[SPECIES INCERTAE SEDIS

Melanostoma ceylonense (de Meijere, 1911)

Melanostoma ceylonense de Meijere, 1911, Tijdschr. Ent., 54: 348; 51: 312 (♂♀; 'Pattipola, 2000m, Ceylon') [ZMA. Amsterdam]

Sri Lanka (de Meijere, 1908, 1911, Keiser, 1958, Knutson *et al*., 1975, Ghorpadé, 2014c).

[NOTE: de Meijere named this *ceylonense* in 1911 after placing it as *orientale* Wiedemann earlier in 1908. It is mentioned in this paper as this is considered being necessary (*loc. cit*.). Chris Thompson (*in litt*.) in a manuscript of our Oriental—Papuan Syrphidae Conspectus (Ghorpa dé, *in prep*.) listed *ceylonense* as a synonym of *scalare* (F.), but this requires more study and confirmation or correction. Knutson *et al.* (1975: 325) had also earlier listed it as a synonym of *scalare* (Fabricius, 1794). In a recent paper Thompson & Skevington (2014) presented the latest understanding of the phylogeny of what they recognized as Bacchini, "as a working and possibly paraphyletic group with Melanostomini as a well supported monophyletic group." See also Vockeroth (1969: 14).] **]**

Platycheirus albimanus (Fabricius, 1781)

Syrphus albimanus Fabricius, 1781, Spec. Insect, 2: 434 (sex ?; 'Angliae' = England) [BMNH, London]

India: HP, JK; Nepal (Brunetti 1907a, 1908, 1915, 1917, 1923, Singh, 1953, Coe, 1964, Lambeck & van Brink 1973, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Peck, 1988, Vockeroth, 1990, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, 2015, Mitra *et al*., 2015).

[NOTE: Brunetti (1907a: 169, 1908: 53) listed four females from Theog and Matiana in the Simla Hills, 8,000 ft., "taken by Dr. Annandale between 27-iv-07 and 3-v-07." Brunetti (1915: 207) corrected his mistake of *M. dubium* which "proves on closer examination to be only a melanoid *Platychirus* [*sic*] *albimanus*, F." Brunetti (1917: 84) listed it from Theog and Matiana near Simla and wrote "A very common and widely distributed European species. The melanoid or nearly wholly black form is not rare and one such specimen was recorded erroneously by me as *Melanostoma dubium*, Zett." Brunetti (1923: 54-55, Pl. I, fig. 13) reproduced an abbreviated description from Verrall's *British Flies* and gave its European synonymy. Singh (1953) recorded a species of this genus as useful pollinators. Coe (1964: 258) recorded this from Thangpoche, c. 13,000 ft, Khumbu in Nepal taken in July [ZSBS, Munich], and Kapoor *et al.* (1979: 61) listed it from Nepal. Lambeck & van Brink (1973: 92) reported it from Nagin Lake in Kashmir. Vockeroth (1990: 680) gave notes on the holotype. Knutson *et al.* (1975: 325), Kapoor *et al.* (1979), Peck(1988: 68), Ghorpadé & Shehzad (2013: 10), Shah *et al.* (2014: 301), Ghorpadé (2014c: 16) and Mitra *et al.* (2015: 66) listed it.

Thompson (1972) described a new species of *Platycheirus* from New Zealand whose type series were reared from larvae which were "collected from the nests of *Huberia striata* Smith (Formicidae)." Bur these nests with larvae "did not contain any fulgorids or coccids which have been reported as being 'farmed' by *Huberia striata*." The explanation Thompson gave was "Most myrmecophilous syrphids belong to the subfamily Microdontinae (Thompson, 1969) but the puparia of a syrphine species (*Xanthogramma pedissequum* (Harris)] and a chrysotoxine species (*Chrysotoxum verralli* Collin) have been found in nests of *Lasius niger* (Linne) in England (Dixon, 1960). Since none of the above mentioned groups are known from New Zealand, it is not surprising to find a different syrphid genus occupying the ant-nest habitat in New Zealand," See also Rotheray *et al.* (1996) for notes on myrmecophilous syrphids. Patil *et al.* (2013) reported an Indian *Chrysotoxum* species from Karnataka whose larvae were found preying on sugarcane root aphids.]

Platycheirus altotibeticus Nielsen, 2001

Platycheirus altotibeticus Nielsen, 2001, Dipteron, 4(1): 11 (♂; 'Lamna La, 17,000 ft., Tibet') [NHM, London]

Nepal; China: Tibet (Nielsen, 2001, Ghorpadé, 2014c, 2015)

[NOTE: Nielsen (2001: 11-13, fig. 1a-g) described it based on a single male taken at Lamna La, 17,000 ft., on the northern Chinese slope of Mt Everest, taken by Maj. R.W.G. Hingston, on the British Museum's Everest Expedition in 1923-1924. It resembles *P. ambiguus* (Fallén) but differs in fore tibia and tarsi and in frontal femur pile. Ghorpadé (2014c: 16, 2015: 6) listed it.]

Platycheirus ambiguus (Fallén, 1817)

Scaeva ambigua Fallén, 1817, *Syrphici Sveciae*, p. 47 (♀; 'Westrogothia' = prov. Vastergötland, Sweden) [NR, Stockholm ?]

Afghanistan; Pakistan; India: HP, JK (Brunetti, 1908, 1915, 1917, 1923, Sack, 1935, van Doesburg, 1955, Bańkowska, 1968, Knutson *et al*., 1975, Peck, 1988, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d, Mitra *et al*., 2015)

[NOTE: Brunetti (1908: 53) mentioned Dr. Annandale taking specimens of *Melanostoma* [*sic*] *ambiguum* Fln, at Matiana (8,000 feet) between 27-iv-07 and 3-v-07. Brunetti (1915: 207) again mentioned this as a male from Matiana being "truly identified, agreeing in every particular with Verrall's very faithful description . . ." Brunetti (1917: 85) mentioned " A single ♂, undoubtedly of this species, from Matiana" in his Diptera of the Simla District paper. Then he (Brunetti, 1923: 47-48) described in full this male in the FAUNA volume and stated "*M. ambiguum* very closely resembles the ♂ of *Platychirus* [*sic*] *albimanus*, but is known by the undilated front tibiae." He goes on to state that his description does not quite agree with Verrall's description of British specimens, "as the peculiar, curved single hair towards the tip of the front femora, in conjunction with the equally unusual yellow thin bristles below the front and middle femora, infallibly distinguish it from all others except *dubium*, Zett. . ." Sack (1935) and van Doesburg (1955) recorded it from the Karakoram mountains in undivided Kashmir, as a *Melanostoma* (!), and Bańkowska (1968: 202) examined one female of this species (as a *Melanostoma*) from eastern Afghanistan at Peschawurdo, 2200m, Bashgul-Tal in Nuristan, taken in July. Knutson *et al.* (1975: 325) gave it from India (Himachal Pradesh). Peck (1988: 69) listed it from Afghanistan and Oriental Region. Shah *et al.* (2014: 301) listed this from Himachal and Kashmir, as did Ghorpadé & Shehzad (2013: 19) from Pakistan. Ghorpadé (2014d,e) listed this from Afghanistan and from Himachal and Kashmir in India. Mitra *et al.* (2015: 66) listed it.]

Platycheirus angustatus (Zetterstedt, 1843)

Scaeva angustata Zetterstedt, 1843, Dipt. Scand., 2: 762 (sex ?; 'per Scandinaviam,' 'in Scania ad Lund,' 'in Ostrogothis ad Lärketorp,' 'ad Gusum,' 'in Gottlandia in Furillen & Östergarn,' 'in Lapponia Umensi as Wilhelmina & Frederica,' 'e Dania' = Sweden and Denmark) [ZIUL, Lund ?]

Pakistan ?; India: JK (Sack, 1935, van Doesburg, 1955, Lambeck & van Brink, 1973, Peck, 1988, Vockeroth, 1990, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Sack (1935) reported a male from the Karakorum region in then undivided Kashmir. Then van Doesburg (1955: 47) and Lambeck & van Brink (1973: 88) mentioned this record from here, as did Shah *et al.* (2014: 301) and Ghorpadé (2014c: 16). Vockeroth (1990: 683) gave notes on the types and type locality. Ghorpadé & Shehzad (2013: 19) thought it possible in Pakistan. Peck (1988: 69), Shah *et al.* (2014: 301), and Mitra *et al.* (2015: 66) listed it.]

Platycheirus clypeatus (Meigen, 1822)

Syrphus clypeatus Meigen, 1822, Syst. Beschr., 3: 335 (sex ?; ' ? = Stolberg bear Aachen ?) [MNHN, Paris ?]

Afghanistan; Pakistan ? (Bańkowska, 1968, Peck, 1988, Vockeroth, 1990, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 202) reported a male from eastern Afghanistan taken in July at Achmede Dewane, 2700m, Bashgul-Tal, in Nuristan. Vockeroth (1990: 686) gave notes on the type and type locality. Ghorpadé & Shehzad (2013: 19) thought it possible in Pakistan. Vockeroth (1990: 671, 685-686, fig. 38, map 6) included it in a key to Nearctic species of this genus. Peck (1988: 70), and Ghorpadé (2014c: 16, 2015: 6) listed it from Afghanistan.]

Platycheirus cryophilus Nielsen, 2007

Platycheirus cryophilus Nielsen, 2007, Volucella, 8: 95 (♂; 'Tehrong Valley near Siachen Glacier') [ZM, Amsterdam]

Pakistan ?; India: JK ? (Nielsen 2007, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al*., 2015).

[NOTE: Nielsen curiously does not specify which country (India or Pakistan) the type locality, Tehrong Valley, belongs to. Siachen (not "Siachien," error) Glacier is located on the LOC (Line of Control) now operating as the acting boundary, cease-fire line, between India and Pakistan. Shah *et al.* (2014: 302) wrote "India: Jammu & Kashmir." Ghorpadé & Shehzad (2013: 19), Ghorpadé (2014c: 16) and Mitra *et al.* (2015: 66) listed it.]

Platycheirus discimanus Loew, 1871

Platychirus discimanus Loew, 1871, Beschr. europ. Dipt., 2: 227 (LT ♂; 'Asch in Böhmen' = Aš, Czechoslovakia) [ZMHU, Berlin]

Afghanistan (Nielsen, 1972, Peck, 1988, Vockeroth, 1990, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Vockeroth (1990: 667, 691-692, fig, 12, map 8) gave notes on the Lectotype and type locality (see also Nielsen, 1972), and included it in a key to Nearctic species of this genus. Peck (1988: 70), Ghorpadé & Shehzad (2013: 19), and Ghorpadé (2014c: 16, 2014d: 8) listed it.]

Platycheirus formosanus Shiraki, 1930

Platycheirus formosanus Shiraki, 1930, Mem. Fac. Agric. Taihoku imp. Univ., 1: 325 (♂♀; 'Arisan, Royeichi, Shukoran, Taiheisan, Nitakayama, Rantaisan, Asahi, Disuikutsu, Musha, Funkiko, Hassensan, Kanko' inTaiwan) [NIAS, Tsukuba ?]

India: HP, UK (Ghorpadé, unpubl.)

[NOTE: An unpublished manuscript of mine on Oriental *Platycheirus* (Ghorpadé, unpubl.) mentioned 5♂♀ specimens studied and identified as this species. Two female specimens were each taken from Manali, 1828m and Mussoorie, 2100m, in June and October. I had also seen 2♂ 1♀ from the Philippines, Mountain Province, in AMNH, New York, and USNM, Washington, DC. These are now in USNM, Washington DC, given by me to Chris Thompson in 1982.]

Platycheirus himalayensis Brunetti, 1915

Platychirus manicatus var. *himalayensis* Brunetti, 1915, Rec. Indian Mus., 11: 209 (♂; 'Garhwal') [ZSI, Calcutta - examined]

India: UK; Nepal (Brunetti, 1915, 1923, Coe, 1964, Knutson *et al*., 1975, Kapoor *et al*., 1979, Claussen & Weipert, 2003, Shah *et al*., 2014, Ghorpadé, 2014c, unpubl., Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 209) decided to "rank [this] as at least a very distinct variety, if not a distinct species." He gave what he felt were distinctive characters of 3 males that were larger than *manicatus* and retained this status in his FAUNA volume (Brunetti, 1923: 53-54). Knutson *et al.* (1975: 326) gave it a new status as a full species in their Catalog. Coe (1964: 258) reported a male and female taken at Thangpoche, 13,000 ft., Khumbu in July in eastern Nepal. This was cited by Kapoor *et al.* (1979: 61) in their Nepal Check List. Claussen & Weipert (2003: 363-354) reported several specimens from western Nepal. I examined what is the holotype male in ZSI (Calcutta), with left wing partly broken, labeled "9829/H2 / TYPE ♂ / Onari, 11000 ft., Garhwal, W. Himalayas, 20-V-14, Tytler / Platy. manicatus var. himalayensis Brun. ♂, det. Brun. 1923" and noted "Very large *Platycheirus*, see FBI figs & descr., tubercle and mouth ant. border black." The other two males were not found by me in 1981 and are probably in the BMNH, London ? Shah *et al.* (2014: 302), Ghorpadé (2014c: 16, 2015: 6) and Mitra *et al.* (2015: 66) listed it. An unpublished manuscript of mine on Oriental *Platycheirus* (Ghorpadé,, unpubl.) mentions 13♂♀ specimens studied and placed as this species, one ♂ taken in the Valley of Flowers, Garhwal, by Prof. V.K. Gupta in June and all other 5♂ 7♀ being on loan from the CNC, Ottawa, and collected in Nepal also in June by the Canadian Nepal Expedition in 1967. These specimens that were with me are now in the USNM, Washington DC, given to Chris Thompson in 1982 when I arrived in North America, as a Smithsonian Postdoctoral Fellow.]

Platycheirus kalatopensis Nayar, 1968 **n. comb.**

Chilosia [*sic*] *kalatopensis* Nayar, 1968b: 129 (♀; Kalatop-Lakkarmandi bridal path, India') [ZSI, Calcutta - examined]

India: HP (Nayar, 1968a, Knutson *et al*., 1975, Shah *et al*., 2014, Ghorpadé, 2014c, Mitra et al., 2015).

[NOTE: In his original description, Nayar (1968b: 129) mentioned only a single female holotype but I found a female paratype also in ZSI (Calcutta) when I checked the Nayar types there in 1981. The holotype ♀ was labeled : "HOLOTYPE [red card] / Chilosia kalatopensis sp. nov., Det. J.L. Nayar / Kalatop, Lakkarmandi bridal path, 8000 ft. / Coll. J.L. Nayar, 29.IX.1962 / 3728/H6." The antennae were lost and the abdomen glued on pith. The Paratype ♀ was labelled : "PARTATYPE / Chilosia kalatopensis sp. nov., Det. J.L.Nayar / Kalatop—L. Mandi, 29.IX.'62 / 3729/H6." Its head was pinned on a piece of pith. I had also made the following notes : "Probably a *Platycheirus*, black, incl. face, with white pollinose abd. spots. No facial groove, next to eyes, as in *Cheilosia*. Legs all black, yellow distal tip of femora, base of tibiae." Figures I made of these specimens, of lateral view of head and of abdomen, show a prominent facial tubercle, but the oral portion not produced as in Plate I, fig. 15 (Brunetti, 1923), and the abdomen with similar pale spots as in that plate's fig. 12, but lateral pale spots of terga 3-5 being narrower and horizontal, on anterior half of each tergum; and the pale spots on tergum 2 larger and confluent with anterior margin and longer and vertically

oriented. Since Nayar's generic placement is obviously incorrect, I here transfer this species *kalatopensis* to the genus *Platycheirus* **n. comb.** Knutson *et al.* (1975: 329; as '*Cheilosia*', and from 'Punjab', error), Shah *et al.* (2014: 291, as '*Cheilosia*'), Ghorpadé (2014c: 16, as '*Cheilosia*'), and Mitra *et al.* (2015: 66, as '*Cheilosia*') listed it.]

Platycheirus kashmiricus Nielsen, 2004

Platycheirus kashmiricus Nielsen, 2004, Volucella, 7: 31 (♂; 'Aghil-Gebirge Polu 5220m') [ZM, Amsterdam]

Pakistan ?; India: JK ? (Nielsen, 2004, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Nielsen (2004: 31-32, fig. 1) described this based on a single male taken at Aghil-Gebirge Polu 5220m, 24.vii.1935, A. Peter, on the Fourth Dutch Karakorum Expedition. As for *cryophilus* (*op. cit.*), Nielsen curiously does not specify which country (India or Pakistan) the type locality belongs to. Shah *et al.* (2014: 302) wrote "India: Jammu & Kashmir." Ghorpadé & Shehzad (2013: 19) thought it possible in Pakistan. Shah *et al.* (2014: 302), Ghorpadé (2014c: 16), and Mitra *et al.* (2015: 66) listed it.]

Platycheirus scutatus (Meigen, 1822)

Syrphus scutatus Meigen, 1822, Syst. Beschr., 3: 333 (sex ?; Stolberg near Aachen ?) [MNHN, Paris]

Afghanistan (Sack, 1932b, Bańkowska, 1968, Peck, 1988, Vockeroth, 1990, Thompson & Rotheray, 1998, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 203) listed 3 males and six females from eastern Afghanistan at Sarekanda-Geb., Badakschan in July and at Khanabad, 650m, Kataghan in June. Vockeroth (1990: 668, 734-735, figs 31, 83, map. 33) gave notes on the syntypes and type locality. Peck (1988: 73), Ghorpadé & Shehzad (2013: 19), Ghorpadé (2014c: 16, 2014d: 8) listed it from Afghanistan. See also Sack (1932b: 141) and Thompson & Rotheray (1998: 106) for discussion and key to this genus in the Palaearctic.]

Platycheirus Unnamed sp. 1 [undet.]

India: HP, JK, UK, SI, WB; Nepal (Ghorpadé, unpubl.)

[NOTE: An unpublished manuscript of mine on Oriental *Platycheirus* (Ghorpade, unpubl.) mentions 26♂ 46♀ specimens studied and placed as an undetermined species, diagnosed by Chris Thompson then and planned to be named and described as '*nepalensis* Thompson.' He also had 8♂ 19♀ on loan from CNC, Ottawa and of these specimens 2♂ 1♀ were in USNM, Washington, DC, all taken by the Canadian Nepal Expedition in 1967 and 1♂ from Bokaihunde, 20km N. Trisuli (Nawakot), 2100m, 13-17.xi.1965, L.W. Quate, in BPBM, Honolulu, Hawaii. Thompson also identified as this new species material from my personal collection (18♂ 27♀), from Gulmarg in JK, from Dalhousie, 15km NE. Manali, and Narkanda, Simla Hills both in HP, and from Dunagiri, Loharkhet, Khati, and Dhakuri all in Kumaon Hills, UK. I also had specimens from Gangtok in Sikkim and from Darjiling in WB. All these specimens were taken from April to November.]

Platycheirus Unnamed sp. 2 [undet.]

India: JK (Ghorpadé, unpubl.)

[NOTE: An unpublished manuscript of mine on Oriental *Platycheirus* (Ghorpade, unpubl.) mentions another ♂ specimen from Leh, 3500m, Ladakh, Jammu & Kashmir, India taken in June 1973 by V.K. Gupta [KGC, Bangalore], which is another undetermined species. The specimen has its fore legs lost and it requires further perfect material to put a name on this described or undescribed species.].

[SPECIES INCERTAE SEDIS :

Platycheirus maculatus Arif, 2001, **nom. nud.**

Platycheirus maculatus Arif, 2001, *Taxonomic Studies of Syrphidae (Diptera) of Pakistan*, p. 82. (♂; 'Matta, Swat') [IMUA, Faisalabad] **nom. nud.**

Pakistan : Khyber Pakhtunkhwa (Hangu, Kohat, Matta) (Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c).

[NOTE: Arif (2001: 82-83, 85, 125) described this based on 4♂ 2♀ specimens taken at the above localities in April in tobacco and grass. Stated to be close to *P. albimanus*. This needs

to be examined for correct identity. Ghorpadé & Shehzad (2013: 10), and Ghorpadé (2014c: 16, 2014d: 8) listed it.]

Pseudoplatychirus peteri van Doesburg, 1955

Pseudoplatychirus peteri van Doesburg, 1955, Beaufortia, 47(5): 48 (♂; 'Aghil Gebirge, Polu, 5220m') [ZM, Amsterdam]

Pakistan ?; India: JK (Sack, 1935, van Doesburg, 1955, Zimina, 1958, Lambeck & van Brink, 1973, Peck, 1988, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: As for *P. cryophilus* and *kashmiricus* (*op. cit.*), Nielsen curiously does not specify which country (India or Pakistan) the type locality belongs to. Shah *et al.* (2014: 302) wrote "India: Jammu & Kashmir." This is a distinctively different species which has been placed in a new genus *Pseudoplatychirus* by van Doesburg, but currently, as is the thinking of Thompson and his followers, it has been made a 'subgenus' ! The diagnostic characters are proof of its distinctness, especially the holoptic males (besides the elongate antennae and pilose eyes), which is a feature of extremely high altitude frequenting flies. All the papers cited above listed it. See Thompson & Rotheray (1998: 105) for a key to this genus in the Palaearctic.]

Rohdendorfia dimorpha Smirnov, 1924

Rohdendorfia dimorpha Smirnov, 1924, Ent. Mitt., 13(2+3): 94 (sex ?; 'Turkestan, Dzhizak, Jagnob (Samarkand), Dzhiptyx (Uzbekistan)) [?]

Afghanistan; Pakistan ? ; India: JK ? (Sack, 1935, van Doesburg, 1955, Bańkowska, 1968, Lambeck & van Brink, 1973, Claussen, 1988, Peck, 1988, Ghorpade & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d, Mitra *et al.*, 2015).

[NOTE: Bańkowska (1988: 201) reported it from NE. Afghanistan at Sarekanda, 4200m, in Badakschan and from E. Afghanistan at Umgeb 1740m, nr Kabul in July-August. Peck (1988: 76) and Shah *et al.* (2013: 302) gave its synonyms - *Platychirus nigripes* Enderlein, 1933, *Chilosia reinigi* Lindner, 1954, *Platychirus sziladyi* van der Goot, 1964, and *Rohdendorfia bactriana* Violovitsh, 1984. All the other papers cited above listed it. See also Sack (1932b: 139) and Thompson & Rotheray (1998: 105) for discussion and key to this genus in the Palaearctic.]

Tuberculanostoma solitarium van Doesburg, 1955

Tuberculanostoma solitarium van Doesburg, 1955, Beaufortia, 47(5): 50 (♂; 'Aghil Gebirge, Polu, 5220m') [ZM, Amsterdam]

Pakistan ? ; India: JK (van Doesburg, 1955, Peck, 1988, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: As for *P. cryophilus* and *kashmiricus* (*op. cit.*), Nielsen and here van Doesburg curiously do not specify which country (India or Pakistan) the type locality belongs to. The author (van Doesburg, 1955: 51) also wrote that this genus was "based by Fluke (1943) on *Melanostoma*-like flies, having the face produced forward into a snout, with a very prominent tubercle, and missing a distinct tubercle on the notopleurae. Till now the species have only been collected at high altitudes in Ecuador [South America]. It is remarkable to find a representative of this genus in Central Asia at about a corresponding altitude." Thompson & Rotheray (1998: 105) placed "*Tuberculanotsoma*" in such quotes in their generic key implying doubt with this genus name and gave "China (Karakorum Mts)" as the distribution of *solitarium*, not Pakistan or India, which is questionable. The Karakoram range lies in the north of undivided Kashmir, just east of the Pamirs in the west and extending eastwards to Chinese occupied Kashmir (Aksai Chin) which may be the reason for this interpretation. Peck (1988: 67), Ghorpadé & Shehzad (2013: 19), Shah *et al.* (2014: 305), Ghorpadé (2014c: 16), and Mitra *et al.* (2015: 66) listed it. See Thompson & Rotheray (1998: 105) for a key to this genus in the Palaearctic.]

Xanthandrus garhwalensis (Kohli, Kapoor & Gupta, 1988)

Indosyrphus garhwalensis Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 122 (♂; 'Ramgarh, 1900 ft, Dehra Dun) [IARI, New Delhi - examined]

Xanthandrus garhwalensis : Ghorpadé, 2014c, Colemania, 44: 16. (as *comb. nov.*)

India : UK (Kohli *et al.*, 1988, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: I examined the holotype male of *Indosyrphus garhwalensis* in IARI (New Delhi), labeled "Dehra Dun, 1900', Ramgarh block, hovering over marshy patch in jungle, 15.iii.1936, J.A. Graham," and found it to be a species of *Xanthandrus*. This species was therefore formally transferred to *Xanthandrus* by me (Ghorpadé, 2014c: 16). Shah *et al.* (2014: 305), Ghorpadé (2014c: 16) and

Mitra *et al.* (2015: 67) listed it. See also Sack (1932b: 162) and Thompson & Rotheray (1998: 105) for discussion and key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Xanthandrus comtus (Harris, 1780)
Musca comta Harris, 1780, Expos. Eng. Ins., p. 108 (sex ?; '?'= England)[NHM, London]

Pakistan : Khyber Pakhtunkhwa (Peshawar)(Peck, 1988, Saleem *et al.*, 2001, Ghorpadé & Shehzad, 2013).

[NOTE: The specimen(s) from the Peshawar Division is/are probably misidentified and need(s) to be examined for correct identity. This species was omitted, in error, from the Ghorpadé (2014c: 1) check-list.]

Xanthandrus indicus Curran, 1933
Xanthandrus indicus Curran, 1933, Stylops, 2: 46 (♂♀; 'Rahatgaon, Hoshangabad' [FRI, Dehra Dun - examined]

India : MP (Curran, 1933, Beeson, 1953, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: I examined the holotype male of this species in FRI (Dehra Dun). Beeson (1953: 340) wrote "The larva of this hoverfly feeds on young caterpillars of *Hyblaea puera* [pyralid moth] which it discovers in the folded edges of the leaves of teak [*Tectona grandis*] or *Vitex negundo*. . .The puparium is formd on the leaf and the fly emerges in seven days." The maggot eats 2-3 caterpillars each day. Shah *et al.* (2014: 305), Ghorpadé (2014c: 16) and Mitra *et al.* (2015: 67) listed it. This species is included for information and as it could occur on the eastern fringe of the NWFP area, *i.e.*, eastern Rajasthan.] **]**

Tribe Paragini

Pandasyopthalmus abrogans (Goeldlin de Tiefenau, 1971)
Paragus abrogans Goeldlin de Tiefenau, 1971, Mitt. Schweiz. Ent. Ges., 43: 272 (♂; 'Polur, Iran') [MZL, Lausanne]
? Pandasyopthalmus annandalei Ghorpadé : Vujic *et al.*, 2008, Zool. J. Linn. Soc., 152: 534, (as *comb. nov.*)

Nepal (Peck, 1988, Thompson & Ghorpadé, 1992, Claussen & Weipert , 2004, Vujić *et al.*, 2008b, Ghorpadé, 2014d)

[NOTE: Peck (1988: 78) treated *abrogans* as a synoym of *albipes* Gimmerthal, 1842. Thompson & Ghorpadé (1992: 9-10) doubtfully placed this Iranian species as a synonym of *rufocinctus* (Brunetti, 1908) but Claussen & Weipert (2004: 82) examined the type male from Iran and a few other specimens from Turkey and retained it as a distinct species which they had found in western Nepal, and earlier identified it as "*Paragus* spec. aff. *haemorrhous* Meigen, 1822 (Claussen & Weipert, 2003: 378). Vujić *et al.* (2008b: 535) placed *abrogans* in their *tibialis*-group of *Pandasyopthalmus* and Ghorpadé (2014d) erroneously omitted it from his Indian subregion checklist.]

Pandasyopthalmus annandalei (Ghorpadé, 1992)
Paragus (Paragus) annandalei Ghorpadé, *in*: Thompson & Ghorpadé, 1992, Colemania, 5: 9 (♂; 'Simla, 2133m, Himachal Pradesh') [USNM, Washington, DC]
Pandasyopthalmus annandalei Ghorpadé : Vujic *et al.*, 2008, Zool. J. Linn. Soc., 152: 534 (as *comb. nov.*)

India: HP, JK, UK (Datta & Chakraborti, 1984; Thompson & Ghorpadé, 1992, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c, Mitra *et al.*, 2015)

[NOTE: Thompson & Ghorpadé (1992: 9-10) had given details about this fly and Vujić *et al.* (2008b: 535) transferred it to *Pandasyopthalmus* in their revision of the Paragini and discussed its position. Shah *et al.* (2014: 300) misplaced it in *Paragus* again, maybe unaware of Vujic *et al.*'s paper. Datta & Chakraborti (1984: 245) misidentified this as *atratus* de Meij., as I found when I studied their specimens in ZSI, Calcutta. Flies were taken on flowers of *Solanum nigrum* and *Cynodon* sp., at Udhampur and Bijbihara (Jammu & Kashmir) in September. Ghorpadé & Shehzad (2013: 20) thought it possible in Pakistan. Shah *et al.* (2014: 300; as '*Paragus*'), Ghorpadé (2014: 16) and Mitra *et al.* (2015: 67) listed it.]

Pandasyopthalmus haemorrhous (Meigen, 1822)

Paragus haemorrhous Meigen, 1822, Syst. Beschr., 3: 182 (sex ?; 'Österreich (Austria), südliches Frankreich (France)') [?]

Afghanistan (Peck, 1988, Thompson & Ghorpadé, 1992, Claussen & Weipert, 2003, 2004, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Peck (1988: 78) listed this species from Afghanistan and it was so cited in Ghorpadé & Shehzad (2013: 19o) and Ghorpadé (2014c: 16; 2014d: 8). Thompson & Ghorpadé (1992: 3) did not include it in their paper. Claussen & Weipert (2004: 86) included it in their key and Vujić *et al.* (2008b: 535) placed it in their *tibialis*-group of *Pandasyopthalmus.*]

Pandasyopthalmus karnaliensis Claussen & Weipert, 2004

Paragus (Pandasyopthalmus) karnaliensis Claussen & Weipert, 2004, Volucella, 7: 78 (♂; 'Garpung-Tal E Hurikot, 3100-3600m, Prov. Karnali, West-Nepal') [NM, Erfurt]

Nepal (Coe, 1964, Claussen & Weipert, 2003, 2004, Vujić *et al.*, 2008b, Ghorpadé, 2015).

[NOTE: Coe (1964: 256) misidentified this as '*Paragus tibialis tibialis*' as stated by Claussen & Weipert (2004: 78) who examined the male specimen in NHM, London, and described this new species. Vujić *et al.* (2008b: 535) placed it in their *tibialis*-group of *Pandasyopthalmus.* Ghorpadé (2014c: 16, 2015: 6) listed it.]

Pandasyopthalmus politus (Wiedemann, 1830)

Paragus politus Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 89 (LT ♂; 'China'; design. by Thompson & Ghorpadé, 1992: 5) [NMW, Vienna]

Pipizella indica Brunetti, 1908, Rec. Indian Mus., 2: 52 (♂; 'Simla, Lower Himalayas' [ZSI, Calcutta – examined]

Paragus rufiventris Brunetti, 1913, Rec. Indian Mus., 8: 157 (♂; 'Mangaldai, Assam—Bhutan Frontier') [ZSI, Calcutta – examined]

Paragus ruficaudatus Keiser, 1952, Verh. Naturf. Ges. Basel, 63: 154 (♂; 'Lokojengo, Sumbawa, Indonesia') [NM, Basel]

Paragus keiseri van der Goot, 1964, Beaufortia, 10: 219 (*nom. nov.* for *ruficaudatus* Keiser, 1952 not Bigot, 1884)

Pakistan; India: CH, HP, JK, PB, UK; Nepal (Brunetti, 1908, 1913a, 1915, 1917, 1923, Rahman, 1940, Coe, 1964, Knutson *et al.*, 1975, Hamid *et al.*, 1977, Varma *et al.*, 1978, Ghorpadé, 1981b, 2014c,e, unpubl., Mathur, 1983, Agarwala *et al.*, 1983a,b, Das & Raychaudhuri, 1983, Agarwala *et al.*, 1984, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, 1986a, Peck, 1988, Thompson & Ghorpadé, 1992, Aslamkhan *et al.*, 1997, Arif, 2001, Parui *et al.*, 2006, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: See Thompson & Ghorpadé (1992: 5-7) for details of this species. I had examined the type of *indica* Brunetti in the ZSI (Calcutta), a male, labeled "Matiana, 8000 ft., Simla Hills, 28-30.iv.07, N.A. / 4482/15 / Pipizella indica Brun. TYPE ♂ / TYPE" and noted it to be a *Pandasyopthalmus*, "all black, incl. whole abd., legs yellow, femora 1, 2 with basal half black, femur 3 with two-thirds basally black, tibia 3 with a median brown ring, white hairs." Brunetti (1908: 52-53) wrote that *indica* was described "from a ♂ and two ♀♀ in the Indian Museum collection from the Simla district and from Katmandu in Nepal." He added that the species did not agree with any European one known to him, but he was not able to obtain descriptions of *P. curvinervis,* Strobl, and *P. sculpeonata*, Rondani, both of which Peck (1988: 83) included as *Heringia.* Then (Brunetti, 1913a: 157-158) he described as new *rufiventris* from the Assam area in the north-east but was clearly confused and did 'lumping,' as other specimens he wrote came from Dhikala, Gharwal [*sic*] District, base of Western Himalayas and from Bijrani, Naini Tal District, as well as from Sri Lanka ! Brunetti (1915: 201) later wrote "This species was wrongly placed by me in *Pipizella*. I examined the type male in ZSI, Calcutta, specimen lost but labeled "Assam—Bhutan Frontier, Mangaldai dist., N.E., 1-2.i.11, S.W. Kemp / TYPE / 1492/HI /no specmen on pn, 6.viii.41." Further specimens in the Indian Museum are from "Darjiling, Matiana, and Tenmalai (Travancore) [= Kerala; this a misidentification for *rufocinctus*], 21-xi-08. It is perhaps identical with *Paragus politus*, W. described from China." Then he (Brunetti, 1917: 83) listed it from Simla District as '*indicus,*' taken at Matiana, 28—30-iv-07, and stated it "Also occurs in Nepal." In the FAUNA volume Brunetti (1923: 34-35, 413) gave a description and listed it (as '*rufiventris*') from "Quetta, v.1892 (*Nurse*); Dhikala, Garhwal District, base of W. Himalayas, 10.iii.1910; Bijrani, Naini Tal District, 19.iii.1910; Allahabad, 4.iv.1906, 6.x.1905 (both *Howlett*), etc., in other parts of the sub-continent. I examined 1 ♂ 1 ♀ in CNC, Ottawa taken from Sundarijel in Nepal in May by Amnon Freidberg. Rahman (1940: 72) gave it (as '*indicus, rufiventris*') feeding on aphids on *Centaurea* amd *Sonchus.* Hamid *et al.* (1977: 107) noted this active from July to September in Pakistan (as '*indicus*'). Varma *et al.* (1978) recorded it (as '*indicus, rufiventris*') feeding on the sugarcane grassy shoot aphid at

Lucknow. Ghorpadé (1981: 64) listed aphid prey for '*Paragus indicus* Brunetti' (probably misidentified) as were recorded by then (*q.v.*). Ghorpadé (1981b: 64, 65) listed aphid prey for this (as '*indicus*' and '*tibialis*' from Indian and Pakistani localties. Mathur (1983: 231) misidentified it as '*Paragus tibialis*' from Jullundur (Punjab, India) and noted it "was found sometimes associated with *A. gossypii* on *Gossipium* [*sic*] sp." Das & Raychaudhuri recorded two aphid species as prey of this (as '*tibialis*') at Manali, 2050m, and Chamba, 726m, in June. Agarwala *et al.* (1984: 18) gave aphid prey for this (as '*tibialis*') from India. Datta & Chakraborti (1984: 244, 245) misidentified specimens from Kashmir (India) as *tibialis* and *rufiventris*, but gave flowers visited information and figured male terminalia of *politus* (as '*rufiventris* !) and *rufocinctus* (as *tibialis* !). Awtar Singh *et al.* (1985: 192, 1986a: 146, figs 7-13) listed *P. indicus* and *rufiventris* from Chandigarh and gave flowers visited and these were certainly misidentifications of *politus* and *rufocinctus* ? Parui *et al.* (2006: 98) cited four males taken by Parui at Nangal FRH in Ropar Dist., Indian Punjab, in September. Arif (2001: 125) had listed this as '*Paragus rufiventris* Brunetti' from Pakistan. Ghorpadé & Shehzad (2013: 10) gave locality records from Pakistan, including those of Aslamkhan *et al.* (1997). Ghorpadé & Pathania (2014: 7) listed it from the Punjab Doab. Vujić *et al.* (2008b: 535) placed it in their *tibialis*-group of *Pandasyopthalmus*. Knutson *et al.* (1975: 328), Peck (1988: 78), Shah *et al.* (2014; as '*Paragus*'), Ghorpadé (2014c: 16, 2014e: 8) and Mitra *et al.* (2015: 67) mentioned it in their check-lists.]

Pandasyopthalmus rufocinctus (Brunetti, 1908)

Pipizella rufocincta Brunetti, 1908, Rec. Indian Mus., 2: 53 (♂; 'Rangoon, Burma') [NHM, London]

India: CH, HP, HR, JK, PB; Nepal (Brunetti, 1908, 1923, Mathur, 1983, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Thompson & Ghorpadé, 1992, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Ghorpadé, 2014e, Mitra *et al.*, 2015).

[NOTE: Brunetti (1908: 53) described this (and his *indica*) as a *Pipizella*, perhaps recognizing the distinctness from *Paragus s. str.* and antedating Stuckenberg's concept of *Pandasyopthalmus* as a distinct genus-group. *P. rufocincta* was described from Rangoon in Burma and from "Umballa, N.-W. India" [= Ambala, now in Haryana] noting it was different from *Pipizella* species in having a marked (red) abdomen and that it was "apparently widely distributed." See under *politus* above (*op cit.*) for some more details of citations given for this species as well. In the FAUNA volume Brunetti (1923: 37) gave a description and listed it (as '*Pipizella rufocincta*') also from "Umballa (N.W. India, altitude 900 ft.), 8-13.v.1905." Mathur (1983) gave prey from Jullundur and Datta & Chakraborti (1984: 244-245, fig. 5) misidentified it as *tibialis* Fln, giving localities taken in Jammu & Kashmir and illustrating male terminalia. Awtar Singh *et al.* (1985: 192) misidentified it as *rufiventris* Brun., and listed it from Chandigarh and Pinjore as a common species visiting flowers of wild weeds, candy-tuft and *Ageratum* sp. from August to December. Thompson & Ghorpadé (1992: 7-8, figs 7-8) gave details and listed it from Tangmarg 2200m and Srinagar 1893m from JK, Manali 1828m and Simla 2133m from HP, and gave prey and flower records. Vujić *et al.* (2008b: 535) placed it in their *tibialis*-group. Ghorpadé & Shehzad (2013: 20), Ghorpadé & Pathania (2014: 7), Shah *et al.* (2014: 300; as '*Paragus rufocincta*'), Ghorpadé (2014c: 16, 2014e: 8), and Mitra *et al.*, 2015: 67) listed it.]

Pandasyopthalmus tibialis (Fallén, 1817)

Pipiza tibialis Fallén, 1817, *Syrphici Sveciae*, p. 60 (♂♀; 'in Vestergothia. . .; in arvis montosis Scaniae' = Västergötland and Skåne provinces of Sweden) [NR, Stockholm ?]

Afghanistan, Pakistan ?; India: HP; Nepal (Coe, 1964, Bańkowska, 1968, Rao, 1969a, Ghosh, 1974, Kapoor *et al.*, 1979, Ghorpadé, 1981, Das & Raychaudhuri, 1984, Peck, 1988, Thompson & Ghorpadé, 1992, Sorokina, 2002, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d, Mitra *et al.*, 2015).

[NOTE: Probably the confirmed records of this Palaearctic species here are only from northernmost Afghanistan (Bańkowska, 1868: 200), the "widespread Oriental; cosmopolitan" (Knutson *et al.*, 1975: 328) range given being a lapsus of mistaken beliefs of earlier decades, when species were superficially studied and peregrine distributions believed to be common for some species that were actually complexes and therefore 'lumped.' The otherwise very useful and revisionary Oriental Catalog also made an error by placing *Paragus indicus and P. rufiventris* as a 'subspecies' 'of *tibialis*; it is known to be *politus* now ! Incidentally, Brunetti's other *rufiventris* (described as a *Pipizella*) I found to be a *Betasyrphus* species, after examining the type ! Coe (1964: 256) also gave *rufiventris* Brun., as a subspecies of *tibialis*, confirming both from eastern Nepal. Rao (1969a: 787) gave *Aphis gossypii* and *A. spiraecola* as larval prey for this species, but this was certainly misidentified (see Ghorpadé, 1981b: 65). Ghosh (1974) recorded *Aphis spiraecola* as prey of this species (as '*tibialis*'). Kapoor *et al.* (1979: 55) listed this from Kirtipur (Nepal) visiting composite flowers in April. Bańkowska (1968: 200), Peck (1988: 78), and Ghorpadé (2014d: 8) gave records from Afghanistan. Datta & Chakraborti (1984: 244) misidentified *tibialis* (see notes under

rufocinctus above). Thompson & Ghorpadé (1992) cleared misidentifications of *tibialis* in this subcontinent. Sorokina (2002: 10, 12, 14, figs 90-91) in a paper on Russian and other Asian *Paragus*, keyed this species out and gave illustrations of abdomen and terminalia. Ghorpadé & Shehzad (2013: 20) thought it possible in Pakistan. Shah *et al.* (2014: 300; as '*Paragus*'), Ghorpadé (2014c: 16, 2014d: 8) and Mitra *et al.* (2015: 67) listed it. Vujić *et al.* (2008b: 535) placed it in their *tibialis*-group. See Thompson & Rotheray (1998: 101) for a key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Pandasyopthalmus atratus (de Meijere, 1906)

Paragus atratus de Meijere, 1906, Nova Guinea, V. Zool. 1: 85 (LT ♂; 'Manokwari, New Guinea,' design. by Thompson & Ghorpadé, 1992: 4) [ITZ, Amsterdam]

India: UK (de Meijere, 1908, Brunetti, 1915, 1923, Rau, 1936, Thompson & Simmonds, 1965, Rao, 1969a, Knutson *et al*., 1975, Ghorpadé, 1981b, 2014d, Datta & Chakraborti, 1984, Thompson & Ghorpadé, 1992, Vujić *et al.*, 2008b, Shah *et al.*, 2014, Ghorpade, 2014c, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 202) mentioned a single male from Bijrani in Naini Tal district, taken in March which "agrees exactly with a specimen in the collection from Java, sent by Dr. Meijere." He then described both sexes in the FAUNA volume (Brunetti, 1923: 33-34) and mentioned the Naini Tal specimen. Ghorpadé (1981b: 64) listed aphid prey as recorded by Rau (1936), Thompson & Simmonds (1965), and Rao (1969a). Datta & Chakraborti (1984: 245) listed five males from Kashmir as this species, but my examination of these specimens in ZSI (Calcutta) showed them to be my new species *annandalei* (*q.v., op. cit.*), just like most other *Paragus* spp. recorded by them also being misidentifications. Thompson & Ghorpadé (1992: 4) gave detailed notes on *atratus* and cleared up matters giving this, correctly, as a Malay Archipelago to western New Guinea (Irian Jaya) distributed species, its Indian subcontinent records considered doubtful. Vujić *et al.* (2008b: 535) placed it in their *tibialis*-group. Shah *et al.* (2014: 300; as '*Paragus*'), Ghorpadé (2014c: 16), and Mitra *et al.* (2015: 67) listed it.] **]**

Paragus albifrons (Fallén, 1817)

Pipiza albifrons Fallén, 1817, *Syrphici Sveciae*, p. 60 (sex ?; 'prope Stenshufvud Scaniae,' Sweden) [NR, Stockholm ?]

Afghanistan (Bańk0wska, 1968, Peck, 1988, Sorokina, 2002, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d)

[NOTE: The above citations refer to records of this Palaearctic species in NE. Afghanistan. Sorokina (2002: 10, 13, figs 21-23) in a paper on Russian and other Asian *Paragus*, keyed this species out and gave illustrations of head and terminalia. Vujić *et al.* (2008b: 535) placed this in *Paragus s. str.*]

Paragus bicolor (Fabricius, 1794)

Syrphus bicolor Fabricius, 1794, Entom. Syst., 4: 297 (sex ?; 'Barbariae' = NW. Africa) [UZM, Copenhagen]

Afghanistan; Pakistan; India: HP, JK; Nepal (Brunetti, 1923, Bańkowska, 1968, 1969, Hamid *et al.*, 1977, Kapoor *et al.*, 1979, Ghorpadé, 1981b, Datta & Chakraborti, 1984, Peck, 1988, Thompson & Ghorpadé, 1992, Aslamkhan *et al*. 1997, Arif, 2001, Sorokina, 2002, Mitra *et al.*, 2003a,b, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d,e, Mitra *et al*., 2015).

[NOTE: Brunetti (1923: 36) cited a male and female collected from Quetta (now in Pakistan) in May and July 1902 by Nurse. Peck (1988: 80) gave its distribution as a Holarctic species flying also in northern Africa. However, Vockeroth (1986: 185) noted that this species "represents a complex of 7 species" and did not treat it in his paper on New World species of this genus. Ghorpadé (1981b: 64) cited its prey in Pakistan as *Aphis craccivora, vide* Hamid *et al.* (1977: 107) who noted it active from July to September there. In this subcontinent it is known from Afghanistan and Pakistan, also Nepal (Kapoor *et al*., 1979: 55) and western Himalayan India in Kashmir and Himachal (Thompson & Ghorpadé, 1992: 11-12). Datta & Chakraborti (1984: 242-243) misidentified some specimens they listed as *serratus* (F.); my examination of this material at ZSI, Calcutta revealed a female from Chhatabal and a male from Rangawara to be *bicolor* (F.). Arif (2001: 86, 125) had listed this as '*Paragus bicolor* Brunetti' from Pakistan. Sorokina (2002: 10, 12-13, figs 28-36) in a

paper on Russian and other Asian *Paragus*, keyed this species out and gave illustrations of abdomen and terminalia. Mitra *et al.* (2003a: 34, 2003b: 102) took one specimen at the Pin Valley NP in Lahaul-Spiti District. Mitra *et al.* (2004b: 121-122) wrote that a "good number of individuals were found to visit . . . the white flower heads of *Choerophyllum* sp. at Pin Valley, National Park [Himachal Pradesh] . . . throughout the day." Vujić *et al.* (2008b: 535) placed this in *Paragus s. str.* Ghorpadé & Shehzad (2013: 10), Shah *et al.* (2014: 300; as '*Paragus*'), Ghorpadé (2014c: 16, 2014e: 8), and Mitra *et al.*, 2015: 67) listed it.]

Paragus compeditus Wiedemann, 1830

Paragus compeditus Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 69 (sex ?; 'Egypten') [?]
Paragus luteus Brunetti, 1907, Rec. Indian Mus., 1: Pl. xi, fig. 1, 1908: *ibid.*, 2: 52 (♀; 'Persia (Bushire)' = Bushir, Iran) [ZSI, Calcutta ?]

Afghanistan (Brunetti, 1908, 1923, Peck, 1988, Sorokina, 2002, Vujić *et al.*, 2008b, Gilasian & Sorokina, 2011, Ghorpadé & Shehzad, 2013, Ghorpadé, 2014c,d).

[NOTE: Brunetti (1908: 52, 1923: 35, fig. 8) described *luteus* from Iran which was synonymized under *compeditus* Wiedemann by Peck (1988: 81). The type stated to be in the "Indian Museum collection" (= ZSI, Calcutta) was not found by me when I examined that collection in 1981. Sorokina (2002: 12, 14, figs 70-75) in a paper on Russian and other Asian *Paragus*, keyed this species out and gave illustrations of abdomen and terminalia. Vujić *et al.* (2008b: 535) placed this in *Paragus s. str.* See Gilasian & Sorokina (2011) for notes on this and other related species. Ghorpadé & Shehzad (2013: 10) and Ghorpadé (2014c: 17, 2014d: 9) listed it. See Gilasian & Sorokina (2011) for notes on this and other related species in Iran.]

Paragus gulangensis Li & Li, 1990

Paragus (Paragus) gulangensis Li & Li, 1990, *Review of China*, p. 120 (♂; 'Xiangling Temple, Gulang, Gansu Prov., China) [?]

Nepal (Sorokina, 2002, Claussen & Weipert, 2003, Vujić *et al.*, 2008b, Ghorpadé, 2014c)

[NOTE: Sorokina (2002: 10, 11-14, figs 47-53) in a paper on Russian and other Asian *Paragus*, keyed this species out and gave illustrations of head, abdomen and terminalia. Claussen & Weipert (2003: 365, figs 75-76) reported a single male from Simikot, 3100m, Karnali Prov., Nepal, taken in June and compared it with a male from Mongolia and confirmed the identification, quoting Mutin & Barkalov (1999) and Sororkina (2002) as helpful references. Li & Li (1990: 120) mentioned it was "similar to *punctulatus* Zett., but differs." Vujić *et al.* (2008b: 536) placed *punctulatus* in *Paragus s. str.*, but did not treat *gulangensis*. Ghorpadé (2014c: 17) listed it.]

Paragus quadrifasciatus Meigen, 1822

Paragus quadrifasciatus Meigen, 1822, Syst. Beschr., 3: 181 (LT ♂; 'France') [MNHN, Paris]

Afghanistan; India: JK (Bańkowska, 1968, Goeldlin de Tiefenau, 1976, Datta & Chakraborti, 1984, Peck, 1988, Thompson & Ghorpadé, 1992, Sorokina, 2002, Vujić *et al.*, 2008b, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé, 2014c,d, Mitra *et al.*, 2015).

[NOTE: Goeldlin de Tiefenau (1976) designated a lectotype for this species. See Thompson & Ghorpadé (1992: 14) for notes on this species collected from Jammu & Kashmir by Ghorpadé, and by Datta & Chakraborti (1984: 246; as '*Paragus* sp.'), which was listed as 'Unnamed sp. 1' by Ghorpadé (2014c: 17). Bańkowska (1968: 200) recorded it from eastern Afghanistan. Datta & Chakraborti (1984: 246) listed an unidentified *Paragus* sp., which was *quadrifasciatus*, as I determined it in ZSI, Calcutta after studying that male specimen. Sorokina (2002: 10, 11, 14, figs 60-62) in a paper on Russian and other Asian *Paragus*, keyed this species out and gave illustrations of head, abdomen and terminalia. Vujić *et al.* (2008b: 535) placed this in *Paragus s. str.* Peck(1988: 82), Ghorpadé & Shehzad (2013: 20), Shah *et al.* (2014: 300), Ghorpadé (2014c: 17, 2014d: 9), and Mitra *et al.* (2015: 67) listed it. See also Sack (1932b: 131) and Thompson & Rotheray (1998: 101) for discussion and key to this genus in the Palaearctic.]

Paragus Unnamed sp. 1 [undet.]
Pakistan (Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013).

[NOTE: Specimens need to be examined and identity confirmed if material is still available.]

[SPECIES INCERTAE SEDIS :

Paragus ambalaensis Sodhi & Awtar Singh, 1991

Paragus ambalaensis Sodhi & Awtar Singh, 1991, Acta zool. Cracov., 34(1): 321, figs 15-16 (♀; 'Ambala') [IARI, New Delhi ?]

India: HR (Awtar Singh *et al.*, 1985, Sodhi & Awtar Singh, 1991, Vujić *et al.*, 2008b, Ghorpadé & Pathania, 2014, Ghorpadé, 2014c,e, Mitra *et al.*, 2015).

[NOTE: I could not find the unique female holotype either in Panjab University, Chandigarh or in IARI, New Delhi. From the description and illustrations I am sure it is not a *Paragus s. lat.*, and is misidentified. With its all black colouring and pale legs it is perhaps a *Melanostoma* sp. or maybe a Pipizini ? Awtar Singh *et al.* (1985: 192) had listed a '*Paragus* sp. nov.' from Ambala, which is possibly the same as this *ambalaensis* that was described by Sodhi & Awtar Singh (1991: 321) later ? Vujić*et al.* (2008b: 535) placed it in *Paragus s.str.*, but wrote that this "Species without information to be placed in the proposed classification (taxonomical status according to Thompson, 2004)." Ghorpadé (2014c: 17, 2014e: 7) and Mitra *et al.* (2015: 67) listed it.] **]**

Serratoparagus auritus (Stuckenberg, 1954)

Paragus auritus Stuckenberg, 1954, Trans R. ent. Soc. Lond., 105: 418 (♂; 'Kandy, Ceylon') [NHM, London]

Nepal (Stuckenberg, 1954, Coe, 1964, Knutson *et al.*, 1975, Musthak Ali & Sharatchandra, 1985, Thompson & Ghorpadé, 1992, Vujić *et al.*, 2008b, Ghorpadé *et al.*, 2011, Ghorpadé, 2014c)

[NOTE: Stuckenberg (1954: 418-420, figs 30-33) described this from specimens taken in Sri Lanka, India, and, curiously, also from Kenya (E. Africa). The holotype male was collected at "Ceylon: Kandy, 29.vi.1892 (*Lt.-Col. Yerbury*)" and the Indian specimen was a male taken at "Calcutta, 1-17.xii.1908, ex. Coll. Brunetti." Stuckenberg (1954: 418) illustrated the terminalia and abdomens and wrote "This is a large species with elongated antennae. The abdomen is usually broad in relation to the thorax, the females especially with greatly distended abdomens." One male from Kenya was taken at the Lumi River, Teita Hills, Kenya, in December [Coryndon Musuem, Nairobi] but this African specimen showed some differences from the Indian sub-continent ones. I believe this species does not occur on the African continent and this Kenyan specimen is of a separate, probably undescribed, species. Coe (1964: 257) reported specimens taken in eastern Nepal "from blooms of *Guizotia abyssinica*," but misspelt it as '*auratus*.' Musthak Ali & Sharatchandra (1985: 18) reported the root aphid *Forda orientalis* as prey of this species in Karnataka. Thompson & Ghorpadé (1992: 10-11, map 5) gave details, reported specimens from southern and eastern India, gave a map and a key, as well as prey and flower records. See also Ghorpadé *et al.* (2011: 79) where this species is stated to have larvae that feed on root aphids. Vujić *et al.* (2008b: 536) placed this in *Paragus* (*Serratoparagus*), a new subgenus they erected for a group of mainly Oriental and Afrotropical species with striped eyes and scutellum with conspicuous teeth on posterior margin. Knutson *et al.* (1975: 327) and Ghorpadé (2014c: 17) listed it. Curiously, Shah *et al.* (2o13) and Mitra *et al.* (2015) omitted this species in their checklists.]

Serratoparagus crenulatus (Thomson, 1869)

Paragus crenulatus Thomson, 1869, *in*: K. svenska fregatten Eugenies resa, Zool., Dipt., p. 503 (♂♀; 'China') [NRS, Stockholm]

India: BI; Nepal (Stuckenberg, 1954, Coe, 1964, Peck, 1988, Thompson & Ghorpadé, 1992, Vujić *et al.*, 2008b, Ghorpadé, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Stuckenberg (1954: 408-413, fig 17-20) wrote that this species seems to "differ from *P. serratus* as then understood in having extensively dark femora, longish antennae, the mesonotal stripes narrowed behind, and the wings yellowish at the base. . . There is considerable variation within the species. Each of the larger islands [of the Malay archipelago] has a slighty different form, and there are small differences between specimens from Malaya, Siam [= Thailand], India and Hong Kong. *P. crenulatus* could probably be divided into several subspecies; I lack sufficient material to attempt this." About variation, differences between sections of this population ranging widely, from India to probably Australia, he wrote "This is one of the most widely distributed species of the [*serratus*-]complex. It ranges over the whole of the Oriental Region and Austro-Malayan Subregion. . . The hypopygium of the male from Ceylon differs in certain respects from that of the Chinese specimens. . . three specimens from Calcutta are rather dark . . . This species can usually be recognised by its suffused wings, and by the extensively dark posterior femora. It may be confused with *P. serratus* (Fabricius) when the wings are clear, but the longer mesonotal pile and darker posterior femora distinguish it from that species. The shape of the abdomen is often characteristic." Coe (1964: 256-257) gave some notes confirming Stuckenberg's paper. He mentioned a "dark form" also from eastern Nepal, with a more coarsely punctuate thorax than in the typical form, and with "dull violaceous and a few cupreous reflections." Thompson & Ghorpadé (1992: 13-14, map 4) cited more than 200 specimens which they studied from India (Bihar), Sri Lanka, Nepal, Burma, to Taiwan and doubtfully Australia. They gave a key, notes on diagnostics and prey and flower

records as well. They wrote that this species "is restricted to the humid forested areas, unlike *serratus*, which clearly favours an open, dry, plains habitat." And that "dark specimens can be distringuished from *P. yerburiensis* in never being wholly black behind the transverse ridge on the first tergum. . ." Perhaps more extensive material from most of the Malay archipelago islands and more critical study of variations, along with molecular biology data will result in confirming *crenulatus* as a 'lumped' species, and is a study worth waiting for, though neither Thompson & Ghorpadé (1992) nor any other workers on Paragini have made any revelations after the fundamental revision by Stuckenberg (1954) for a M.Sc. degree at Rhodes University. Vujić*et al.* (2008b: 536) placed this in *Paragus* (*Serratoparagus*), their new subgenus. Knutson *et al.* (1975: 327), Peck (1988: 81), Ghorpadé (2014c: 17, 2015: 6), and Mitra *et al.* (2015: 67) listed it.]

Serratoparagus serratus (Fabricius, 1805)

Mulio serratus Fabricius, 1805, Syst. Antliat., p. 186 (♀; 'Tranquebar, India') [UZM, Copenhagen]

Paragus serratus (Fabricius) : Stuckenberg, 1954, Trans. R. ent. Soc. Lond., 105: 413, figs 21-25.

Paragus femoratus Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 120 (♂; 'Pantnagar, U.P.') [IARI, New Delhi – examined]; Ghorpadé, 2014c: 17 (as *n. syn.*)

Serratoparagus serratus Fabricius : Vujić & Radenković, 2008, Zool. J. Linn. Soc., 152: 536 (as *n. comb.*)

Afghanistan; Pakistan; India: BI, CH, DL, GJ, MP, JK, PB, UK, UP; Nepal (Brunetti, 1908, 1913a, 1915, 1923, Bhatia & Shaffi, 1933, Ahmad, 1940, Rahman, 1940, Kapur, 1943, Beeson, 1953, Stuckenberg, 1954, Butani, 1960, Rao, 1969a, Hamid *et al.*, 1977, Kapoor *et al.*, 1979, Bańkowska, 1968, Patel & Patel, 1969, Ghosh, 1974, Hamid *et al.*, 1974, Patel *et al.*, 1975, Knutson *et al.*, 1975, Varma *et al.*, 1978, Ghorpadé, 1981a,b, 2014c,d,e, 2015, Agarwala *et al.*, 1983, 1984, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, 1986a, Peck, 1988, Kohli *et al.*, 1988, Thompson & Ghorpadé, 1992, Aslamkhan *et al.*, 1997, Parui *et al.*, 2006, Vujić *et al.*, 2008b, Ghorpadé *et al.*, 2011, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti (1908: 52) wrote of this species "with serrated scutellum" and "variable both in size, and coloration of the abdomen." He mentioned having seen specimens in his own collection and in the Indian Museum [= ZSI, Calcutta] taken "from Calcutta to Nepal and reaching as far west as Karachi and as far south as Bangalore." Later he (Brunetti, 1913a: 158) gave records from NE. India, remarking "A common and widely distributed species in South Asia . . . and probably in many other parts of the Orient also." Brunetti (1915: 201) mentioned seeing specimens from the Assam area and he himself having collected it at "Cawnpore, 29-xi-04, Calcutta 1-ii-07 and Rangoon 9-ii-06. It is common at Pusa in Bihar." In his FAUNA volume (Brunetti, 1923: 32) he mentioned a "good series in the Indian Museum [ZSI, Calcutta], Pusa [IARI, New Delhi] and other collections. A variable species, especially in the extent of pale colour in the abdomen." From north-western subcontinent he gave the localities of Mussoorie, Dehra Dun, Cawnpore, United Provinces [U.P.], Karachi, Allahabad, and Pusa. Bhatia & Shaffi (1933: 555-556, Pl. LXI: f) described and figured its immature stages. Ahmad (1940) listed it from the Laghman Valley and Kabul Plateau in Afghanistan. Rahman (1940: 72) noted it as a "widely distributed syrphid in Orient," larvae feeding on aphids on red gram, watermelon, lablab, cotton, mustard and sugarcane. Kapur (1943) noted this predating on cowpea aphids in the experimental plots of the Entomology Division in IARI, New Delhi. Beeson (1953: 340) gave it as predaceous on the psyllid *Euphalerus vittatus*, and aphids, quoting Bhatia & Shaffi (1933). Stuckenberg (1954: 413-415, figs 21-25) revised what he then called the "*Paragus serratus* Complex" (now *Serratoparagus*) and mentioned specimens in the BMNH (London) from "Jubblepore, North-West India" [= Jabalpur, M.P.] and Deesa [Gujarat], as well as from Delhi, North-East India [! in error, based on mislabeled museum specimens of T. Jermyn; see Ghorpadé, 2007: 5], Poona, Coimbatore, Mysore, Bangalore, and 'Hasi' a place unknown to me, a misprint, probably, for Itarsi in north-central India (?). He mentioned its "scutellum black, with extensive yellow on the rim, saw-like with many little teeth. Abdomen black on the first segment, red on the rest, with a whitish edge. clear, unspotted wings; rust-red tarsi." He also ended "It is interesting to note that a Danish factory was opened at Tranquebar [= Tharangambadi in Tamil Nadu now], the type locality in 1620. Danish influence continued until 1845, except for a brief period of British occupation from 1801 to 1814. . . Fabricius probably came by his material of *P. serratus* through the efforts of these settlers. The species seems to be confined to India." Butani (1960: 280) recorded this as '*Paragus* on sugarcane and other aphids.' Bańkowska (1968: 200) cited specimens taken at Jalalabad, 500m, in eastern Afghanistan in March (see also Ghorpadé, 2014d: 9). Patel & Patel (1969) mentioned it from Anand, Gujarat and its parasitoids, with the larvae reared from *Aphis craccivora* on *Dolichos lablab*. Rao (1969a: 787) gave *Aphis gossypii* as larval prey for this species, and also *Toxoptera aurantii, vide* Rau (1936) (see Ghorpadé, 1981b: 65). Ghosh (1974) recorded several aphid prey of this species (see Ghorpadé, 1981b: 64-65). Hamid *et al.* (1974: 79; 1977: 107) noted it on *Acyrthosiphon pisum* in Pakistan, active from July to September there. Patel *et al.* (1975) listed a *Syrphophagus* sp. (Encyrtidae) larval parasitoid in Gujarat. Varma *et al.* (1978) recorded it predating on the sugarcane grassy shoot aphid at Lucknow. Kapoor *et al.* (1979: 62) listed it from

Nepal. Ghorpadé (1981b: 64-65) listed all its aphid prey, and a psyllid, from India and Pakistan. Agarwala *et al.* (1983: 391) gave its aphid prey from India. Datta & Chakraborti (1984: 242—243, fig. 4) illustrated its male terminalia and localities from where collected in Jammu & Kashmir, plus flower visiting records on *Solanum nigrum*, *Agertum conyzoides*, *Polygonum orientale*, and *Lantana camara*. Agarwala *et al.* (1984: 18) listed aphid prey from India. Awtar Singh *et al.* (1985: 192) noted it as common in the Chandigarh area and visiting flowers of species of *Ageratum*, *Chrysanthemum*, Candy-tuft, Maize, and *Brassica campestris*. Awtar Singh *et al.* (1986: 145-146, figs 1-6) figured its male terminalia and described it from Chandigarh. Peck (1988: 82) gave its distribution as Afghanistan and the Oriental Region. Kohli *et al.* (1988: 120-121, figs 30-35) described a *Paragus* (*Paragus*) *femoratus* as new from Pantnagar (Uttarakhand) which type specimen I examined in IARI, New Delhi (see Ghorpadé, 2014d: 17) and found it to be *serratus* (F.), a new synonym. Thompson & Ghorpadé (1992: 14-16) revised Oriental Paragini and can be consulted for details on this species, the "smallest and palest species of the *serratus*-complex and confined to the hot, dry plains of the subcontinent. . . From small specimens of *auritus*, it can be separated by its clear wings and brownish black base of the fore femur." Prey and flower records were also given. It is recorded from Pakistan as cited above (see also Aslamkhan *et al*., 1997, and Ghorpadé & Shehzad, 2013). Parui *et al.* (2006: 97-98) mentioned specimens taken at Nangal FRH, Ropar in the Indian Punjab. Vujić & Radenković (in Vujić *et al*., 2008b) erected a new 'subgenus' *Serratoparagus* with *Paragus pusillus* Stuckenberg, 1954 as the type species and included *serratus* and six other Afrotropical and Oriental species under it (Stuckenberg, 1954 had included seven species in his *serratus*-complex then). I raise this 'subgenus' to genus status here. Knutson *et al.* (1975: 327), Peck (1988: 82), Ghorpadé (2011: 79), Shah *et al.* (2014: 300), Ghorpadé & Pathania (2014: 7), Ghorpadé (1981a, 2014c: 17, 2014e: 9), and Mitra *et al.* (2015: 67) listed it.]

Serratoparagus yerburiensis Stuckenberg, 1954

Paragus yerburiensis Stuckenberg, 1954, Trans, R. ent. Soc. Lond., 105: 415, figs 26-29 (♂; 'Velverry, Ceylon' = Sri Lanka) [BMNH, London]

India: BI, DL, UK, UP; Nepal (Stuckenberg, 1954, Coe, 1964, Rao, 1969a, Gokulpure, 1972, Ghosh, 1974, Knutson *et al*., 1975, Patnaik & Bhagat, 1976, Kapoor *et al*., 1979, Ghorpadé, 1981a,b, 2014c, 2015, Thompson & Ghorpadé, 1992, Vujić *et al*., 2008b, Ghorpadé *et al.*, 2011, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Before Stuckenberg (1954: 415-418, figs 26-29) this was 'lumped' with *serratus* (Fabricius). The epithet *–ensis* in honour of Lt-Col. J.W. Yerbury is incorrect and unfortunately chosen, as this epithet should only be added to a geographical name. A male patronym ends with an '*-i*' and a female one with '*-ae*'. Stuckenberg's type material was mainly from Sri Lanka and from "Jubblepore" [= Jabalpur, M.P.] in central India. This is a distinct species with tergum 1 all black and fore femur without any black markings. Stuckenberg (1954) further wrote "This species has a transverse band of black across most of the first abdominal segment. The posterior corners of the abdomen are very much produced, and the abdomen appears to be truncated in the males. . . it seems that *P. yerburiensis* is a rather isolated species within the complex. There seems to be considerable variation in size between individuals of this species." Coe (1964: 257) gave specimens taken in eastern Nepal from blooms of *Guizotia abyssinica*. Rao (1969a) gave *Aphis gossypii*, *A. spiraecola* and *Myzus persicae* as larval prey for this species (see Ghorpadé, 1981b: 65). Gokulpure (1972: 848) recorded it from Madhya Pradesh. Ghosh (1974) recorded *Aphis spiraecola* as prey of this species. Kapoor *et al.* (1979: 62) listed it from Nepal. Patnaik & Bhagat (1976: Pl. 2(d)) misidentified this as *Eumerus* sp. nr *albifrons* Walker, as their illustration of the adult fly indicates. It was reared from several aphid species listed found in Bhubaneswar area and other parts of Puri District in Orissa. Thompson & Ghorpadé (1992: 16-18, map 7) and Ghorpade *et al.* (2011:79-80) may be consulted for details, also of prey and flower records. The former paper listed more than 350 specimens studied from many parts of India and Sri Lanka, and gave a psyllid as prey as well. Vujić *et al.* (2008b: 536) placed this in *Paragus* (*Serratoparagus*), a new subgenus. Knutson *et al.* (1975: 328), Ghorpadé (2011: 79-80), Shah *et al.* (2014: 301), Ghorpadé & Pathania (2014: 7), Ghorpadé (1981a, 2014c: 17, 2014e: 9), and Mitra *et al.* (2015: 67) listed it. See also Sack (1932b: 131) and Thompson & Rotheray (1998: 101) for discussion and key to *Paragus s. lat.* in the Palaearctic.]

Tribe Pipizini

Neocnemodon ? vitripennis (Meigen, 1822)

Pipiza vitripennis Meigen, 1822, Syst. Beschr., 3: 254 (sex ?; 'Osterreich' + Austria) [?]

Pakistan; India : JK ?, HP ? UK ? (Siddiqui & Krishnaswamy, 1972, Ghorpadè, 1981b, 2014c, Peck, 1988, Vujić, 1999).

[NOTE: A species determined as 'near *vitripennis*' of *Cnemodon* was reported as an uncommon predator of *Adelges* spp. on the Western Himalayas in Pakistan and India (Sidiqui & Krishnaswamy). See also Ghorpadè (1981b: 74). This species was not listed by Ghorpadè (2014c) or by any others from this subcontinent, possibly by oversight, this being the only paper recording it here and being a 'hidden' part of a CIBC research report published and not available generally. Ghorpadè (2014c: 17) had listed five genera of the Tribe Pipizini here, all unnamed except for *Heringia cyanea* (Brunetti) from Sikkim and *Pipizella mesasiatica* Stackelberg from Afghanistan. See below, also for *Pipizella maculipennis* reported from Afghanistan recently. Recent phylogenetic upheavals, including molecular data, suggests that *Neocnemodon* is only a 'subgenus' of *Heringia* Rondani, but this awaits more study, based on larger material and confirmation. Peck (1988: 85) placed this species in *Neocnemdon* and gave only Mongolia and northern China as documented locations in Asia. Chris Thompson (*in lit.*) mentioned a "new species" of *Neocnemodon* from N. India, which may be what is recorded here from Pakistan and NW. Himalayas feeding on *Adelges* spp., recorded by the then C.I.B.C. (Commonwealth Institute of Biological Control) staff ? See Siddiqui & Krishnaswamy (1972: 14-22) for more details. Vujic (1999) wrote on this genus and species, and related Pipizini, *q.v.* See also Sack (1932b: 22) and Thompson & Rotheray (1998: 107) for discussion and key to this genus in the Palaearctic.]

Pipiza Unnamed sp. 1 [undet.]
India: UK (Kohli *et al*., 1988, Ghorpadé, 2014c).

[NOTE: Kohli *et al.* (1988: 125) described an unnamed species of this genus based on a female listed as taken by Sen at Mukteswar in Kumaon on 22.viii.1923. I saw the specimen in IARI, New Delhi labeled "Kumaon 7500 ft., Muktesar, 22.viii.1913, Sen coll." [all *sic*] and confirmed it as a Pipizini, but of an uncertain genus. Vujic *et al.* (2008a) may be consulted for a species-group of this genus. See also Sack (1932b: 143) and Thompson & Rotheray (1998: 107) for discussion and key to this genus in the Palaearctic.]

Pipizella maculipennis (Meigen, 1822)
Pipiza maculipennis Meigen, 1822, Syst. Beschr., 3: 254 (LT ♂, '393, 113, *Pipizella maculipennis* Meig. Det Lucas et P. Goeldlin 22.ii.1926') [MZ, Florence]
Pipiza varians Rondani, 1847, Nuovi Ann. Sci. nat. Ist. Bologna, (2) 8: 343 (LECTOTYPE [red label], 'Lectotype ♂ Pipiza varians Rondani, 1847, des. J. van Steenis 2003 [red label]') [MZ, Florence]; van Steenis & Lucas, 2011: 156 (as *n. syn.*)
Pipizella sibirica Violovitsh, 1981, Nasekomye I kleshchi Sibiri, p. 70 (sex ?; 'Chumakovo village, Kuybyshev district, Novosibirisk') [?]; Kuznetsov, 1987, Revue d'Entomologie de l'URSS, (as *n. syn.*)

Afghanistan (Peck, 1988, van Steenis & Lucas, 2011, Ghorpadé, 2014c)

[NOTE: Van Steenis & Lucas (2011: 156-158, figs 114-119) listed one female from 'entre Doavi et Doad Ali, A746, 21.vii.1925, 1♀, leg. A. Lindberg, coll.' in Afghanistan. The specimen had "clearly infuscated wings." Peck (1988: 90) listed it but it was omitted by Ghorpadé (2014c).]

Pipizella mesasiatica Stackelberg, 1952
Pipizella mesasiatica Stackelberg, 1952, Trudy zool. Inst., Leningrad, 12: 352 (sex ?; 'Hissar mountain ridge, Ko0ndara, Kvak, Tajikistan') [ZIAS, St Petersberg]

Afghanistan (Bańkowska, 1968; Peck, 1988, van Steenis & Lucas, 2011, Ghorpadé, 2014c,d).

[NOTE: Bańkowska (1968: 205) listed specimens from NE. and E. Afghanistan, 2300-2800m, taken in May and July. Two male paralectotypes in St Petersburg museum were studied by van Steenis & Lucas (2011: 158, figs 120-123). Peck (1988: 90) and Ghorpadé (2014c: 17, 2014d: 9) listed it. See also Thompson & Rotheray (1998: 107) for a key to this genus in the Palaearctic.]

Tribe Syrphini

Agnisyrphus angara Ghorpadé, 1994
Agnisyrphus angara Ghorpadé, 1994, Colemania, No. 3, p. 6 (♂; 'Mussoorie') [USNM, Washington, DC - examined]

India: UK (Ghorpadé, 1994, 2007, 2014c, Shah *et al*., 2014, Mitra *et al*., 2015)

[NOTE: I (Ghorpadé, 1994: 6) named and described this new genus and species based on a single male collected by myself at Mussoorie, 2005m in May 1974. It was a strikingly unusual hover-fly, dark, with a flame red abdominal tip shining as burning coal ! Another male was taken earlier by T. Jermyn on the "Naini Hills, 7000-80o0 ft" [near Naini Tal ?] in May 1927, which I found in a NHM, London loan material to me, and designated a Paratype. A revisionary paper on

Agnisyrphus Ghorpadé (2007) dealt with this and five other new species of this new genus distributed from Uttarakhand in NW. India to the Fukien Province in SE. China. The genus was placed by me (Ghorpadé, 2007: 16) in the *Didea*-group of the *Sphaerophoria* Section of the Tribe Syrphini, along with *Asarkina* Macquart, *Asiodidea* Stackelberg, *Didea* Macquart, *Dideomima* Vockeroth, *Dideopsis* Matsumura, *Eriozona* Schiner, and *Megasyrphus* Dušek & Láska. Shah *et al.* (2014: 289), Ghorpadé (2014c: 17) and Mitra *et al.* (2015: 67) listed it.]

Allobaccha apicalis (Loew, 1858)

Baccha apicalis Loew, 1858, Wien. Ent. Mschr., 2: 106 (♀; 'Japan') [MCZ, Cambridge]

Baccha apicenotata Brunetti, 1915, Rec. Indian Mus., 11: 221 (♀; "Bhowali, 5700ft") [ZSI, Calcutta - examined]

India: BI, HP, UK; Nepal (Kertész, 1913, Brunetti, 1915, 1923, Curran, 1931, Bhatia & Shaffi, 1933, Knutson *et al*., 1975, Ghorpadé, 1981a,b, 1994, 2014c, unpubl., Peck, 1988, Shah *et al.*, 2014, Mitra *et al*., 2015).

[NOTE: See also my notes under *pulchrifrons* Austen below. Brunetti (1915: 221) described his *apicenotata* based on "a single ♀ from Bhowali, 5700 ft., vii-09 [*Imms*]" and mentioned two other specimens from "Jungle at base of Dawna Hillls, 1-iii-08" and "Cherrapunji, Assam, 44o0 ft., 2—8-x-14 [Kemp]." Brunetti (1923: 122-124) later placed his *apicenotata* as a synonym of *pulchrifrons* Austen and this synonymy needs to be studied and determined and also that of *apicalis* Loew. Curran (1930: 325) wrote : "In his original description Major Austen called attention to the similarity of his species [*pulchrifrons*] and *apicalis* Loew. In view of the fact that *pulchrifrons* occurs commonly in Japan, whence Loew's damaged specimen came, it seems probable that Loew's name should be applied to this species." Bhatia & Shaffi (1930: 549-555, Pl. LX) described and illustrated this syrphid and its life history (as '*Baccha pulchrifrons*') on the psyllid *Ctenophalara elongata* on the red silk cotton tree *Bombax malabaricum* at Pusa in Bihar. Knutson *et al.* (1975: 321) placed *pulchrifrons* and *apicenotata* as synonyms of *apicalis* Loew. Ghorpadé (1981b: 66) listed recorded prey of this species from our subcontinent. I studied the type of *Baccha apicenotata* in the ZSI, Calcutta, a ♀ labelled "near Bhowali, Kumaon, 5,700ft., July 1909, A.D. Imms / Baccha apicenotata Brun. Typ ♀ / TYPE / 1977/HI." I had then noted that "In FBI key (p. 114-115) it goes to *pulchrifrons*." Brunetti (1923: 124) incorrectly gave a specimen from Ceylon as "*type* ♀ of *apicenotata*," under his full description of *pulchrifrons* and a figure of its wing. Ghorpadé (1994: 6-7) included this species in his key to *Allobaccha*. Two females were seen in CNC (Ottawa) by me on my visit there in August 1983 taken at Godavari, 5000' near Kathmandu, Nepal in April. Also an unsexed specimen from Lothar, 450 ft., near Birganj, Nepal in September. One other ♀ was seen and determined as this species from the Botanical Garden, Kathmandu, taken on 1-v-1980 by my Israeli colleague Amnon Freidberg, and now deposited in the USNM, Washington, DC. Knutson *et al.* (1975: 321), Peck (1988: 53), Ghorpadé (2014c: 17), Shah *et al.* (2014: 289), and Mitra *et al.* (2015: 67) listed it.]

Allobaccha binghami Ghorpadé, 1994

Allobaccha binghami Ghorpadé, 1994, Colemania, No. 3, p. 7 (♂; 'Sikkim') [ZMHU, Berlin - examined]

Nepal (Ghorpadé, 1994, 2014c, unpubl., Mitra *et al*., 2015)

[NOTE: I (Ghorpadé, 1994: 7) named and described this new species based on a single male collected by Capt. C.T. Bingham in Sikkim. I examined a female in CNC, Ottawa labeled "Nepal, nr. Birganj, Lothar, 450 ft., 18. Sept. '67, Can. Nepal Exped. / Malaise Trap, mounted from alcohol, No. 34." Ghorpadé (2014c: 17) and Mitra *et al.* (2015: 67) listed it, but was omitted by Ghorpadé (2015).]

Allobaccha elegans (Brunetti, 1915)

Baccha elegans Brunetti, 1915, Rec. Indian Mus., 11: 220 (♂; 'Sukna, 500 ft., North Bengal') [ZSI, Calcutta - examined]

Nepal (Brunetti, 1915, 1923, Curran, 1931a, Knutson *et al*., 1975, Kapoor *et al.*, 1979, Ghorpadé, 1994, 2014c, 2015, unpubl., Mitra *et al*. 2015)

[NOTE: Brunetti (1915: 220-221) described this "from several ♂♂ in the Indian Museum from Sukna, 500 ft., 1 and 2-vii-08; and from jungle at base of Dawna Hills, I-iii-08 [both Annandale] . . . This is evide ntly distinct from *flavopunctata* [= *amphithoe* Austen], though bearing a close resemblance, and at one time I thought it the ♂ of that species. It differs in the distinct blue tinge to the whole thorax instead of the almost cupreous dorsum in *flavopunctata*." Then in his FAUNA volume (Brunetti, 1923: 124-126), he treated it as a synonym of *triangulifera* Austen, with no explanation ! Knutson *et al.* (1975: 323) retained this last synonymy. Kapoor *et al.* (1979: 60) listed *triangulifera* from Nepal, but I (Ghorpadé, 1994: 7) showed that that species was distinct from *elegans* and that *triangulifera* was restricted to the island of Sri Lanka and that *elegans* was found in NE. India, Nepal and peninsular India, but material being scarce. I studied the holotype male of *elegans* in

ZSI, Calcutta in 1981, which was labeled "Sukna, 500 feet, E. Himalayas, 1-VII-08, N.A. / Baccha elegans Brun Type ♂ / TYPE / 1972/HI / Baccha triangulifera Aust. / elegans Brun. Type ♂, det. Brun. 1923." I had then noted "Goes to *Allobaccha*. In FBI key to *triangulifera*, but no yellow spot on tip of T 3." I have seen 5 ♀ specimens from Nepal taken at Adhabhar, 600 ft., nr Simra, and at Lothar, 450 ft., nr Birganj, and also at Amlekhganj, 500m, collected from July to September [CNC, Ottawa and USNM, Washington, DC]. Ghorpadé (2014c: 17, 2015: 7), and Mitra *et al.* (2015: 67) listed it.

The genus *Allobaccha* in the Orient is quite speciose and requires careful study and revision, based on good many specimens. I had recognized and keyed out eight species (Ghorpadé, 1994: 7) in the Indian subcontinent, but have seen more than 300 specimens from other parts of the Orient and am in the process of revising Oriental—Papuan species of this genus. Curran (1931a: 325-327) gave a key to Malayan species of his *Allobaccha*, which is a workable base.]

Allobaccha nigricosta (Brunetti, 1907)

Baccha nigricosta Brunetti, 1907, Rec. Indian Mus., Plate XI, fig. 5; Brunetti, *ibid*., 1908: 50 (♂; 'Bhim Tal, 4500ft, Kumaon, Lower Himalayas') [ZSI, Calcutta – examined]

Pakistan; India: DL, UK (Brunetti 1907b, 1908, 1923, Anand *et al*., 1967, Knutson *et al*., 1975, Agarwala *et al*., 1984, Anand 1986, Dirickx, 2010, Ghorpadé & Shehzad, 2013, Ghorpadé, 1994, 2014c, Shah *et al.*, 2014, Mitra *et al.*, 2015)

[NOTE: Brunetti (1907b, 1908) descibed and illustrated this "from one ♂ taken by Dr. Annandale (19—22-ix-06) at Bhim Tal, Kumaon," on the "Lower Himalayas, Bhim Tal, 4,500 feet." In his FAUNA volume (Brunetti, 1923: 118, fig. 21) he kept it separate as a distinct species, included it in his key to *Baccha* and mentioned another specimen taken at Pusa (Bihar) in December 1915, and noted "This species can hardly be confused with any other, the conspicuous blackish cloud in the middle of the wing differentiating it from all the clear-winged species except *umbrosa*, and also sufficiently from the two species classed by me as wholly brown-winged [*fallax* Austen and *nubilipennis* Austen]. Anand *et al.* (1967) and Anand (1986) recorded this from Delhi on grasses, and it was also cited by Agarwala *et al.* (1984: 16). Knutson *et al.* (1975: 322) listed it as a distinct species and also gave "W. Pakistan." I had not included this in my key (Ghorpadé, 1994: 6-7) to Indian subregion *Allobaccha*. In Ghorpadé & Shehzad (2013: 11) I had noted "it could be a junior synonym (?) of *Allobaccha apicalis* (Loew), 1858 which is probably the same as *pulchrifrons* Austen, 1893 and so synonymous with *apicenotata* Brunetti, 1915 ? This sentence was repeated for *A. sapphirina* in that paper in error. But a major revision of Indian *Allobaccha* needs to be carried out and these synonymies confirmed or negated. I studied the holotype (damaged, head and abdomen lost) in ZSI, Calcutta, a male labeled "Baccha nigricosta Brun. Type ♂, det. Brun. 1923 / TYPE / Bhim Tal, 4500 ft., Kumaon, 19—22-IX-06, N.A. / Baccha nigricosta Brunetti ♂ TYPE / 914/15." Curiously, I had then further noted "probably *B. sapphirina* ??" Shah *et al.* (2014: 289; as synonym of *apicalis*), Ghorpadé (2014c: 17), and Mitra *et al.* (2015: 67) listed it. Dirickx (2010: 231) gave notes on this species, *q.v.*]

Allobaccha sapphirina (Wiedemann, 1830)

Baccha sapphirina Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 96 (♀; 'East Indies') [NHM, London – examined]

Pakistan; India: DL, GJ, RJ (Kertész, 1913, Brunetti 1923, Curran, 1931a, Beeson, 1953, Alam & Hafiz, 1963, Alam *et al*., 1969, Ghosh, 1974, Knutson *et al*., 1975, Ghorpadé, 1981a,b, 1994, 2014c, Peck, 1988, Dirickx, 2010, Ghorpadé & Shehzad, 2013, Arif, 2001, Mitra *et al.*, 2015).

[NOTE: *Baccha umbrosa* Brunetti (1923) is sometimes treated as a synonym (*q.v.*, *loc. cit.*), but this needs further study and verification. Kertész (1913: 279-281, fig. 7) described material from Taiwan and figured wing of both sexes. Brunetti (1923: 122) described it from Indian (Mt Abu in Rajasthan and Deesa in Gujarat) and African specimens, but the African distribution needs to be verified for species identity. The species treated as *sapphirina* by Dirickx (2010: 215, 218-220, 232, figs 2-3) from Madagascar appears to me to be misidentified. Dirickx (2010: 229-232) also gave notes on the status of *Allobaccha*. Beeson (1953: 339) gave this as predacious on Psyllidae. Alam & Hafiz (1963) recorded this (as 'possibly *sapphirina*') feeding on *Anuraphis helichrysi* infesting *Prunus persica* in Rawalpindi, Peshawar and Changamanga in Pakistan. Ghosh (1974: 196-197) recorded *Pterochlorus persicae* as prey of this species (as '*Bacca ? sapphirinia*'). Knutson *et al.* (1975: 322) gave a wide distribution from Africa to New Guinea which requires confirmation by studying specimens. Arif (2001) recorded it from Murree in Pakistan. I (Ghorpadé, 1981: 66) listed its aphid and psyllid prey and (Ghorpadé, 1994: 6) presented a key. In the Indian subregion checklist (Ghorpadé, 2014c: 17) I gave its range which included Delhi also from NW. India. I examined the holotype ♀ in NHM, London, labeled "TYPE [red] / B: n: fp: u (?) Ind. Or., Baccha sapphirina Wied. / Allobaccha sapphirina." It is interesting that Curran (1931: 321-323) did not include it in his key to *Baccha s. lat.* from Malaya. Ghorpadé & Shehzad (2013: 11) gave a record and notes from Pakistan. Peck (1988: 54) and Mitra *et al.* (2015: 67) listed it.]

Allobaccha umbrosa (Brunetti, 1923)
Baccha umbrosa Brunetti, 1923, *Fauna of Br. India*, Dipt., 3: 119 (♂; 'Abu, Rajputana') [NHM, London – examined]
India: CH, PB, RJ (Brunetti 1923, Knutson *et al.* 1975, Awtar Singh *et al.*, 1985, Thompson & Rotheray, 1998, Ghorpadé, 2014c,e, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 119) named and described this from one male taken by Col. Nurse at Mt Abu on the Aravalli Hills of Rajasthan, and wrote "Very near *nigricosta*, Brun., differing by the wings having the ground-colour grey, but possessing a similar brownish cloud over the middle of the costa, filling the middle third of the wing, dispersing gradually hindwards." He also wrote "A ♂ in the British Museum from Trincomalee, Ceylon, 23.i.1891 (*Yerbury*), maybe this species; it differs only in the 4th and 5th segments being much brighter shining blue. It is very slightly larger and in indifferent condition." Knutson *et al.* (1975: 323) listed it as a good species of *Allobaccha.* Awtar Singh *et al.* (1985: 193) noted it as a very rare species found in Chandigarh, Chandni, in September (see also Ghorpadé, 2014e: 9). Chris Thompson listed it (*in litt.*) as a synonym of *sapphirina* (Wiedemann), which needs confirmation; but see below. I examined the holotype ♂ in BMNH, London labeled "Type [circular orange bordered white label] / Abu / India, Pres. By Col. C.G. Nurse, 1922-309 / Baccha umbrosa Type ♂ Brun. det. Brun. 1921-2. / Allobacha sapphirina Wied., K.D. Ghorpade det. 1983." This was double mounted on large squarish yellow plastic piece and the specimen had its distal half of left wing lost and apical tip of right wing behind apical dark spot also lost. I had identified *umbrosa* as a synonym of *sapphirina* after studying types of both species in London. But this needs verification as I had treated this as a good species in my Indian sugregion check-list (Ghorpadé, 2014c: 18). Mitra *et al.* 2015: 67) listed it. See also Thompson & Rotheray (1998: 97, 115) for a key to this genus in the Palaearctic.]

Allobaccha Unnamed sp. 1 [undet., sp., nov. ?]
Nepal (Ghorpadé, *in litt.*, unpubl., 2015: 7)

[NOTE: In my research notes, I had written of 3 females from Nepal and south India I studied in the NHM (London) "having only the extreme distal tip of hind basitarsus yellow. They differ in being more 'melanistic,' with a distinct median vertical brownish-black fascia on the wing, and yellow markings on terga 3 and 4 variably reduced and in the distal one-third to one-fourth of second basal cell more densely microtrichose, these microtrichia complementing the brownish-black areas approximately. Distinct from *amphithoe* ? Definitely not *dispar* (Walker), yellow pleural areas are different. If distinct this is probably an unnamed species."]

[SPECIES INCERTAE SEDIS :

Allobaccha pulchrifrons (Austen, 1893)
Baccha pulchrifrons Austen, 1893, Proc. Zool. Soc., London, p. 139, Pl. IV, figs 10-11 (LT ♂; 'Hot Wells, Trincomali" = Sri Lanka') [NHM, London - examined]

India: GO, KN, TN, KL; Sri Lanka (Austen, 1893, Kertész, 1913, Brunetti, 1910, 1923, Curran, 1930, 1931a, Bhatia & Shaffi, 1933, Mathur, 1935, Beeson, 1953, Singh, 1959, Knutson *et al.*, 1975, Ghorpadé, 1981a,b, 1994, 2014c).

[NOTE: This species is included here for necessary discussion. See also notes under *apicalis* Loew. It is probably restricted to peninsular India and Sri Lanka and *apicalis* perhaps flies on the Himalayas and northern India east to Japan ? Needs study. I now think *pulchrifrons* is perhaps distinct from that species and distributed only in peninsular India and Sri Lanka. This needs confirmation. I examined the types of *pulchrifrons* in London and had then designated a Lectotype specimen labeled "Type ♂ [white circular label with red sub-border] / Trincomali, Ceylon, 2.xi.90, Col. Yerbury. 92-192 / type of pulchrifrons Aust. / LECTOTYPE, Baccha pulchrifrons AUSTEN ♂, K.D. Ghorpade des. 1983." Also designated then was a Paralectotype specimen labeled "Type ♀ [same as LT] / Trincomali, Ceylon, 13.iii.92 / type of pulchrifrons Aust. / PARALECTOTYPE, Baccha pulchrifrons AUSTEN ♀, K.D. Ghorpade des. 1983." Both specimens are double mounted on card, the LT ♂ with left arista, and costal section of right wing at centre of stigma split. The PLT ♀ antennae are lost, abdomen glued on card, costal section at stigma of both wings split. A pair of specimens I saw in the USNM, Washington, DC from Singapore were reared on psyllids infesting *a Calophyllum* tree. Austen (1893: 139-142, Pl. IV, figs 10-11) described this based on several specimens from Sri Lanka, the holotype male (see above) from the Hot Wells at Trincomali, and "apparently the commonest species of *Baccha* in Ceylon." Austen goes on to comment "This species is very closely allied *to Baccha apicalis*, Lw. . . from Japan, and may, indeed, be identical with it. Since, however, Loew describes a ♀ only, of which the head was destroyed, and considering the great difference in the locality of the specimens . . . I have therefore ventured to consider the present specimens as distinct."

Kertész (1913: 274-275, fig. 1) recorded this from Taiwan, (could be *apicalis* Loew ?) illustrated the wing of both sexes with a short description. Brunetti (1910: 171) reported two males taken at Peradeniya in November in Sri Lanka. In the FAUNA volume, Brunetti (1923: 122-124) gave a detailed description copied from Austen (1893) and placed *apicenotata* as a synonym which is probably *apicalis* (*op. cit.*), the type from Bhowali (UK). Brunetti also erred in labeling specimens from Sri Lanka as types of *apicenotata*, when they are actually of *pulchrifrons* ! These species need to be correctly separated or combined. As stated above, Curran (1931a: 325-327) gave a key to Malayan species of his *Allobaccha* which is a base. He commented "I am still uncertain about the exact identity of *pulchrifrons* . . . In his original description Major Austen called attention to the similarity of his species and *apicalis* Loew. In view of the fact that *pulchrifrons* occurs commonly in Japan, whence Loew's damaged specimen came, it seems probable that Loew's name should be applied to this species." Earlier, Curran (1930: 253-254) gave a description, placed it in his key to *Baccha s. lat.* (including his subgenus *Allobaccha*) and wrote "I am not positive that this [♂ from Kuala Lumpur, Malaya] is *pulchrifrons* although it agrees very well with the description. There are a number of very closely allied species in the East, and it is not possible to be certain of the identity of isolated specimens without recourse to the types." See notes under *apicalis* above also for Bhatia & Shaffi's (1933) life-history data. Beeson (1953: 339) gave this as "widespread in India" and predacious on Psyllidae like *Apsylla cistellata, Cerotrioza* sp., *Phylloplecta malloticola,* and *Tenaphalara acutipennis,* Aphidae" in Indian forests, and gave notes on its life-history. Singh (1959) noted this species was reared from *Apsylla cistellata* infesting and galling mango, *vide* Mathur (1935), but perhaps refers to *apicalis* correctly ? Knutson *et al.* (1975: 321) listed *pulchrifrons* as a synonym of *apicalis* Loew. Ghorpadé (2014c) listed it.]

Allobaccha triangulifera (Austen, 1893)

Baccha triangulifera Austen, 1893, Proc. zool. Soc. Lond., p. 138 (LT ♂; 'Huldamulla, Ceylon,' here designated) [NHM, London – examined]

Sri Lanka (Austen, 1893, Brunetti, 1923, Curran, 1931a, Ghorpadé, 1981a, 1994, 2014c, Mitra *et al.*, 2015)

[NOTE: This Ceylonese species is included here just to comment on its misidentification and incorrect range concept. Austen (1893: 138, Pl IV, fig. 5) described this from a pair taken at "Huldamulla, Ceylon, *circa* 400 ft. (*Lieut.-Colonel Yerbury*), a pair taken *in copulâ*, June 10, 1892." I formally designate here a Lectotype and Paralectotype [both on same pin, *in copula*] of *triangulifera,* a male in the NHM, London, labeled as follows : "Type ♂, ♀ [circular white label with red submarginal ring] / Huldamulla., 10.VI.92, circa 3,000 ft., Ceylon., Col. Yerbury., 92.—192. / Baccha trianguifera, Aust., Type ♂, ♀ /LECTOTYPE, Baccha triangulifera Austen ♂, K.D. Ghorpade des. 1983," and "Paralectotype, Baccha triangulifera Austen ♀, K.D. Ghorpade des. 1983." I found some nine specimens of this species in then CIBCI, Bangalore, taken in December and January, whose larvae were found feeding on fulgorids on *Casuarina equisetifolia* trees there. Ghorpadé (1994: 6) included it in his key to Indian subregion *Allobaccha* species. Ghorpadé (2014c: 18) and Mitra *et al.* (2015: 67) listed it. The inclusion of this species in my Nepal paper (Ghorpadé, 2015: 7) is in error.] **]**

Allograpta javana (Wiedemann, 1824)

Syrphus javanus Wiedemann, 1824, Analecta Ent., p. 34 (LT ♂; 'Java') [NMW, Vienna – examined]
Xanthogramma nakamurae Matsumura, 1918, J. Coll. Agric. Hokaido Imp. Univ., 8: 9 (sex ?; 'Japan') [?]
Miogramma iavanus : Frey, 1946, Notul. Ent., 25: 165 (as *n. gen.*)
Helenomyia javana : Bańkowska, Bull. L'Acad. Pol. Sci., 10: 311 (as *n. gen.*)
Paraxanthogramma nakamurae Tao & Chiu, 1971, Taiwan Agril. Res. Inst., Spl. Publ., 10: 74 (as *n. gen., nom. nud.*)

India: BI, DL, UK, UP; Nepal (Brunetti, 1913a, 1915, 1917, 1923, Hervé-Bazin, 1923, 1924, Curran, 1928, 1931a,b, Bhatia & Shaffi, 1933, Mathur, 1935, Narayanan, 1941, Pruthi, 1942, Isaac, 1946, Beeson, 1953, Bańkowska, 1962, Anand *et al.*, 1967, Rawat & Modi, 1968, Rao, 1969a, Vockeroth, 1969, Vockeroth, 1971, Knutson *et al.* 1975, Patnaik *et al.*, 1977, Kapoor *et al.*, 1979, Ghorpadé, 1973a,b, 1981a,b, 1994, 2014c, 2015, unpubl., Peck, 1988, Claussen & Weipert, 2003, Mengual *et al.*, 2008b, 2009, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written that this species "is widespread in south and southeast Asia (recorded from Japan, Australia and even Fiji in the literature). . . It is very variable in colour markings, especially the extent of the black facial vitta. The form of the male terminalia, especially the dorsal margin of the minis (see Hippa, 1968: fig 4, mi) and the surstylus, is however

characteristic and constant. It is fairly common in the Indian plains and foothills and its larvae have been reared on several prey species (see Ghorpadé, 1973a, 1981b: 72-73). Wiedemann (1824) described this species from an unspecified number of specimens. What remains of the primary type material (see Osten Sacken, 1878: XV-XVI, and Zimsen, 1954, for the types of Wiedemann) is a single syntype ♂ in NMW, Vienna, and the other syntypes in UZM, Copenhagen are lost. Dr Leif Lyneborg informed me (*pers. comm.*) that there are no identified specimens of '*iavanus*' in UZM. Wiedemann (1824: 35) indicated the type material as being 'In museo nostro; a Westermannio ex Insula Iava allatus,' meaning that they were in 'nostro' [= our] museum [NMV] and in Killiae (= UZM, Copenhagen), brought by Westermann from the island of Java. A male syntype, labeled "Java, Coll. Winthem" exists in Vienna and is designated lectotype here. *Allograpta distincta* (Kertész) and *A. medanensis* (de Meijere) are probably distinct species and not synonyms or varieties of *javana* as previously treated. The former has all yellow antennae and no black facial vitta, and was described from New Guinea (see also Bezzi, 1928: 73 and van Doesburg Sr, 1966: 64). While some specimens of *javana* lack the facial vitta (especially males), or have it extremely reduced, *distincta* is not accepted as a synonym of *javana* (see Knutson *et al*., 1975: 308) until fresh specimens are examined from the type locality (Erima, Astrolabe Bay, New Guinea). The type(s) [in HNHM, Budapest] were destroyed. *A. medanensis*, described from Medan (Sumatra) as a variety of *javana*, is a distinct species, as is apparent from its distinct male terminalia and in the black facial vitta reaching the oral cavity and in its fore femur being black pilose on its apical one-third." At the CNC, Ottawa, I examined 7♂ 23 ♀ from Adhabhar, 600 ft., Royal Botanical Garden, and Godavari 5000-6000' in Nepal, taken in July-August. Mengual *et al.* (2009) presented a comprehensive 'conspectus' of this genus *Allograpta* with a checklist of world species and a key to its 'subgenera,' and their phylogeneti relationships. I (Ghorpadé, 1981b: 72) listed its prey species and also gave a key (Ghorpadé, 1994: 7) to species in this sub-continent. I studied the syntypes in NMW, Vienna and designated a ♂ Lectotype labeled "Java, Coll. Winthem [square pink card] / javanus, det. Wiedem. / javanus Wied., Java / LECTOTYPE, Syrphus javanus Wiedemann, Ghorpade des. 1983." Brunetti (1913a: 164) listed it as '*Sphaerophoria scutellaris*' from NE. India. He acknowledged this 'clerical error' in his later paper (Brunetti, 1915: 214, 217) and listed this species from more localites in NE. India and the Burma-Siam [= Thailand] Frontier, and separated it in a key to Oriental species and the 'forms' of *Sphaerophoria*. Then (Brunetti, 1917: 85) he mentioned it as a *Sphaerophoria*, common on the Simla Hills. In his FAUNA volume (Brunetti, 1923: 100) he gave a full description but still retained it in *Sphaerophoria* (with *indiana* Bigot and *viridaenea* Brunetti) in the key given to these species. He also noted it from Coorg in south India. Hervé-Bazin (1924: 291, 1926: 70-71)) debated its placement in *Sphaerophoria* and stated it to be a *Xanthogramma*. Curran (1928: 241-243, 1931a: 321, 1931b: 355-356) retained it in *Sphaerophoria* and reported it from Malaya, and gave a key. Bhatia & Shaffi (1933: 557-559, Pl. LXII) described and illustrated its life-history in Pusa (Bihar). Mathur (1935: 68-69) recorded it as a predator of psyllids in Dehra Dun. Narayanan (1941) described a new cynipid, *Amblynotus syrphidiphagus* from immatures of this species (as '*Sphaerophoria*') feeding on *Aphid laburni* at Delhi (see also Pruthi, 1942). Isaac (1946) noted it on *Myzus persicae* on potato in Delhi. Beeson (1953: 340) wrote it feeds on *Phylloplecta* sp., "a psyllid species making pit-galls on the leaf of *Shorea robusta*, and *Psylla* sp. on *Bauhinia variegata*, and *Tenaphalara acutipennis*," quoting Bhatia & Shaffi (1933). Anand *et al.* (1967) recorded it (as '*Xanthogramma* sp.' ?) from Delhi, Meerut, Saharanpur and Bulandshahr (U.P.) on aphids infesting coriander, cabbage, mustard, peas and berseem. Bańkowska (1962: 311-314, figs 1, 5-12) differed from placing this species either in *Sphaerophoria* or in *Ischiodon*, and erected a new genus *Helenomyia* for it, with *javana* as the type species. She gave a description of the genus and illustrations of *javana* : head, pleura, abdomen, terminalia. She mentioned it as a 'predator of *Psyllidae*,' and gave its range as India to Australia, with note of a male from Bhim Tal [UK] in November, and 'N.E. India' coll. T. Jermyn [this is in error, as noted elsewhere in this paper, *q.v.*]. Rawat & Modi (1968) recorded its larvae feeding on early nymphs of *Ferrisia virgata* at Jabalpur (M.P.). Vockeroth (1969: 126-130) was the first to put it in the correct genus *Allograpta* in his excellent review of world Syrphini. Then he gave diagnostics and figures of head profile and surstylus (Vockeroth, 1971: 1628). I (Ghorpadé, 1973a) gave an Araeopid as prey, listed its other prey from India, and included it in my Master's thesis (Ghorpadé, 1973b) on Syrphidae of the Bangalore area. Knutson *et al.* (1975: 308) listed it from India to Japan, Fiji and Guadalcanal. Rao (1969a: 787) gave *Aphis gossypii* and *Myzus persicae* as larval prey for this species (see Ghorpadé, 1981b: 65). Patnaik *et al.* (1977: 585) recorded it from the Puri District of Orissa and gave sorghum aphid as prey there. Kapoor *et al.* (1979: 57) listed it from Nepal. I (Ghorpadé, 1981b: 72-73) listed prey from the Indian sub-continent. Agarwala (1983: 37) and Agarwala *et al.* (1983a: 239) gave *Macrosiphum rosae* and *M. rosaeiformis* aphids on rose as prey at Kalimpong (WB), in April-May. Das & Raychaudhuri (1983: 33) listed a '*Xanthogramma* sp.' as predator of aphids on *Rubus ellipticus* at Solan (c. 1450) [HP] in March, which could be this species ? Agarwala *et al.* (1984: 16) gave many prey species of this from India. Anand (1986: 199) listed a '*Xanthogramma* sp.' preying on the aphids *Lipaphis erysimi* and *Acyrthosiphon pisum* at Delhi which could be this species ? Ghorpadé (1994: 7) gave a key to this and three other species of *Allograpta* from the Indian subcontinent, and noted *javana* to be the correct original spelling, not '*iavana*' as used by some authors. Claussen & Weipert (2003: 345) listed specimens taken in Koshi Province of Nepal in November. Mengual *et al.*

(2008b) wrote on the molecular phylogeny of *Allograpta* and then a detailed Conspectus of this genus (Mengual *et al.,* 2009). In the species listed in their *obiqua* species-group they listed this species with *Xanthogramma nakamurae* Matsumura, 1918 as its synonym. Ghorpadé (2014c: 18) and Shah *et al.* (2014: 289) listed it from India to the Solomon Islands and even Australia. Peck (1988: 12) and Mitra *et al.* (2015: 67) listed it. See also Thompson & Rotheray (1998: 99) for a key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Allograpta maculipleura (Brunetti, 1913)

Syrphus maculipleurus Brunetti, 1913, Rec. Indian Mus., 8: 162 (♀; 'Rotung, N.E. Frontier of India') [ZSI, Calcutta - examined]

India: HP ? Nepal ? (Brunetti, 1908, 1913a, 1923, Hervé-Bazin, 1923, 1924, Nayar, 1968a, Vockeroth, 1969, Knutson *et al.*, 1975, Ghorpadé, 1981a,b, 1994, 2014c, 2015, Mengual *et al.*, 2008b, 2009, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti (1913a: 162-164) described this based on a single female from 'Rotung, 25-xii-11, N.E. Frontier of India,' the 'Assam' area in NE. India, and commented on its relationship : "According to Verrall, species with distinct yellow spots on the pleurae should not be included in *Syrphus*, yet it is difficult to know where else to place the present species . . . In its general appearance it is still less like *Mesogramma* or *Allograpta* . . . As it seems to all intents and purposes a *Syrphus*, it is left in this genus, at least for the present." I examined the type in ZSI, Calcutta, a female labeled "Rotung, 1400 ft, Abor Exp. 20.xii.11, Kemp / Syrph. maculipleurae [*sic*] Brun., Type ♀ / TYPE / 1728/HI / Xantho. bouvieri Bazin (Syr. maculipleura Brun.), det. Brun. 1923 / no type in register" It is very dirty and greasy and abdomen is all blackish. Hervé-Bazin (1923: 26) described a *Xanthogramma bouvieri* from Laos, and from Trichinopoly and Coonoor in south India, placing it close to "*X. javanum* [*sic*] Wiedemann," and gave diagnostic characters to separate the two. Hervé- Bazin (1924: 290) then indicated that *bouvieri* was a junior synonym of *maculipleura*. Then he (Hervé-Bazin, 1926: 71-73, figs 4-5) gave a detailed description and illustrated the fly, as well as the terminal abdominal segments of this and of *Xanthogramma javanum* [*sic*] and *Ischiodon scutellaris*, indicating differences. He mentioned having in his collection a female from Laos and three males from 'Trichinopoly (Inde méridionale)' plus two other males in MNHN, Paris from 'Coonoor, Nilghiri' [*sic*] taken by M. Maindron. Knutson *et al.* (1975: 308) listed this synonymy unquestionably, as did Vockeroth (1969: 130). During my doctoral research on Indian Syrphini I doubted this synonymy and in my thesis (Ghorpadé, 1981a) had written "Hervé-Bazin (1924) synonymised *bouvieri* (Hervé-Bazin) under this species, without seeing the holotype of *maculipeura*. Brunetti also agreed with Hervé-Bazin as is indicated by his label on the holotype. But *bouvieri* and *maculipleura* are distinct species (also allopatric) as shown in the key provided then. As mentioned in the remarks under *bouvieri* [see below], I suspect that the female syntype of *bouvieri*, from Laos [MNHN: not examined], either belongs to *maculipleura* or to an allied species, and not to *bouvieri*." When doing my postdoc at the Smithsonian (U.S.A.), I had borrowed and examined one of the syntypes of *bouvieri* Hervé-Bazin [in MNHN, Paris] labeled "Inde Meridionale, Trichinopoly, F. Caius 1911 / Museum Paris, Coll. J. Herve-Bazin 1923 / Xanthogramma Bouvieri H.-B. ♂ Cotype [blue card] / LECTOTYPE, Xanthogramma bouvieri (Herve-Bazin), K.D. Ghorpade des. 1983 [red card]," and designated this as the lectotype of *bouvieri* H.-B. Under *bouvieri* I wrote in my thesis "*Allograpta bouvieri* (Herve-Bazin) was described from a series of specimens collected at Trichinopoly (= Tiruchirapalli, Tamil Nadu) and Coonoor in southern India, and in Laos. . . My specimens from Munnar [Kerala, India] were all taken from a 'swarm' of males hovering 2-3m high in shade by the roadside, in mountain forest. Trichinopoly being on the plains, I suspect the type specimens were actually collected on the Palni Hills nearby, where the species appears to be fairly common during March-April." I studied a male specimen of *bouvieri* in ZMUH (Berlin) labeled "Shembaganur, Madura, Sd. Ind., H. Rolle, Berlin, S.W.11" which locality is just below the hill station of Kodaikanal on the Palni Hills from which mountain range I have taken many more specimens in recent years. Also seen specimens in CNC (Ottawa) taken at "Kodaikanal, Pulney Hills, 6500', S. India, iv.1953, P.S. Nathan, maculipleura det. J.R. Vockeroth." Mengual *et al.* (2009: 15) mistakenly listed *bouvieri* Hervé-Bazin as a synonym of *maculipleura* Brunetti. This Oriental species is here discussed only because Nayar (1968a: 125) recorded a female from "Manali, 5.6 km from Post Office in the Manaslu Gorge, 2129-2440m, N.W. Himalaya, 24.5.1961, coll. S.K. Tandon" identified as *Syrphus maculipleura* Brunetti. I was not able to find this specimen either in ZSI (Calcutta) or IARI (New Delhi) but am certain it was misidentified, invariably for *javana* Wiedemann. Nayar had additionally commented "This species is previously recorded from Rohtung [*sic*] (Assam) and seems to represent Indo-

Malayan element in the Indian fauna. The present collection extends its distribution north-westwards almost up to southern fringe of Southern Palaearctic." Kapoor *et al.* (1979: 52, 57) reported a male taken by Yeeta Rajbhandari at Kirtipur Horticultural Station, Nepal, on composite flowers on 25.xi.1978, but the identity needs to be confirmed, although this is within the possible range of this Oriental species. Ghorpadé (2014c: 18, 2015: 7), Shah *et al.* (2014: 289), and Mitra *et al.* (2015: 67) listed it.] **]**

Asarkina assimilis (Macquart, 1846)

Syrphus assimilis Macquart, 1845, Dipt. Exot. Suppl., 1: 135 (♂; 'India') [UM, Oxford – examined]

India: HP ?; Nepal (Brunetti, 1923, Nayar, 1968a, Knutson *et al.* 1975, Ghorpadé, 2014c, unpubl., Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written that this species "was placed in *Syrphus* until Knutson *et al.* (1975: 309) transferred it to *Asarkina* based on Vockeroth's examination of the unique holotype male. Vockeroth (*in litt.*) had informed me that "a male labeled 'Syrphus assimilis ♂ Macq. n.' in Macquart's hand was in the UM, Oxford. It has rather broad bands on the terga and the hypopleuron is bare below the barette except for a tuft near the posterior spiracle. As I have no further data, it is not possible presently to suggest correct affinities." The presence of broad black fasciae on the tergites precludes it being synonymous with *incisuralis* (Macquart), which has narrow tergal bands." I examined this type borrowed from Oxford and noted "it was in poor condition, flagella of antennae missing, half of left wing lost, two legs and fore tarsi lost. Face all yellow" I made a drawing and found a label with "Syrphus assimilis ♂. Macq. n. sp., India macq. D." written on it. Nayar (1968a: 123) recorded a male from "Kalatop forest area, 2440m, 25.9.1962, coll. J.L. Nayar" identified as *Syrphus assimilis* Macquart, and noted several differences from what was published. This is also again most probably misidentified, but the specimen will have to be checked, if found in ZSI (Calcutta) or IARI (New Delhi). Brunetti (1923: 94) reproduced Macquart's description of a male from "India, Bigot collection." Knutson *et al.* (1975: 309) listed it also from "India." Vockeroth (*in litt.*) sent me notes on the sole holotype male in the Bigot Collection in UM (Oxford), which I also later examined, labeled "Syrphus assimilis ♂ Macq. n." I had noted that this examination "reveals it to be a senior synonym (!) of *Asarkina consequens* (Walker, 1857), a species that has not so far been collected in our subcontinent, but one common in the Malay Peninsula and eastward. This possible synonymy needs to be confirmed after study of male terminalia, etc. At the CNC, Ottawa I found a female taken by the CNC Nepal expedition at Pulchauki, 8000' near Kathmandu, Nepal, which specimen is now n the USNM, Washington, DC. Knutson *et al.* (*op. cit.*) gave 'India' for *consequens* but I am unable to find any published record ! Ghorpadé (2014c: 18), Shah *et al.* (2014: 289), and Mitra *et al.* (2015: 67) listed it.]

Asarkina bhima Ghorpadé, 1994

Asarkina bhima Ghorpadé, 1994, Colemania, No. 3, p. 7 (♂; 'Debrepani, 2010m, 16km W. Ghoom, West Bengal, 22.x.1961, E.S. Ross & D.Q. Cavagnaro') [CAS, San Francisco, CA - examined]

India: UK; Nepal (Ghorpadé, 1981a, 1994, 2014c, 2015, unpubl., Mitra *et al.*, 2015).

[NOTE: I examined a male and five females of this new species that I described from India (WB) and Nepal, taken in July, August and October. In my doctoral thesis (Ghorpade, 1981a) I wrote "Holotype ♂ labeled 'INDIA: West Bengal: Debrepani, 16km W. Ghom, 2010m, 22.x.1961 (*E.S. Ross & D.Q. Cavagnaro*)' [CAS, San Francisco, CA]. This is a very large species, most closely related to *porcina* (Coquillett). It has, however, a very different facial tubercle, more black hairing and different male terminalia. So far known only from Nepal and the Darjeeling Himalaya. The specific name '*bhima*' is after the second Pandava Prince, of Hindu mythology, and alludes to its robust size." I have also taken in it Uttarakhand State in recent years (Ghorpadé, 2014c: 18, and unpubl. data) and had earlier also examined a female labeled "Nepal, Ktmd., Godavari 5000', 20.vii.1967" in the CNC (Ottawa), as well as 1♂ 2♀ paratytpes from Godavari, 6000' near Kathmandu and in pasture at 10,000' in Nepal taken in July-August 1967. I (Ghorpadé, 1994: 7-8) included this in a key to Indian subregion *Asarkina*. See also my notes under *porcina* (Coquillett) below. Ghorpadé (2014c: 18, 2015: 7), and Mitra *et al.* (2015: 67) listed it.]

Asarkina incisuralis (Macquart, 1855)

Syrphus incisuralis Macquart, 1855, Dipt. Exot., Suppl., 5: 94 (LT ♂; 'Inde') [UM, Oxford]

Asarcina ericetorum var. *formosae* Bezzi, 1908, Annls hist.-nat. Mus. Natn. Hung., 6: 499 (♂♀; 'Takao, Formosa') [MNHN, Budapest, lost ?]; Ghorpadé, Colemania, 15: 8 (as *n. syn.*)

Asarcina ericetorum (Fabricius), *A. salviae* (F.) *auct.*: misident.

India: BI, CH, JK, PB, UK, UP; Nepal (Bezzi, 1908, Sack, 1913, 1922, 1932, Brunetti, 1910, 1915, 1917, 1923, Herve-Bazin, 1926, Curran, 1928, 1931a, Keiser, 1958, Coe, 1964, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1973a, 1974, 1981a, 1994, 2009, 2014c,e, 2015,

unpubl., Datta & Chakraborti, 1984, Agarwala *et al*., 1984, Awtar Singh *et al*., 1985, Mitra & Parui, 2002, Mitra *et al*., 2004c, 2007, Ghorpadé *et al*., 2011, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Sack (1913: 3, fig. 2) noted specimens taken in Taiwan andgave a figure of the head profile which shows a carinate face rather like *incisuralis* (Macquart). Later (Sack, 1922: 3) he mentioned more specimens of what he named as 'var. *orientalis* Bezzi' which he noted could be a synonym of *incisuralis* but required study. Knutson *et al.* (1975: 310) recognized it as a distinct species. Then he (Sack, 1932: 230) gave '*ericetorum*' from the Indonesian Lesser Sunda Islands of Lombok and Flores. Brunetti (1910: 171) noted that *Syrphus salviae*, W. [*sic*] was "generally common during summer . . . now relegated to *Asarcina*" in Sri Lanka. 'Later, Brunetti (1915: 210) curiously stated that *Asarcina* [*sic*] "is not a good genus," I wonder why ? Then he mentioned under *Syrphus* (*Asarcina*) *ericetorum*, F. that "*S. salviae*, W., is identical with *ericetorum*, F., described originally from Africa, and the latter name will have to be used for it." He then listed localties he had seen specimens from, ranging from Simla and Sri Lanka through Assam to Java. Then (Brunetti, 1917: 84) he listed '*salviae*' from Simla, taken in August by Capt. Evans, the famous butterfly specialist (see Ghorpadé & Kunte, 2010). In his FAUNA volume (Brunetti, 1923: 63-64) he described and illustrated this (as '*Asarcina ericetorum*, Fabr.') and treated *salviae* Fabr. and *incisuralis* Macq. as synonyms, noting that it is "Widely distributed in India and the East, in both hills and plains, throughout the greater part of the year." No doubt this note stems from a misunderstanding that all of the several species of *Asarkina* here were one and the same, which I had separated recently (Ghorpadé, 1994: 7-8). Hervé-Bazin (1926: 64) mentioned a single female taken in Tonkin (as '*ericetorum*') and gave a brief description. Curran (1928: 232, fig. 13, 1931a: 320) treated this as *salviae* Fabricius and reported it from the Malay Peninsula. His '*salviae*' was possibly *incisuralis* based on the narrow black fasciae of abdominal terga. Keiser (1958: 195-196) interestingly named his Ceylonese specimens, of what evidently were *incisuralis*, as *ericetorum* var. *formosae*, and probably some others as '*porcina*' that were *ayyari* Ghorpadé. Coe (1964: 265) treated it as '*Asarcina ericetorum (*Fabricius)' when reporting specimens from E. Nepal and, like Brunetti, mistook *Asarkina* here as a single species "This species with its numerous named varieties is common and widespread in the Ethiopian, Oriental and Australian regions." In my Master's thesis (Ghorpadé, 1973a, 1974: 636) I reported it from the Bangalore area and continued to use *ericetorum* (Fabr.) then. Knutson *et al.* (1975: 309) listed more than a dozen *Asarkina* (*s. str.*) species from the Oriental region and again wrongly included both *ericetorum* and *salviae* from here ! Macquart's *incisuralis* was treated as a synonym of *ericetorum* Fabricius. Kapoor *et al.* (1979: 57) listed *ericetorum* from Nepal. Datta & Chakraborti (1984: 237, Fig. 1) illustrated its male terminalia and recorded it (again as *ericetorum*) from Jammu & Udhampur (but not in the Kashmir Valley) on flowers of a few plants. Agarwala *et al.* (1984: 16) gave "unidentified aphids (on *Zea mays*)" as prey of this species, but this seems questionable. Awtar Singh *et al.* (1985: 193) also named it *ericetorum* and reported it from the Chandigarh area as a rare species from March-October coming to flowers of mango and wild weeds. I recognized and keyed 7 species of *Asarkina* from the Indian subcontinent (Ghorpadé, 1994: 3, 7-8) and for the first time treated this species as *incisuralis* (Macquart). This was based on a revision of Indian Syrphini for my doctoral thesis research (Ghorpade, 1981a) where I wrote "This is one of the most widely distributed syrphids in the Orient. All earlier workers have misidentified it either as *ericetorum* (F.) or as *salviae* (F.), which are distinct African species, based on my examination of types. The oldest name available for it is *incisuralis* (Macquart) which has priority over *formosae* Bezzi which becomes a new synonym. I have seen examples of this species in the FRI, Dehra Dun, labeled as "*incisuralis*" by Curran. . . It apparently occurs all over India except in the dry northwestern region (?) and on the higher elevations on hills and mountains." Mitra & Parui (2002: 45) recorded '*ericetorum*' from N. Gujarat visiting flowers of *Cassia tora* and *Commelina* sp. in the Jessore and Balaram-Ambaji WLS there. Mitra *et al.* (2004c: 4) collected ten males of '*ericetorum*' from Nepli R.F. near Chandigarh, and a male by this incorrect species name from Jalda P.R. in Bilaspur District (M.P.) in June (Mitra *et al.*, 2007: 54). I clarified the correct name for this species and gave synonymy (Ghorpadé, 2009: 8). See notes in Ghorpadé *et al.* (2011: 80) also. Ghorpade & Pathania (2014: 7) listed this from the Punjab Doab. Shah *et al.* (2014: 289) listed this as a W. Himalayan species. I examined specimens of this species in the DZPU, Chandigarh on my visit there (Ghorpadé, 2014eb: 9). Mitra *et al.* (2015: 67) listed it.

I studied syntypes of *incisuralis* in the Macquart Collection in the UM, Oxford and designated a Lectotype ♂ labeled "Syrphus incisuralis Macquart, 1855 / Asarkina incisuralis Macquart, K. Ghorpade det. 1994." Other syntypes, 2 males and a female, were from "China," but are actually *A. porcina* (Coquillett) ! Knutson *et al.* (1975: 309) gave the type as a ♀ from "Inde" which was incorrect. I also studied syntypes of *Syrphus ericetorum* Fabricius in the NHM, London, present in the Banks Collection. These were 2♀ without any labels (!) but the BMNH Curator gave labels which read "*Syntypes* of *Syrphus ericetorum* Fabr. From Banks' Collection." These were abundantly distinct from *incisuralis* with different facial profile and other characters. When I visited the CNC, Ottawa in August 1983, I examined a female of this species taken at Lothar, 450' near Birganj, in Nepal in August.]

Asarkina porcina (Coquillett, 1898)

Syrphus porcinus Coquillett, 1898, Proc. U.S. natn Mus., 21: 322 (♂; 'Japan, Mitsukuri') [USNM, Washington, DC – examined]

India: UK; Nepal (Shiraki, 1930, Sack, 1932b, Keiser, 1958, Knutson *et al.*, 1975, Peck, 1988, Ghorpadé, 1981a, 1994, 2014c, 2015, unpubl., Thompson & Rotheray, 1998, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: This is a large species of *Asarkina*, originally described from Japan and being widely distributed at high elevations on the Himalayas, 'Assam' and the Khasi Hills, extending eastwards through China to Japan. Shiraki (1930: 347) recorded it from Taiwan and gave a range, from Japan to China, and at Calcutta (error), Khasi Hills and Assam. The record from Sri Lanka by Keiser (1958: 195-196), repeated by Knutson *et al.* (1975: 310) is a misidentification (see my notes under *incisuralis* above). Peck (1988: 13) mentioned it from Transbaikalia and Amur in Russia, Japan and the Oriental region. Ghorpadé (1994: 8) listed it from 'UP' and NE. Indian States to Nepal (see also Ghorpadé, 2014c: 18, 2015: 7) and Burma in this sub-continent and included it in his key. It is sympatric with *bhima* Ghorpadé and superficially similar, but distinct (see key in Ghorpadé, 1974: 7-8). At the CNC, Ottawa I examined 10 ♂ of this species taken at Godavari 5000-6000' and in pasture at 11,000' in Nepal in May, July and August 1967. Shah *et al.* (2014: 289) and Mitra *et al.* (2015:67) listed it. In my doctoral thesis (Ghorpadé, 1981a) I had written that this species "was originally described from Japan and is widely distributed at high elevations on the Himalaya, Assam and the Khasi Hills, extending eastward through China to Japan. The holotype ♂ is in good condition and labeled "Japan, Mitsukuri / Type No. 3992, U.S.N.M. [red label] '/ Syrphus porcinus Coq. / Asarkina porcina (Coquillettt), det. K. D. Ghorpade 1983." The broad abdomen with the black median stripe on tergum 2 and the posterior black band on this tergum not reaching side margins and the somewhat produced facial tubercle (though not as much as in *ayyari* Ghorpadé, *sp. nov*.) easily distinguishes this species. It does not seem that the unrecognized *assimilis* (Macquart) is synonymous with this species. However, *porcina* is not found in the Indian peninsula outside of the Himalayan range and 'Assam,' and records from these southern areas are misidentifications. It is extremely similar to *bhima* sp. nov., but though they are symptaric and superficially similar, I have shown they are distinct species." See also Bezzi (1908), Sack (1932b: 184) and Thompson & Rotheray (1998: 98) for discussion and key to this genus in the Palaearctic.]

[SPECIES INCERTAE SEDIS :

Asiobaccha nubilipennis (Austen, 1893)

Baccha nubilipennis Austen, 1893, Proc. zool. Soc. Lond., p. 136 (LT ♂; 'Kandy, 1700 ft., Ceylon,' here designated) [NHM, London]

Nepal ? (Austen, 1893, Brunetti, 1910, 1923, Sauter, 1922, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 2014c, 2015, Thompson & Rotheray, 1998, Dirickx, 2010, Mitra *et al.*, 2015)

[NOTE: Austen (1893: 136-137, Pl. IV, figs 7,9, Pl. V, fig 14) described this based on specimens from Kandy, ca 1800 ft., in Sri Lanka, taken in May-June by Lieut.Colonel Yerbury there and presented by Brunetti to the British Musuem in 1927. Brunetti (1910: 170-171) noted four males seen from Kandy, taken in October and November in Sri Lanka "by that indefatigable collector Mr. E.E. Green." Then, in the FAUNA volume, Brunetti (1923: 116-117) gave a detailed description and mentioned specimens seen from Sri Lanka as well as from several localities in southern and north-eastern India, and mentioned Austen's diagnosis of this by its different abdominal markings and "the sharply defined facial and antenniferous tubercles when viewed in profile." Sauter (1922: 161) reported a "*Baccha nubilipennis* Walk. [*sic*] from Taiwan. Knutson *et al.* (1975: 323) listed this as *Baccha* (*Allobaccha*) from Sri Lanka, India, Nepal, Taiwan and even Japan. In my doctoral thesis (Ghorpadé, 1981a) I had written "A Lectotype ♂ is here designated labeled 'Type ♂ [red bordered circular label] / Kandy, Ceylon, 28.VI.92, *circa* 1,700 ft., Col. Yerbury, 92-192 / Baccha nubilipennis, Aust. Type ♂ / LECTOTYPE, Baccha nubilipennis Austen, K.D. Ghorpade des. 1983 / Asiobaccha nubilipennis (Austen) ♂, K.D. Ghorpade det. 1983." [NHM, London]. A Paralectotype ♀ was also designated, labeled as "Type ♀ [red bordered circular label] /Kandy, Ceylon, 25.V.92, *circa* 1,700 ft., Col. Yerbury, 92-192 / Baccha nubilipennis, Aust. Type ♀ / PARALECTOTYPE, Baccha nubilipennis Austen ♀, K.D. Ghorpade des. 1983 / Asiobaccha nubilipennis (Austen) ♀, K.D. Ghorpade det. 1983." [NHM, London]." I saw several specimens from Sri Lanka and India (KL, KN, TN, WB) and Burma, besides also from Thailand, Java, Taiwan, Philippines, Ryukyu Is, and Malaysia. I separated this in a key to Indian subcontinent genera (Ghorpadé, 1994: 4). Kapoor *et al.* (1979: 60) listed it from Nepal as '*Baccha* (*Allobaccha*) *nublipennis*' [*sic*]. Ghorpadé (2014c: 18, 2015: 7) and Mitra *et al.* (2015: 67) listed it. Dirickx (2010: 231) gave notes on

this species, *q.v.* Mengual (2015) recently wrote on the systematics and phylogeny of *Asiobaccha*, reviving its status to a good genus, with seven known species in the Oriental—Papuan region. He concluded "Consequently, the combination of pilose anterior anepisternum and sclerotised maculae on posterior wing margin seems to define the '*Episyrphus* clade', with *Asiobaccha*, *Episyrphus* and Meliscaeva. See Thompson & Rotheray (1998: 97) for a key to this genus in the Palaearctic.]]

Betasyrphus aeneifrons (Brunetti, 1913)

Syrphus aeneifrons Brunetti, 1913, Rec. Indian Mus., 8: 159 (♂; 'between Kalek and Misshing, 4000 ft, N.E. Frontier of India') [ZSI, Calcutta – examined]; Ghorpadé, 2009, Colemania, 15: 6. (as *n. comb.*)

Syrphus transversus Brunetti, 1913, Rec. Indian Mus., 8: 160 (♀; 'Sadiya, Assam') [ZSI, Calcutta – examined]; Ghorpadé, 2009, Colemania, 15: 4. (as *n. comb.*, *n. syn.* ?) **n. syn.**

Pakistan; India: CH, PB, UK; Nepal (Brunetti, 1913a, 1915, 1923, Curran, 1928, 1931a,b, Rahman, 1940, Beeson, 1953, Coe, 1964, Biswas *et al.*, 1975, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Das & Raychaudhuri, 1983, Agarwala *et al.*, 1983, 1984, Awtar Singh *et al.*, 1985, Ghorpadé, 1981a, 1994, 2009, 2014c,e, 2015, unpubl., Claussen & Weipert, 2003, Parui *et al.*, 2006, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti (1913a: 159-160) described this as a *Syrphus* from the Abor Hills in Arunachal Pradesh based on two males taken in March at fairly low altitudes there. The holotype from "between Kalek and Misshing (4000 ft.), 18-iii-12," and "the second example taken at Yembung (1100 ft.), 17-iii-12." I examined the holotype ♂ in ZSI, Calcutta, labeled "between Kalek & Misshing, c. 4000 ft, Abor Exped., 18.iii.12, Kemp / Syrph. aenefrons [*sic*] Brun Typ ♂ / TYPE / 1724/HI / Syrphus aeneifrons Type ♂ det. Brun. 1923 / Betasyrphus aeneifrons (Brunetti), K.D. Ghorpade det. 1981." Brunetti (1915: 21) gave this name *aeneifrons* to a male he described in 1913 from "N.E. Front., India, 1100ft., 17-iii-12; 4000 ft., 18-iii-12." He also mentioned a unique female of *transversus* he described as new from Sadiya ['Assam']. I also examined the holotype female of *transversus* in ZSI, Calcutta, labeled "Sadiya, N.E. Assam, Abor Exped., 28.XI.11 / Syrph. transversus Brun. Type ♀ / Syrphus transversus Brun. Type ♀, det. Brun. 1923 / TYPE / 1726/HI." And noted "Seems to be *aeneifrons* by the key, but with some differences," which were listed. At the CNC, Ottawa I examined a male and female from Godavari, 5000' near Kathmandu, Nepal taken in August. In the FAUNA volume, Brunetti (1923: 73-76, 79-80, Pl. II, figs 11-14) described *serarius*, *aeneifrons* and *transversus* as separate species, separated these in a key to '*Syrphus*' and gave illustrations which look like those of *aeneifrons* and of *bazini*. He listed specimens examined of all three from Mussoorie, Kumaon, 5000 & 6000 ft., Almora, Kumaon District, W. Himalayas, 5500 ft., Painsur Garhwal District, W. Himalayas, 7500 ft., Murree, 75oo ft. [now in Pakistan], Soondrijal and Nagarkote in Nepal. For *transversus* he wrote "The unique *type* is now considerably stained, the abdominal markings being indistinguishable." See Ghorpadé & Shehzad (2013: 11) for notes and the possible species from Murree being *isaaci* Bhatia (see below) and not *aeneifrons* Brunetti ? Curran (1928: 200-201, 1931a: 311, 1931b: 353) named this as "*Syrphus serarius*" from Malaya and included it in a key to several species of *Syrphus* from there he had studied. Rahman (1940: 72) noted it (as *Syrphus serarius*') "from various hill stations in India," feeding on the mustard aphid. Beeson (1953: 340) noted this (as '*Syrphus transversus*') feeding on aphids on the hills and the plains, quoting Bhatia & Shaffi (1933). Biswas *et al.* (1975: 5) probably had this species which they misidentified as "*Syrphus serarius* Wiedemann"? Knutson *et al.* (1975: listed it as an uplaced species of *Syrphus*. See Ghorpadé (2009: 4-5) for detailed notes on this species, where I remarked on its place in *Betasyrphus* and also gave further notes on other Indian species of *Betasyrphus*. I wrote that Brunetti described *aeneifrons* and *transversus* in the same paper as new species based on different sexes and that as first reviser I had selected *aeneifrons* as the valid name, this having page priority and also with a male as holotype. This species I noted "appears to fly mostly in NE. India and the eastern Himalaya, though its westernmost record is from Garjia on the [Kumaon] Himalayan foothills in former Uttar Pradesh [= Uttarakhand now]. Awtar Singh *et al.* (1985: 192) listed this as a rare species in Chandigarh and Pinjore, flying from November to January, and taken on wild weeds and grass. Ghorpadé (1994: 8) separated it in a key to Indian Subregion *Betasyrphus*, giving its range as from U.P. to Arunachal Pradesh, flying most months of the year. I then listed it as a good species of *Betasyrphus* (Ghorpadé, 2014c: 18) and then recorded it from Chandigarh and the Indian Punjab (Ghorpadé, 2014e: 9-10, 15, Ghorpadé & Pathania, 2014: 7). Kapoor *et al.* (1979: 60) listed this (as '*aenifrons*')[*sic*] from Kirtipur in Nepal. Claussen & Weipert (2003: 345, 377, figs 8-13) also recorded specimens from Karnali and Koshi Provinces in Nepal and illustrated it. Coe (1964: 261) had earlier mentioned specimens of "*Syrphus serarius*" taken in east Nepal and was confused with the variation he noticed; those could have been *aeneifrons* or *isaaci* (?) and these Nepalese specimens will have to be checked for correct identity. Similarly for the "*Betasyrphus serarius*" for which prey were listed by Agarwala *et al.* (1983: 239, 1984: 16), Agarwala (1983: 37) , Das & Raychaudhuri (1983: 32), and Ghorpadé (1981b: 68-69); and the "*Syrphus serarius*" for which prey were listed by Raychaudhuri *et al.* (1979: 165). Parui *et*

al. (2006: 96) reported a male from Ropar, Nangal (Punjab) taken in March. Shah *et al.* (2014: 290) from the W. Himalaya, and Mitra *et al.* (2015: 67) listed it.]

Betasyrphus bazini (Brunetti, 1925)

Pipizella rufiventris Brunetti, 1915, Rec. Indian Mus., 11: 202 (♀; 'Kousanie, 6075 ft, Kumaon District, Western Himalayas') [ZSI, Calcutta – examined]
Syrphus bazini Brunetti, 1925, Rec. Indian Mus., 27: 75 (*nom. nov.* for *rufiventris* Brunetti, 1915, not Macquart, 1949)
Syrphus albipilus Coe, 1964, Bull. Br. Mus. Nat. Hist. (Ent.), 15(8): 263 (♀; 'Tumlingtar plateau, Arun Valley, East Nepal') [BMNH, London – examined]; Ghorpadé, 2009, Colemania, 15: 5. (as *n. syn.*)
Betasyrphus isaaci : Ghorpadé, 2009, Colemania, 15: 5. (as *n. comb.*)

Pakistan ?; India: BI, UK; Nepal (Brunetti 1915, 1923, 1925, Hervé-Bazin, 1924, Bhatia & Shaffi, 1933, Rao, 1969a, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 2009, 2014c, 2015, Claussen & Weipert, 2003, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti described "*Pipizella rufiventris*" based on "a perfect ♂ in the Indian Museum, presented by Col. Tytler, and taken by him at Kousanie, 6075 ft., Kumaon District, 22-vii-14." In the FAUNA volume, Brunetti (1923: 37-38, Pl. I, figs 9-10) retained this name, perhaps placing it in *Pipizella* owing to the small size (7mm.), and correcting the sex –"erroneously described by me as a ♂." He gave another locality record, from "Pusa [Bihar], 5.iii.1911," without mentioning the sex. Hervé-Bazin (1924: 289) noted this was not a *Pipizella* but a *Syrphus.* Brunetti (1925: 75) then mentioned (name printed in error as '*rufocincta*') Hervé-Bazin and wrote "I now think that *P. rufocincta* [*sic*] can hardly be a true *Pipizella*, though the specimens referred to are not at present available for comparison. As the name *Syrphus rufiventris* [*sic*] is pre-occupied by Macquart in 1849 for an Australian species, I propose *S. bazini* in consideration for the assistance Mr. Hervé-Bazin has generously rendered me in this family." I examined the holotype female of *rufiventris* Brunetti in the ZSI, Calcutta which was labeled "Kousanie, 6075 ft., Kumaon, W. Himalayas, 22,VII.14 / Syrphus [Pipizella] rufiventris Brun. Type ♀ det. Brun. 1923 / Kousanie, Kumaon, R 6675, 2.7.14 / 1502/HI / Betasyrphus bazini (Brunetti) det. K..D. Ghorpade 1981." Bhatia & Shaffi (1933: 559-551, PL. LXIII) described and illustrated its life history (as "*Syrphus serarius*") on mustard aphids in Pusa (Bihar). Knutson *et al.* (1975: 320) listed it as an unplaced species of *Syrphus*. Claussen & Weipert (2003: 345-346, 377, figs 1-7) recorded it from Nepal, a single male taken at 1100m on 5.xii.1998 in Koshi Province. Rao (1969a) gave *Toxoptera aurantii* as larval prey for this species (*vide* Rau, 1936 as '*adligatus*'; see Ghorpadé, 1981b: 65). Kapoor *et al.* (1979: 57) listed it as '*B. albipilus*' from Nepal. The type of *albipilus* Coe, 1964, which I examined in London, is labeled "TYPE ♀ [red circular card] / Syrphus albipius Coe MS, det. R.L. Coe 1963, HOLOTYPE / yellow blooms of cultivated composite, 10-16.xii.1961 ' ARUN VALLEY, Tumlingtar Plateau, c. 2000' ' BRIT. MUS. EAST NEPAL EXP. 1961-62, R.L. Coe coll., B.M. 1962-177 / Betasyrphus bazini (Brunetti) ♀, K.D. Ghorpade det. 1979." This was made a new synonym of *Syrphus bazini*, 1915 (Ghorpadé, 2009: 5). Ghorpadé (2014c: 18, 2015: 7), Shah *et al.* (2014: 290), and Mitra *et al.* (2015: 67) listed it.]

Betasyrphus isaaci (Bhatia, 1933)

Syrphus isaaci Bhatia *in* Bhatia & Shaffi, 1933, Indian J. agric. Sci., 2(6): 566, PL. LXVI (♂; 'Assam-Bhutan Frontier, Mangaldai Dist., N.E.') [ZSI, Calcutta – examined]
Betasyrphus isaaci : Ghorpadé, 2009, Colemania, 15: 5. (as *n. comb.*)
Syrphus instabilis Brunetti *vide* Bhatia & Shaffi, 1933, Indian J. agric. Sci., 2(6): 566 : *nom. nud.*
Syrphus plumbicinctus Brunetti *vide* K.D. Ghorpade, MS notes : *nom. nud.*

Pakistan; India: BI, CH ?, HP, JK, PB, UK, UP; Nepal (Bhatia & Shaffi, 1933, Rau, 1936, Rahman, 1940, Beeson, 1953, Rao, 1969a, Vockeroth, 1969, Ghosh, 1974, Knutson *et al.*, 1975, Das & Raychaudhuri, 1983, Awtar Singh *et al.*, 1985; Ghorpadé, 1981a, 1994, 2009, 2014c,e, 2015, unpubl., Ghorpade & Shehzad, 2013, Aslamkhan *et al.*, 1997, Claussen & Weipert, 2003, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: See also my notes under *aeneifrons* Brunetti above. Bhatia (*in* Bhatia & Shaffi, 1933: 566-567, PL. LXVI) described and illustrated this new species which Brunetti had recognized as new but not described, naming specimens of this species as '*Syrphus instabilis*" and "*Syrphus plumbicinctus*" which are in the ZSI Calcutta. I examined all of these specimens and the holotype ♂ of *isaaci* (in ZSI, Calcutta), labeled "Assam-Bhutan Frontier, Mangaldai dist., N.E., 31.xii.10, S.W. Kemp / S. instabilis Brun. Type ♂ / TYPE / 1824/H2 / Syrphus isaaci sp. nov. Bhatia and Shaffi / Betasyrphus isaaci (Bhatia), K.D. Ghorpade det. 1981." The allotype ♀ (in IARI, New Delhi) is labeled "bred from larva found feeding on mustard aphis on 11.2.32, pupated 14.2.32, emerged 29.2.32, Bhatia coll., Pusa / TYPE ♀ / Syrphus isaaci, sp. nov. Bhatia, H. Bhatia det. 1932 / D/8291 / Betasyrphus isaaci (Bhatia) ♀, K.D. Ghorpade det., 1981." A male specimen in ZSI (Calcutta) is labeled "Painsur, 7500', 20.4.14 / Painsur, above Lobha, 7500 ft., Garhwal, W. Himalayas, 20-iv-14, Tytler / S. plumbicinctus ♂ Brun Type det. Brun. 1923 / Betasyrphus isaaci (Bhatia), K.D. Ghorpade det.

1981." Another female specimen is labeled "Almora, 5,500 ft, Kumaon, 30-ix to 4-x- 11, C. Paiva / S. plumbicinctus ♀ Brun. Type ♀ / TYPE / 1819/H2 / Syr. plumbicinctus ♀ Brun. Type det. Brun. 1923 / Betasyrphus isaaci (Bhatia), K.D. Ghorpade det. 1981." I had also noted – "This species is the most common and widespread *Betasyrphus* on the Himalaya and the Gangetic Plains to its south. Hitherto it was misidentified as *serarius* (Wiedemann), and even Vockeroth (1969: 70, Fig. 37) committed this error, his figure of male terminalia being that of *isaaci* and not of *serarius*. In the CNC, Ottawa I examined a female of this species taken in a Malaise Trap at Godavari, 6000' near Kathmandu in Nepal in August 1967. Also examined 3 ♀ taken in the Royal Botanical Garden at Godavari, 5000' near Kathmandu, Nepal in July as well as from 11,100' in pasture there. Rahman (1940: 72) listed this (as '*Syrphus*') from Assam, Nepal, Mussoorie, Kumaon, and Pusa. Beeson (1953: 340) noted this (as '*Syrphus serarius*') feeding on aphids on the hills and the plains, quoting Batia & Shaffi (1933). Rao (1969a: 787) gave *Aphis gossypii* and *A. spiraecola* as larval prey for this species (as '*serarius*,' see Ghorpadé, 1981b: 65). Ghosh (1974) recorded *Lipaphis erysimi* as prey of this species, and a few other aphids (as '*serarius*'). Knutson *et al.* (1975: 319) listed this as an unplaced species of *Syrphus* and distributed in "Assam, Bihar, Uttar Pradesh and Nepal." Das & Raychaudhuri (1983) reported prey from Himachal Pradesh. See under *aeneifrons* other papers of prey records, which could be of *isaaci* and not of *aeneifrons* ? Awtar Singh *et al.* (1985: 192) recorded this (as "*Syrphus serarius*" as a rare species taken at Chandigarh and Pinjore from November to February on flowers of candy-tuft and wild weeds. See Ghorpadé (2014e: 10) for more notes. Ghorpadé & Shehzad (2013: 11) mentioned records from Pakistan from which country several current records have been made by working entomologists there (photos sent to me for IDs and confirmed). Kapoor *et al.* (1975: 58) recorded a '*B. serarius*' from Nepal which could actually be this species ? See also notes in Ghorpadé (2009: 5-6), where I stated "This most widespread *Betasyrphus* in the northern parts of this subcontinent appears to be more abundant in the north-western areas, unlike *aeneifrons* which appears to be more north-eastern (*vide supra*) in range (see Ghorpade 1994: 8)." Ghorpadé & Shehzad (2013: 11) gave records from Pakistan. Claussen & Weipert (2003: 345, 377) recorded it in Nepal from Karnali Province in June. See also Sack (1932b: 198) and Thompson & Rotheray (1998: 102) for discussion and key to this genus in the Palaearctic.]

Chrysotoxum antiquum Walker, 1852

Chrysotoxum antiquum Walker, 1852, *Insecta Saundersiana*, 3: 218 (♂; 'India orientalis') [NHM, London – examined]

Chrysotoxum violaceum Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 302 (♂; 'Sureil, Darjiling District, 5000 ft') [ZSI, Calcutta – examined]; Ghorpadé, 2012, Colemania, 32: 2 (as n. *syn.*)

Pakistan; India: HP, UK; Nepal (Brunetti, 1923, Knutson *et al.*, 1975, Ghorpadé, 1981a, 1994, 2012, unpubl., Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 301-302) gave complete description of *antiquum* which was described "from the *type* ♂ (without antennae), and a ♀ in good condition from Simla (*Sladen*), both in the British Museum" [NHM, London]. He also described in full his new species *violaceum* "from several of each sex in the Indian Museum from Sureil, Darjiing District, 5000 ft., 11-31.x.1917 (*Annandale & Gravely*)" and "One ♀ in the British Museum from Simla (*Sladen*). *Types* in the Indian Museum [ZSI, Calcutta]. A most beautiful species, closely allied to Walker's *C. antiquum*, though I feel convinced that it is really distinct. He separated these two only by colour characters in his key. Knutson *et al.* (1975: 326-327) listed these as separate species. In a paper devoted only to this genus (Ghorpadé, 2012: 2) I newly synonymised *violaceum* under *antiquum* and gave reasons and also notes on both holotypes which I had examined. The holotype ♂ of *antiquum* Walker is labeled "Chrysotoxum Type antiquum Walk. [circular white green bordered label] / India / Ind." The holotype ♂ of *violaceum* Brunetti is labeled "Sureil, 5000 ft. / Darjiling dist., E. Himalayas, 11-31.x.17., N.A. & F.G. / Chrysotox. violaceum Brun Type ♂ / TYPE / 2342/H2." There is a Paratype of *antiquum* in the CNC (Ottawa) labeled "Sureil, Darjeeling dt., 5000 ft," which I have examined. Also examined a female from Nepal taken in a Malaise Trap at Godavari, 6,000' near Kathmandu in August. Specimens were seen from Dalhousie 2132m and Mussoorie, 2005m, besides Simla, on the W. Himalaya, besides in Nepal. I also examined a male taken on Mt Victoria, Chin Hills, 2400-2800m in Burma, besides many from Darjiling and nearby localities. The violet colour form, named *violaceum* by Brunetti, seems curiously frequent in specimens collected on the Darjiling Hills, but I saw a female with this colour taken at Mussoorie as well (in USNM, Washington, DC). Diagnostic characters of this species were given in my key (Ghorpadé, 1994: 8-9). It has been confirmed from Swat in Pakistan recently (Shehzad, *pers. comm.*). Ghorpadé (2014c: 18, 2015: 7), Shah *et al.* (2014: 291) and Mitra *et al.* (2015: 68) listed it.]

[SPECIES INCERTAE SEDIS :

Chrysotoxum arcuatum (Linnaeus, 1758)

Musca arcuatum Linnaeus, 1758, *Syst. Nat.* ed. 10, 1: 592 (LT ♀; 'Europa' = Sweden) [NHM, London]

Pakistan?; India: BI ? (Violovitsh, 1974, Thompson *et al*., 1982, Peck, 1988, Ghorpadé, 1981a, 1994, 2012, 2014c, Mitra *et al*., 2015).

[NOTE: This is a widespread Palaearctic species flying from Ireland to Japan. The sole Indian record needs confirmation and is from Bihar (Rothschild Collection) wrongly identified as *festivum* (Linnaeus). See Ghorpadé (2012: 1) for more notes. Violovitsh (1974: 203, fig. 11a) keyed it out with other Palaearctic species and illustrated the antenna. Thompson *et al.* (1982: 151-152) gave detailed notes on the Lectotype they selected and designated while clearing the confusion between this and *festivum* of modern and early authors, *q.v*. They wrote "Thus, *Chrysotoxum festivum* of modern authors (Sack, 1930: 226; Coe, 1953: 39; Seguy, 1961: 120; Stackelberg, 1970: 37) is *arcuatum* Linnaeus, and *arcuatum* of these authors should be known as *fasciatum* Müller (1764: 85)."] **]**

Chrysotoxum baphyrum Walker, 1849

Chrysotoxum baphyrus Walker, 1849, List. Dipt. Br. Mus., 3: 542 (♂; 'north Bengal, India') [NHM, London]

Chrysotoxum indicum Walker, 1852, *Insecta Saundersiana*, 3: 218 (♂; 'East Indies') [NHM, London – examined]

Chrysotoxum sexfasciatum Brunetti, 1907, Rec. Indian Mus., 1: Pl. XIII, fig. 9; Brunetti, 1908, *ibid.*, 8: 89 (♀; 'Rampore Chaka, Bijnor district, United Provinces') [ZSI, Calcutta – examined]

Chrysotoxum citronellum Brunetti, 1908, Rec. Indian Mus., 8: 90 (♂; 'Kandy, Ceylon') [NHM, London]

Chrysotoxum testaceum Sack, 1913, Ent. Mitt., 2: 9 (ST ♂♀; 'Yama and Tappani, Taiwan' [SMF, Frankfurt]; Ghorpadé, 2012, Colemania, 32: 2. (as *n. syn.*)

Chrysotoxum mundulum Hervé-Bazin, 1923, Bull. Soc. Ent. Fr., p. 27 (♂; 'Cochinchine') [MNHN, Paris – examined]

Chrysotoxum fasciatus Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 115 (♀; 'Panjab Univ., Chandigarh') [IARI, New Delhi – examined]; Ghorpadé, 2012, Colemania, 32: 2. (as *n. syn.*)

Pakistan; India: CH, HP, JK, PB, UK, UP; Nepal (Brunetti 1907b, 1908, 1910, 1913a, 1917, 1923, Sack, 1913, Hervé-Bazin, 1923, 1924, Coe, 1964, Violovitsh, 1974, Knutson *et al.* 1975, Kapoor *et al.*, 1979, Datta & Chakraborti, 1984, Awtar Singh *et al*., 1985, Kohli *et al.*, 1988, Ghorpadé, 1981a, 1994, 2012, 2014c,e, 2015, unpubl., Ghorpadé & Shehzad, 2013, Patil *et al.*, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: See Ghorpadé (2012) for a detailed review of this genus in the Indian sub-continent. I had written "*C. baphyrum* is extremely variable in markings on the face, and in relative lengths of antennal segments, the opaque yellow scutellar patches, black markings on terga 2 to 5, posterior anepisternum (which may also be yellow in some specimens), black sternal fasciae (especially on sternum 4), facial black vitta, infuscation on wing, etc. The extreme bases of first and second basal cells may be narrowly bare, and the barette and anterior anepisternum may be black in some specimens." Types seen by me are as follows : holotype of *sexfasciatum* Brunetti is labeled "Simla, W. Himalayas, 7000 ft., 9-V-10, Annandale / Chrysotoxum 6 fasciatum Brun. Type ♂ / TYPE / 2159/HI / Chrysotoxum 6 fasciatum = baphyrus Walk., det. Brun. 1923 / Chrysotoxum baphyrus Walker ♂, K.D. Ghorpade det. 1981." Holotype of *indicum* Walker is labeled "Chrysotoxum Type indicum Walk. [circular white green bordered label] / India / Ind. / Chrysotoxum baphyrum Walker ♂, K.D. Ghorpade det. 1983." Holotype ♂ of *mundulum* Hervé-Bazin is labeled "COCHINCHINE, Chuachan le 26.I.1921, R. Vitalis de Salvaza / Chrysotoxum mundulum H.-B. ♂ Type [blue label, handwritten] / Chrysotoxum baphyrum Walker ♂. K.D. Ghorpade det. 1983." I also examined 2♂ Paratypes of *mundulum* in MNHN (Paris). I also saw a Homotype ♂ of *testaceum* Sack (in CNC, Ottawa; compared by Vockeroth; head lost), labeled "Chisan Park, Koashung, TAIWAN, 19.VII.1968, J.W. Boyes / Boyes Cytolog. Coll. #956, To remain in C.N.C. [yellow label] / comp. with STs Chrysotoxum testaceum Sack, Vockeroth '69 [blue label] / Chrysotoxum baphyrum WALKER ♂, K.D. Ghorpade det. 1983."

Brunetti (1907b: Pl. XIII, fig. 9, 1908: 89-90) described and illustrated his new *sexfasciatum* from a female "taken 23—31-xi-07, at Rampore Chaka, Bijnor district, United Provinces." Brunetti (1908: 90-91, fig.) also described and illustrated his new *citronellum* "described from a unique ♂ in my own collection, sent by Mr. E. Green; taken at Kandy (Ceylon), December 1907" (with missing antennae). He then wrote "At first I thought it was the ♂ of my *sexfasciatum*, but am now convinced ir is quite distinct. The three colours in the abdomen stand out very clearly." He mentioned this in his Notes on Ceylon Diptera (Brunetti, 1910: 171). Brunetti (1913a: 169) mentioned a male "taken between Rotung and Kalek (2000-3500 ft.), 14—15-iii-12, differing as follows "the antennae show hardly any red at their base, and the antennal protuberance is wholly shining black." Then Brunetti (1917: 89) mentioned this (as '*6-fasciatum*') from "Simla, 9-v-10." In his FAUNA volume (Brunetti, 1923: 296-298, figs 62-63) he synonymised his *sexfasciatum* and *citronellum* along with Walker's *indicum* with this species giving it a wide range from NW. to NE.

India, peninsular India and Sri Lanka. Sack (1913: 9-10) described his *testaceum* from 'Formosa' [= Taiwan] which Knutson *et al.* (1975: 326-327) kept as valid, and listed *baphyrum (*as "*baphyrus*"] and its synonyms. I (Ghorpadé, 2012: 2) synonymised it with *baphyrum* after examining types. Hervé-Bazin (1923: 27) described his *mundulum* from "Cochinchine" mentioning its likeness to *sexfasciatum* Brun. and *indicum* Wlk., and this was also synonymised by Knutson *et al.* (1975: 327). Hervé-Bazin (1924: 299) gave notes on this (as "*Baphyrus*") and noted that his *mundulum* was a synonym. Coe (1964: 265) reported a male from east Nepal from "blooms of *Guizotia abyssinica*," and Kapoor *et al.* (1979: 61) listed this from Nepal. Violovitsh (1974) gave a key to Palaearctic species of this genus and many illustrations of abdomen and antennae, but did not include *baphyrum*. Datta & Chakraborti (1984: 242) listed specimens taken in Jammu & Kashmir and gave flower records. Awtar Singh *et al.* (1985: 193) listed this from Chandigarh and Surajpur in March to October, visiting wild weed flowers and being rare there. Kohli *et al.* (1988: 115, 18, figs 8-9) described as new *fasciatus* from the Panjab Univ., Chandigarh which I synonymised after examining the holotype female (Ghorpadé, 2012: 2). Ghorpadé (1994: 8-9) keyed ten species of *Chrysotoxum* recorded in this subcontinent. Recently, Patil *et al.* (2013) recorded the sugarcane root aphid, *Tetraneura javensis* as its prey in northern Karnataka, India. Ghorpadé & Shehzad (2013: 11-12) gave notes on records from Pakistan. Ghorpadé & Pathania (2014: 7), Ghorpadé (2014e: 15), Shah *et al.* (2014: 291), and Mitra *et al.* (2015: 68) listed it.]

Chrysotoxum caucasicum Sack, 1930

Chrysotoxum caucasicum Sack, 1930, *Fliegen Pal. Reg., Syrphidae*, 31, 4(4): 224 (sex ?; *nom nov*. for *derivatum* Walker, 1849 not Becker, 1921) [?]

Chrysotoxum derivatum Becker, 1921, Mitt. Zool. Mus. Berl., 10: 76 (sex ?; 'Kaukasus, USSR and von Alai-Gebirge in S. Sibirien' = Alai mts, not S. Siberia) [?]

Afghanistan (Bańkowska, 1968, Violovitsh, 1974, Peck, 1988, Ghorpadé, 2014c,e).

[NOTE: Bańkowska (1968: 204, figs 3-5) listed specimens taken in north-east and east Afghanistan and illustrated its antenna, wing and tergal pattern. Violovitsh (1974: 202, 208, fig.3d) included this species in his key to Palaearctic *Chrysotoxum*. Peck (1988: 57), and Ghorpadé (2014c: 18, 2014e: 9) listed it.]

Chrysotoxum convexum Brunetti, 1915

Chrysotoxum convexum Brunetti, 1915, Rec. Indian Mus., 11: 249, Pl. XIII, fig. 19 (♂; 'Andarban, Garhwal Distr., 11,000 ft, W. Himalayas') [ZSI, Calcutta – examined]

India: JK, UK; Nepal (Brunetti, 1915, 1923, Knutson *et al*., 1975, Ghorpadé, 1981a, 1994, 2014c, 2015, unpubl., Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Brunetti (1915: 249-250, Pl. xiii, fig, 19, 1923: 298-299, fig. 64) described this as new from a single male taken at Andarban, 11,000 ft., in the Garhwal Himalaya by Col. Tytler in June 1914, and remarked "The brownish-orange of this species presents a contrast with the lemon-yellow colouring of *C. festivum*." And he also wrote "This species has a considerable resemblance to the *C. intermedium* of Europe, differing in its larger size and the greater prominence of the buccal region. It is just possible that it is a variety of the European species." Knutson *et al.* (1975: 327) listed this from "Uttar Pradesh." I examined the holotype male (in ZSI, Calcutta) which has almost all of the antennae lost except for the left pedicel, and is labeled "Chryso. convexum Brun Type ♂, det. Brun. 1923 / Andarban, 11000 ft., Garhwal, W. Himalayas, VI-14., Tytler / Andarban, Garhwal, E 11000, 6-14 / 2161/HI." I also examined two males and a female of this species from Tibet in the BMNH (London) taken by Major R.W.G. Hingston at Tropde and Tasam, Rongahar Valley, 12,000 ft, 20 & 21 June 1924 when on the British Museum Mt Everest Expedition (1924-386). This is on the Chinese, northern, slope of the Everest massif and this species could be present in Nepal on the southern slope also ? Ghorpadé (1994: 8-9) included it in a key to Indian subregion *Chrysotoxum*. Ghorpadé (2014c: 18, 2015: 7), Shah *et al.* (2014: 291), and Mitra *et al.* (2015: 68) listed it.]

Chrysotoxum corbetti Ghorpadé, 1994

Chrysotoxum corbetti Ghorpadé, Colemania, No. 3, p. 9 (♂; 'Mussoorie') [UZM, Copenhagen– examined]

India: UK (Ghorpadé, 1981a, 1994, 2014c, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: The holotype male and paratype female were taken by an expedition to India by the Zoological Museum, Copenhagen (Denmark), in a Malaise Trap set up from 3-14 August 1978,. I (Ghorpadé, 1994: 8-9) keyed it along with other Indian subregion species of this genus, while proposing its name *corbetti* in honour of the late Jim Corbett, a legendary *shikari*, whose books ('*Man eaters of Kumaon*,' etc.) on his exploits with man-eating tigers on the Kumaon Himalaya, and his tips on jungle lore in them, did much to stimulate my interest in wildlife when just a schoolboy. The Corbett National Park on the foothills of the 'Naini Hills' of the Himalaya in Uttarakhand was named in recognition of Mr Jim Corbett's pioneering achievements with wildlife conservation programmes in India. Species of *Chrysotoxum*, brilliantly coloured, in a way resemble the

magnificent striped Royal Bengal Tiger (*Panthera tigris*) and similarly "prowl" Himalayan and other jungles in this sub-continent ! Ghorpadé (2014c: 18), Shah *et al.* (2014: 291), and Mitra *et al.* (2015: 68) listed it.]

Chrysotoxum fasciolatum (De Geer, 1776)
Musca fasciolata De Geer, 1776, Mém. Ins., 6: 124 (sex ?; ' ? ' = Sweden [?]

Pakistan ?; India: JK, UK (Violovitsh, 1974, Ghorpadé, 1981a, 1994, 2014c, unpubl., Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.* 2015).

[NOTE: Aslamkhan *et al.* (1997) listed this from Pakistan but this needs to be verified for correct identity (see Ghorpadé & Shehzad, 2013: 20). I examined and determined a male and female in the BMNH (London) collection labeled "Kashmir, Gulmarg, 19.vi.31, Fletcher coll. / 19.VI / Brit. Mus. 1932-13 / Chrysotoxum fasciolatum (De Geer), K.D. Ghorpade det. 1983." The female had identical labels except for the date, which is 13 June. I also have another female specimen taken by my Bhim Tal (Uttarakhand) entomologist (butterflies) colleague labeled "U.P., Khiron, 3600m, 24.viii.92, P. Smetacek," which is also this species. Violovitsh (1974: 201, 208, fig. 4d) gave its range as "From Lenigrad and the Southern Ukraine in the west to the Urals. Northern and central Europe," and also keyed this out in that Palaearctic *Chrysotoxum* paper, as did Ghorpadé (1994: 9) in his Indian subregion one.]

Chrysotoxum intermedium Meigen, 1822
Chrysotoxum intermedium Meigen, 1822, Syst. Beschr., 3: 169 (sex ?; 'aus hiesiger Gegend' = ?Stolberg near Aachen) [?]
Chrysotoxum fuscomarginatum Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 300 (♀; 'Chitral') [NHM, London – examined] ; Ghorpadé, 2012, Colemania, 32: 2. (as *n. syn.*)
Chrysotoxum ladakense Shannon, 1926, Proc. U.S. natn Mus., 69(11): 13 (♀; 'Rupshu Ledak, 16,000 ft, Kashmir, India') [USNM, Washington, DC – examined]; Ghorpadé, 2012, Colemania, 32: 2. *n. syn.*

Afghanistan; Pakistan; India: HP, JK (Brunetti, 1923, Shannon, 1926, Bańkowska, 1969, Alam *et al.*, 1969, Violovitsh, 1974, Knutson *et al.*, 1975, Peck, 1988; Ghorpadé, 1981a, 1994, 2012, 2014c,d, Aslamkhan *et al.*, 1997, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Bańkowska (1969: 285) mentioned specimens of this species taken at Jalalabad, Nengrahar Prov., E. Afghanistan in April 1967 by Povolny. I had written (Ghorpadé, 2012: 2) "Determined specimens of *C. intermedium* Meigen, 1822 in the NHM (London) and USNM (Washington, DC) have been compared by me with the holotypes of *ladakense* Shannon, 1926 (Rupshu Ladak) and *fuscomarginatum* Brunetti, 1923 (Chitral) in the USNM, Washington, DC and NHM, London and found to be synonymous. *C. intermedium* is widespread in Europe, northern Africa, through to Iran, Afghanistan (Peck, 1988: 60) and now to Pakistan and NW. India through these synonyms." The holotype female of *ladakense* Shannon is labeled "Rupshu Ladak / 16000ft, Jul 22.97 / Kashmir, Dr WL Abbot / Type No. 28312 U.S.N.M. [red label] / Chrysotoxum ladakense Shn. / Chrysotoxum intermedium MEIGEN, K.D. Ghorpade det. 1983." The holotype female of *fuscomarginatum* Brunetti is labeled "Type [red bordered circular white label] / Chitral., R. Hill., 1910-13 / C. fusco-marginatum, Brun. Type ♀, det. Brun. 1923 / Chrysotoxum intermedium MEIGEN, K.D. Ghorpade det. 1983." One other teneral specimen in NHM (London) from 'E. Punjab, Kangra Dist., Kulu, Dibibokri Nal., Runi Thach., 12.800', 10.vii.1952, E.A.C.L.E. Schwlpe., B.M. 1953-171.' was also tentatively determined as *intermedium* by me but needs verification. See also Ghorpadé & Shehzad (2013: 12) for more notes. Violovitsh (1974: 199, 203, 208, figs 8c, 11c) keyed *intermedium* and *ladakense* as separate species (like Peck, 1988: 60) and gave illustrations. Knutson *et al.* (1975: 327) listed only *ladakense*, and Ghorpade (1994: 9) keyed only *intermedium*. Ghorpadé (2014c: 18, 2014d: 9), Shah *et al.* (2014: 291), and Mitra *et al.* (1015: 68) listed it. See also Sack (1932b: 219) and Thompson & Rotheray (1998: 95) for discussion and key to this genus in the Palaearctic.]

Chrysotoxum Unnamed sp. 1 [undet.]
India: UK (Chaturvedi, 1981)

[NOTE: Listed as an undetermined species of this genus from the Valley of Flowers, Garhwal Himalaya visiting umbelliferous flowers there.]

Citrogramma citrinum (Brunetti, 1923)
Xanthogramma citrinum Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 95, Pl. II, fig. 20 (♂; 'Assam-Bhutan Frontier, Mangaldai dist.') [ZSI, Calcutta – examined]

Pakistan ?; Nepal (Brunetti, 1923, Hervé-Bazin, 1924, Curran, 1930, Nayar & Nayar, 1965, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 2014c, 2015, Wyatt, 1991, Arif, 2001, Saleem *et al.*, 2001, Mengual, 2012, Ghorpadé & Shehzad, 2013, Mitra *et al.*, 2015).

[NOTE: Brunetti (1923: 95-97, Pl. II, fig. 20) described this as a *Xanthogramma* based on specimens in the ZSI, Calcutta from NE. and S. India. I studied the holotype male deposited there which was labeled "Assam-Bhutan Frontier, Mangaldai dist., N.E., 26.XII.10, S.W. Kemp / Xantho. Citrinum Brun. Type ♂ / TYPE / 2286/H2 / Xantho. citrinum Brun. Type ♂ det. Brun., 1923 / Citrogramma citrinum (Bruneti), det. K.D. Ghorpade det. 1981." What is the Allotype female was also seen, labeled "Xantho. citrina [*sic*] Brun. Type ♀ / Ghumti, Darjiling dist., E. Himalayas, c. 4000 ft., VII.11., FH. Gravely / TYPE / 2287/H2 / Citrogramma citrinum (Brunetti), det. K.D. Ghorpade det. 1981." This is a dominantly Oriental species (see Vockeroth, 1969: 92-95, Map 14) and the records from Pakistan (see Ghorpadé & Shehzad, 2013: 12) are surprising and require confirmation by studying the specimens on whom these records are based. In India it is only found in the north-east and has been taken at Kirtipur in Nepal (Kapoor *et al.*, 1979: 58). Hervé-Bazin (1924: 290) mentioned that this was not a real *Xanthogramma,* so he had placed it, like his *clarum,* in *Olbiosyrphus,* and pointed out resemblances with *javanum* Wied., *obscuricorne* de Meij., and *maculipleura* Brun., but all these are now placed in *Allograpta.* He then made more comments (Hervé-Bazin, 1926: 66-69), retaining it in *Olbiosyrphus* Mik, and mentioning *laetus* Fabr., as its type species, as well as *luteifrons, circumdatus* and *gedehanus,* all of de Meijere, besides this species. Vockeroth (1969: 90 and 92-95) finally cleared up this mess about "*Xanthogramma*," and made *Olbiosyrphus* a synonym of true *Xanthogramma* Schiner and placed all the other species mentioned by Hervé-Bazin in his new genus *Citrogramma,* with *citrinum* and *clarum* as its good species. Curran (1930: 214-215) treated it as a *Syrphus,* gave a key to all Malayan species and wrote "The female difers from allied forms in having the pale fascia on the second segment of the abdomen basal and scarcely interrupted. The narrow base of the scutellum is even darker than in the ♂." Nayar & Nayar (1965: 241) listed "*Xanthogramma citrinum*" from the Agra area which is interesting in that this region is on the Gangetic Plain. Many of their species listed from Agra are suspicious and require confirmation. Wyatt (1991: 163, fig. 13) gave notes on this in a revision of *Citrogramma* based on material in the NHM, London. He made interesting comments like "the original description is based on two distinct species as the males are wrongly associated with the females. The females have a continuous large yellow area on the pleurae resembling *clarum,* and may therefore be that species, though I know of no definite records of this species from India. Mengual (2012) made a comprehensive review of this genus erected by Vockeroth (*op. cit.*) where I had also given some inputs from the Indian sub-continent whose species were keyed by me earlier (Ghorpadé, 1994: 9). In this paper Mengual (2012: 135) confirmed Wyatt's observation. The specimens from "Sidapur, Coorg, S. India, 8000 [*sic*] ft., 15.iii.1917" I found (2 ex.) in IARI, New Delhi, and they turned out to be my *chola* which is now here synonymised with *flavigenum* Wyatt. **n. syn.** Brunetti (1923: 97) mentioned "An additional ♂ from Janakmukh (Abor Expedition), 600 ft., 18.xii.1911 (*Kemp*)," gave differing characters and ended "It may possibly represent a different species." Wyatt (1991: 163) also wrote "Brunetti considered an additional male from Janakmukh to be probably a distinct species also, which is likely to be true. Mengual (2012: 135) also mentioned this and felt it "could key out to *Citrogramma marissa* Mengual sp. nov." In my doctoral thesis (Ghorpadé, 1981a) I had written that this specimen could be either *hervebazini* (Curran) or *pendleburyi* (Curran)" and this still needs to be sorted out. Mengual's material (2012: 125, 128), purported to be all of his *amarilla* n. sp. is mixed, and not all of that new species fly in a wide range, from NE. and S. India to China, Laos and Vietnam as indicated ! Knutson (1975: 311) listed this species only from "Assam and Mysore" in India. I had also written in 1981, "Vockeroth (1969) misidentified a male from Sri Lanka (as did Keiser, 1958), whose termnalia he figured, as this species, but which is actually *henryi* Ghorpadé. One paratype ♀ of '*Syrphus variscutatus* Curran' [in CNC, Ottawa] is *citrinum,* and this is the only female of *citrinum* I have seen." Ghorpadé (2014c: 19, 2015: 7) and Mitra *et al.* (2015: 68) listed it.]

Citrogramma clarum (Hervé-Bazin, 1923)

Olbiosyrphus clarus Hervé-Bazin, 1923, Bull. Soc. Ent. Fr., p. 25 (LT♂; 'Chapa, Vietnam') [MNHN, Paris]

Xanthogramma fasciatum Shiraki, 1930, Mem. Fac. Sci. Agric. Taihoku Inp. Univ., Ent., 1: 410 (♀; 'Rakuraku, Taiwan') [NIAS, Tsukuba]

Nepal (Hervé-Bazin, 1923, 1924, 1926, Curran, 1928, 1931a,b, Shiraki, 1930, Vockeroth, 1969, Knutson *et al.*, 1975, Wyatt, 1991, Ghorpadé, 1994, 2014c, 2015, Mitra *et al.*, 2015)

[NOTE: Hervé-Bazin (1923: 25) described this from males taken in Laos, Tonkin and Java. Mengual (2012: 136) selected a Lectotype ♂ from Chapa, Vietnam. Hervé-Bazin (1926: 67-69, figs 1-3) gave a detailed description and good illustrations of habitus, head and pleuron. Curran (1930: 198, 1931a: 313, 1931b: 350) included it in a key to Malayan *Syrphus* species and gave notes. In my doctoral thesis (Ghorpadé, 1981a) I had written of examining a female specimen from Godavari, 1969m, nr Kathmandu in Nepal [CNC, Ottawa] and stated " this is the first record of *clarum* from the Indian subcontinent, where it appears to be restricted to the northeastern region." Shiraki

(1930: 410-411, fig. 94), Vockeroth (1969: 95), Knutson *et al.* (1975: 311), Wyatt (1991: 158), Ghorpadé (2014c: 19, 2015: 7), and Mitra *et al.* (12015: 68) listed it and gave notes.]

Dasysyrphus darada Ghorpadé, 1994

Dasysyrphus darada Ghorpadé, 1994, Colemania, No. 3, p. 9 (♂; 'Drass') [USNM, Washington DC – examined]

India: JK (Ghorpadé, 1981a, 1994, 2014c, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: I had written in mydoctoral thesis (Ghorpade, 1981a) – "This new species probably belongs to the *lunulatus*-group of Vockeroth (1969: 75) and is apparently restricted to the high altitude plateau of Ladakh. It is easily identifed by the widely separated spots on terga. The name of the species is based on the Sanskrit name for the country of Hindu Kush, near Kashmir." I gave a key to Indian *Dasysyrphus* (Ghorpadé, 1994: 9). The holotype male is labeled "India, Jammu & Kashmir, Ladakh dt., Drass, 3900m, 12.vi.1973, V. Khanna 449." Ghorpadé & Shehzad (2013: 20) suggested it could occur in Pakistan. Ghorpadé (2014c: 19), Shah *et al.* (2014: 292), and Mitra *et al.* (2015: 68) listed it.]

Dasysyrphus lunulatus (Meigen, 1822)

Syrphus lunulatus Meigen, 1822, Syst. Beschr., 3: 299 (sex ?; ' ? ' = ?Stolberg near Aachen) [?]

Pakistan (Peck, 1988, Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Ghorpadé, 2014c)

[NOTE: See Ghorpadé & Shehzad (2013: 12) for remarks. Arif (2001: 121-122, 126) had listed this based on 5♂ taken at Jhelum and Mianwali in wheat fields in March and August 1998 from Pakistan. Peck (1988: 15), Ghorpadé & Pathania (2014: 7) and Ghorpadé (2014c: 19) listed it.]

Dasysyrphus orsua (Walker, 1852)

Syrphus orsua Walker, 1852, *Insecta Saundersiana*, 3: 231 (♀; 'India') [BMNH, London – examined]

Syrphus albostriatus, Fln : Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 72, Pl. II, figs 5-8.

Syrphus brunettii Hervé-Bazin, 1924, Ann. Soc. Ent. Fr., XCII, p 290 (nom nov. for *albostriatus* Brunetti, 1923, not Fallén, 1817) (LT ♂; 'Matiana') [ZSI, Calcutta – examined]; Ghorpadé, 2009, Colemania, 15: 8. (as *n. syn.*)

India: HP, JK, UK; Nepal (Brunetti, 1907a, 1923, Hervé-Bazin, 1924, Rahman, 1940, Mani, 1962, 1968, Coe, 1964, Knutson *et al*., 1975, Kapoor *et al.*, 1979, Agarwala *et al.*, 1984, Ghorpadé, 1981a, 1994, 2009, 2014c, 2015, unpubl., Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Brunetti (1907a: 169) had written "Besides these, there are three ♂ ♂ of a species near *albostriatus* Flu., [*sic*] but certainly not that species—two of them are from Matiana, the other from Simla." But in his FAUNA volume (Brunetti, 1923: 72-73) he included it as *Syrphus albostriatus, Fln*, remarking "There is no doubt about the identification, the grey-striped thorax and the convex yellow abdominal bands being striking and unusual characters." Rahman (1940: 72) gave this (as '*Syrphus albostriatus*') "evidently hill species" from Simla, Dehra Dun and Darjiling. Mani (1962, 1968) recorded this name from the NW. Himalaya and Knutson *et al.* (1975: 311) listed it as *Dasysyrphus brunettii (*Hervé-Bazin). Coe (1964: 261) recorded this as "*Syrphus brunettii* Hervé-Bazin" from east Nepal and commented on the determinations (*q.v.*). Kapoor *et al.* (1979: 58) mentioned this record by Coe under *D. brunettii* (Hervé-Bazin). Agarwala *et al.* (1984: 16) gave 'unidentified aphids' as prey. Claussen & Weipert (2003: 346, 377) reported specimens from Nepal. Knutson *et al.* (1975: 311), Ghorpadé (2014c: 19, 2015: 7), Shah *et al.* (2014: 292), and Mitra *et al.* (2015: 68) listed it.

In my doctoral thesis I had remarked (Ghorpade, 1981a) – "Brunetti (1923) misidentified this species as *albostriatus* (Fallén) which was perceived by Hervé-Bazin (1924: 290) who renamed it *brunettii*. Brunetti also had planned to publish a new name '*deceptor*' as is evident on the labels of the paralectotypes designated by me [see below] in the ZSI, Calcutta [here designated now]. The type series came from Mundali, Matiana, Kurseong and Darjiling, and I have seen all except specimens from the last locality, which were perhaps taken by Brunetti and deposited in the NHM (London). I here designated the lectotype and three paralectotypes with labels as given below. Walker described *orsua* based on a specimen (now headless) from the 'East Indies' [I think some locality on the Himalayas, rather than from the islands of the Malay archipelago], whose sex was not known. Vockeroth (*pers. comm.*) studied the type of *orsua* and a series of males and females of *brunettii* (described from several males and just one female) and thought they were probably the same species, the differences being only sexual. It is now clear that the type of *orsua* is a female and that *brunettii* is conspecific. This species is distinct from the Palaearctic *albostriatus* (Fallén) and is apparently common on the Himalayas, especially at higher elevations and in the northwest.

The record of *orsua* by Keiser (1958: 192) from Sri Lanka is certainly a misidentification, the species in question probably being either *rossi* Ghorpadé, or another new species." See Ghorpadé (2009): 8-9) for more notes. Ghorpadé & Shehzad (2013: 20) suggested it could occur in Pakistan. At the CNC, Ottawa I examined 5 ♂ 1♀ taken at Pulchauki, 8500' and at 11,100' in Nepal in May-June 1967.

I here designate a Lectotype labeled "Matiana, 8000ft., Simla hills, 30-IV-01, N.A. / 2944/15 / S. albostriatus Fln ♂, det. Brun. 1919 / LECTOTYPE, Syrphus brunettii H.-B., Ghorpade des. 1981 [red label] / Dasysyrphus orsua (WALKER), K.D. Ghorpade det. 1981" [ZSI, Calcutta]. Paralectotypes 2♂ 1♀, labeled "Mundali, Jaunsa Division, Dehra Dun dist., alt. 9000ft., 10-V-10., Mus. Collr. / 1808/ H2 / Syrphus deceptor Brun. nom. nov. ♂, det. Brun. 1923 / S. albostriatus Brun. Nec Fln / PARALECTOTYPE, Syrphus brunettii H.-B., Ghorpade des, 1981 [yellow label] / Dasysyrphus orsua (WALKER) ♂, K.D. Ghorpade det. 1981." [ZSI, Calcutta]; and "Matiana, 8000ft., Simla hills, 10-30.III.01, N.A. / 2943/15 / Paralectotype, Syrphus brunettii H.-B., Ghorpade des. 1981 [yellow label] / Dasysyrphus orsua (WALKER) ♂, K.D. Ghorpade det. 1981." [ZSI, Calcutta]; and "Kurseong, E. Himalayas, 4700ft., 15.IV.11, Annandale / 1814/H2 / Syrphus deceptor Brun. nom. nov. ♀, det. Brun. 1923 / S. albostriatus Brun. nec Fln / PARALECTOTYPE, Syrphus brunettii H.-B., Ghorpade des, 1981 [yellow label] / Dasysyrphus orsua (WALKER) ♀, K.D. Ghorpade det. 1981 [ZSI, Calcutta]. I examined the holotype female of *orsua* Walker in BMNH, London labeled as follows "Type, Syrphus orsua Wlk [circular white label with green subborder] / India 68.4, Syrphus orsua Wlk. / orsua / Dasysyrphus orsua (Walker), K.D. Ghorpade det. 1983." The specimen is badly damaged with head lost, abdomen in two pieces, half of tergum 3 and terga 4 to 7 glued on card carrying both pins; right mid leg lost.]

Dasysyrphus pandu Ghorpadé, 1994

Dasysyrphus pandu Ghorpadé, 1994, Colemania, No. 3, p. 9 (♂; 'Drass') [USNM, Washington DC – examined]

India: JK (Ghorpadé, 1981a, 1994, 2014c, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written that "This species is quite pale for a *Dasysyrphus*, hence the specific name '*pandu*' meaning pale in Sanskrit. It appears restricted to the high altitude plateau of Ladakh. The holotype male is labeled "India, Jammu & Kashmir, Ladakh dt., Leh, 3500m, 22.vi.1973, V.K. Gupta 571." Ghorpadé (1994: 9) included it in a key to Indian subregion *Dasysyrphus* species. Ghorpadé & Shehzad (2013: 20) suggested it could occur in Pakistan. Ghorpadé (2014c: 19), Shah *et al.* (2014: 292), and Mitra *et al.* (2015: 68) listed it.]

Dasysyrphus sublunulatus (Peck, 1966)

Syrphus sublunulatus Peck, 1966, Ent. Obozr., 45(1): 190 (sex ?; 'Kirghizia, valley of r. Gul'cha, USSR' [?]

Nepal (Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015, unpubl.)

[NOTE: Claussen & Weipert (2003: 346-349, figs 14-16) gave one female taken at Hochtal Gothichaur, 2900m in Karnali Province in June 1997. At the CNC, Ottawa during my visit there in August 1983, I examined 6 ♂ 4 ♀ labeled "27° 58' N, 85° oo' E., Nepal, 11,100 ft." taken in May and June that I had determined as a new species near *lunulatus*, and these may be this very species ? Ghorpadé (2014c: 19, 2015: 7) listed it from Nepal.]

Dasysyrphus tricinctus (Fallén, 18172)

Scaeva tricincta Fallén, 1817, Syrphici Sveciae, p. 41 (o ?; 'Scaniae and Westrogothia' = Skåne and Västergötland provinces, Sweden) [?]

Pakistan (Peck, 1988, Arif, 2001, Ghorpadé & Shehzad, 2013, Ghorpade & Pathania, 2014, Ghorpadé, 2014c)

[NOTE: See Ghorpadé & Shehzad (2013: 12) for remarks. Arif (2001: 118-121, 126) had listed this based on 4♂ taken at Mianwali, Khanewal and Bahawalnager in sunflower fields and wild vegetation in October 1998 and June 1999 from Pakistan. Peck (1988: 16), Ghorpadé &Pathania (2014: 7) and Ghorpadé (2014c: 19) listed it. See also Sack (1932b: 188) and Thompson & Rotheray (1998: 102) for discussion and key to this genus in the Palaearctic.]

Didea fasciata Macquart, 1834

Didea fasciata Macquart, Hist. nat. Ins. Dipt., 1: 508 (♂; 'env. de Paris') [MNHN, Paris]

Pakistan; Nepal (Brunetti, 1923, Nayar, 1968a, Biswas *et al*., 1975, Knutson *et al*., 1975, Kapoor *et al*., 1979, Peck, 1988, Arif, 2001, Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015)

[NOTE: Kapoor *et al.* (1979: 58) listed it from Chovar near Kathmandu in Nepal. In my doctoral thesis (Ghorpadé, 1981a) I had written that "This species was erroneously reported from the Indian

subcontinent by Brunetti (1923: 56-57, Pl. I, fig. 15), Nayar (1968a: 128), and Biswas *et al.* (1975: 24). The female specimen determined by Brunetti as *fasciata* is my new species, *poorva*. Nayar's record from Dalhousie-Khajjiar road (in Himachal Pradesh) seems questionable (he wrote his series of males and females differed from the published description), especially since many of his determinantions of Syrphidae have been found to be incorrect (some even to genera !). Biswas *et al*'s (1975) female which I examined in ZSI, Calcutta is actually *Chrysotoxum quadrifasciatum* Brunetti ! Besides the distinct male terminalia of *fasciata* and *poorva*, these two species are distinguishable by the different colour of legs and scutellar pile." Arif (2001: 10-111, 126) had listed this based on 1♂ taken at Lasbela on ornamental plants in September 1998 from Pakistan. Claussen & Weipert, (2003: 351-352) wrote that their new *subalneti* "is distinguished from *Didea fasciata* Macquart, 1834, which has previously been recorded from Nepal, by the black capitulum of the haltere, the dark median stripe on the face and the broader frontal triangle." They then added a key to four *Didea* species but not *fasciata* Macq. Peck (1988: 16), Knutson *et al.* (1975: 312) and Ghorpadé (2014c: 19, 2015: 7) listed it.]

Didea subalneti Claussen & Weipert, 2003

Didea subalneti Claussen & Weipert, 2003, *Zur Schwebfliegenfauna Nepals*, p. 350 (♂; 'Hochtal Gothichaur 2800m, Karnali Prov.') [SJW, Plaue]

Nepal (Claussen & Weipert, 2003, Ghorpadé, 2014c, 2015)

[NOTE: Claussen & Weipert (2003: 350-352, figs 18-21, 24-25, 28-31) described and illustrated this new species from Karnali Province of Nepal and separated it in a key to similar *Didea* species. Ghorpadé (2014c: 19, 2015: 7) listed it.]

Didea vockerothi Ghorpadé, 1994

Didea vockerothi Ghorpadé, 1994, Colemania, No. 3, p. 10 (♂; 'Gulmarg')[UZM, Copenhagen– examined]

India: JK (Nayar 1968a, Ghorpadé, 1981a, 1994, 2014c, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: This new species was described (see also Ghorpade, 1981a) as "similar to *intermedia* Loew and *alneti* Fallén with the male terminalia being almost identical, but is easily separated by the colour of the scutellar hairs and legs, besides other differences. It appears to be distributed in Kashmir and surrounding regions. It is named in honour of Dr J. Richard Vockeroth of Canada, in deep appreciation of his excellent generic revision of the Tribe Syrphini, and as a token of my esteem for the high quality of his research and his encouragement and assistance in my own work, especially when I visited him in Ottawa in 1982 and 1983." Nayar (1968a: 128) had written about specimens he identified as *Didea fasciata* Macquart "I refer a series of males and females labelled, 'India: Dalhousie-Khajjair [*sic*] Road, 2038m. coll. J.L. Nayar,'" and could be this new species, but specimens need to be examined and confirmed. Ghorpadé (2014c: 19), Shah *et al.* (2014: 292), and Mitra *et al.* (2015: 68) listed it. See also Sack (1932b: 182) and Thompson & Rotheray (1998: 98) for discussion and key to this genus in the Palaearctic.]

Dideoides kempi Brunetti, 1923

Dideoides kempi Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 59 (♂; 'Above Tura, Garo Hills, Assam, 3500-3900 ft.') [ZSI, Calcutta – examined]

Syrphus pellucidipennis Coe, 1964, Bull. Br. Mus. Nat. Hist. (Ent.), 15(8): 259 (♀; 'above Sangu, c. 9,200 ft., Taplejung District, East Nepal') [NHM, London – examined]; Ghorpadé, 2009, Colemania, 15: 9. (as *n. syn.*)

Nepal (Brunetti, 1923, 1925, Coe, 1964, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 2009, 2014c, 2015, Mitra *et al*., 2015)

[NOTE: Brunetti(1923: 59-60, Pl. II, fig. 9) described and illustrated this based on "two ♂♂ in the Indian Museum [ZSI, Calcutta], Above Tura, Garo Hills, Assam, 3500-3900 ft., ix.1917 (*Mrs. Kemp*). A very striking and handsome species. Two ♀♀ and a headless specimen from the lower ranges, Khasi Hills, 1878 (*Chennell*), in the British Museum." Later Brunetti (1925: 75) redescribed the legs. Coe (1964: 259-161, fig. 2) described *pellucidipennis* as new species from east Nepal, in 'damp evergreen oak forest.' He added "The single example of this large, handsome species was taken resting on a fern leaf warmed by the sun's rays." He then likens it to *Syrphus chrysotoxoides* Curran (1928: 201) described from Thailand and transferred to *Dideoides* by Knutson *et al.* (1975: 312). Kapoor *et al.* (1979: 58) listed this from Nepal. I examined the holotype of *kempi* in ZSI, Calcutta labeled "Above Tura, Garo Hills, Assam, 350-3900 ft., Sept., 17. Mrs. Kemp / S. kempi Brun Type ♂ / Syrphus kempi Brun Type ♂ det. Brun. 1923. / TYPE / 1815/H2 / Dideoides kempi Brunetti, K.D. Ghorpade det. 1981." I also studied the holotype female of *pellucidipennis* in NHM, London labeled "Taplejung Distr., Damp evergreen oak forest above Sangu, c. 9200', 2-26.xi.1961 / Brit. Mus. East Nepal Exp. 1961-62, R.L. Coe coll., B.M. 1962-177 / Dideoides kempi Brunetti ♀, K.D. Ghorpade det. 1979." In my doctoral thesis (Ghorpade, 1981a) I had written that "This species is extensively black on the terga and it is possible that the extent of development of the yellow

transverse spots on terga 2 and 3 is variable. Brunetti's paratype from the 'lower ranges' was not found by me in the ZSI and could be in the NHM, London ? I examined the "melanoid ♀" of *'ovata'* Brunetti (1923: 61-62) in ZSI, labeled "Sikkim, Knyvett / Dideoides ovata Bru. Melanitic [*sic*] ♀ / 5670/15 / Dideoides kempi Brunetti, K.D. Ghorpade det. 1981," and confirmed that it was misidentified by him and actually was *D. kempi* Brun." I gave a key to the four Indian subregion species of *Dideoides (*Ghorpadé, 1994: 10) and some notes on synonymy (Ghorpadé, 2009: 9). Ghorpadé (2014c: 19, 2015: 7) and Mitra *et al.* (2015: 68) listed it.]

Dideopsis aegrota (Fabricius, 1805)

Eristalis aegrotus Fabricius, 1805, Syst. Antliat., p. 243 (♀; 'China') [UZM, Copenhagen – examined]

Syrphus fascipennis Macquart, 1834, Hist. nat. Ins. Dipt., 1: 537 (♂; 'Java') [MNHN, Paris]

Didea ellenriederi Doleschall, 1857, Natuurk. Tijdschr. Ned.-Indië, 14: 407 (sex ?; 'Amboina, Moluccas') [ZMA, Amsterdam ?]

Syrphus infirmus Rondani, 1875, Annali Mus. Civ. Stor. Nat. Giacomo Doria, 7: 423 (♀; 'Sarawak, Borneo') [?]

Asarkina pura Curran, 1928, J. Fed. Malay St. Mus., 14: 230 (♀; 'Ampang F.R., 600 ft., Selangor') [NHM, London – examined]; Ghorpadé, 2009, Colemania, 15: 9. (*n. syn.*)

Dideopsis hemipennis Hull, 1945, Ent. News, 56: 212 (♂; New Georgia') [CNC, Ottawa – examined] **n. syn.**

India : UK; Nepal (Brunetti, 1910, 1913a,b, 1915, 1923, Beeson, 1953, Coe, 1964, Vockeroth, 1969, Rao, 1969a, Gokulpure, 1972, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981a,b, 1994, 2009, 2014c, 2015, Agarwala *et al.*, 1983a, Puttannavar *et al.*, 2005, Ramegowda *et al.*, 2006, Shah *et al.*, 2014, Mitra *et al.*, 2015)

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written that "This is a very widespread Oriental species and very distinctive, on account of the black banded wings. Besides the types of *aegrota*, *pura* and *hemipennis* I have seen over 400 specimens from all over the Oriental Region, including two specimens from Australia. I am convinced that there is only one, variable, species throughout this area (confirmed by dissections of male terminalia) and that *pura* and *hemipennis* are synonyms, the latter newly, here. Being a typically 'Oriental' species, restricted to forested habitats and probably Indo-Malayan in origin, it is noticeably absent from the arid parts of northwestern India, Pakistan, and Afghanistan. During my visit to the CNC, Ottawa in August 1983, I examined 1 ♂ 10♀ from Godavari, 500' and Lothar 45p' near Birganj, Nepal in Andalso 45 ♂ 49 ♀ from Pulchauki, 800o', Godavari 5000-6000', Royal Botanical Garden, aned d Balaju, 4500' near Kathmandu, and from Lothar 450. near Birganj, and Patibhanjyang, 6000-7500' in pasture, from May to September in Nepal by the CNC Expedition in 1967.

The holotype female of *aegrota* is labeled "E. aegrotus, e China 'Sflueg' / Dideopsis aegrotus Fabr., det. FC Thompson, 1974 / Dideopsis aegrota (Fabricius) ♀, K.D. Ghorpade det. 1980 / HOLOTYPE [red label]" [in UZM, Copenhagen]. The holotype female of *pura* is labeled "Type [circular red label] / Pres. By Fed. Malay States Museum, B.M. 1934-74 / Oct 1920, H.C. Abraham / Ex. Coll. F.M.S. Museum / Dideopsis aegrota (Fabricius), K.D. Ghorpade det. 1979" [in NHM, London]. The holotype male of *hemipennis* is labeled "New Georgia, 1944, C.O. Berg / Syrph. C. / HOLOTYPE, Dideopsis hemipennis Hull [red label] / Dideopsis aegrota (Fabricius), K.D. Ghorpade det. 1982" [in CNC. Ottawa]

Brunetti (1910: 171) wrote "*Syrphus aegrotus*, F. generally common during summer [in Sri Lanka], relegated to *Asarcina*." Then Brunetti (1913a: 164) wrote for *Asarkina aegrotus* "One ♂, Sadiya, 28-xi-11. The wings are infuscated on the entire basal half instead of bearing, as in typical forms, a broad cross band, but other specimens in the Indian Museum have only the shortest possible clear spece at the wing base." Then, for *Asarcina aegrotus*, F. he wrote (Brunetti, 1913b: 267) "One from Darjiling, 1000-3000 ft. The head being crushed, the sex is indeterminable." This was at a time when the male terminalia were not even looked at as a character, hence his confusion. Nowadays, besides the holoptic head in males (for most species) the distinct male terminalia is also a pointer to the male sex. Females have dichoptic eyes and just a pointed abdominal tip, and no distinct genitalia which indicates a female. Brunetti (1915: 209) under "*Melanostoma cingulatum*, Big." which is an *Asarkina*, mentioned "In the Indian Museum are two specimens marked "*Melanostoma, hemiptera*, Big." In that author's handwriting which are merely the common *Syrphus* (*Asarcina*) *aegrotus* F." In the FAUNA volume Brunetti (1923: 64-65) named it '*Asarcina aegrota*, Fabr.' gave a description and stated "As widely distributed as *A. ericetorum* in India and the East, both from hills and plains, at almost all seasons of the year." Coe (1964: 265) mentioned one male taken in east Nepal in August of '*Asarcina aegrota* (Fabricius)' "Common throughout the Oriental Region. Recorded from NORTH AUSTRALIA." Vockeroth (1969: 13-114, fig. 70, map 20) did not include northern Australia in his map for this genus, placed *pura* newly in this genus, and wrote "No othergenus in the Syrphini has a broaddark band covering ⅓ or more of the wing." Beeson (1953: 339) gave this as "commonly predacious on Aphidae" in Indian forests. Rao (1969a: 787) listed *Aphis spiraecola* on citrus as prey. Gokulpure (1972: 848) recorded it from Madhya Pradesh and Kapoor *et al.* (1979: 58) listed it from Nepal. Ghorpadé (1994: 4) keyed it out in a key

and gave notes on synonymy (Ghorpadé, 2012: 9). Agarwala *et al.* (1983a: 239) gave *Aphis spiraecola* on *Artemisia vulgaris* and *Bidens pilosa* as its aphid prey at Kalimpong, West Bengal. Puttannavar *et al.* (205; 44) and Ramegowda *et al.* (2006: 22) recorded this species preying on the sugarcane woolly aphid, *Ceratovacuna lanigera* in Karnataka, S. India. The larvae of this syrphid are large and broadly flattened (not narrow and cylindrical) and coloured black and white and very noticeable on aphid colonies on the plant. I (Ghorpadé, 1981b: 70-71) listed prey recorded in this subcontinent for this species. Knutson *et al.* (1975: 313), Ghorpadé (2014c: 19, 2015: 7), Shah *et al.* (2014: 292), and Mitra *et al.* (2015: 68) listed it.]

Eosphaerophoria punctata Claussen & Weipert, 2003

Eosphaerophoria punctata Claussen & Weipert, 2003, *Zur Schwebfliegenfauna Nepals*, p. 352 (♀; 'Tal, 1700m, Annapurna-Region, Nepal') [SJW, Plaue]

Nepal (Vockeroth, 1969, Claussen & Weipert, 2003, Mengual & Ghorpadé, 2010, Ghorpadé, 2014c, 2015)

NOTE: Claussen & Weipert (2003: 352-354, figs 32-33, 35-37) described and illustrated this new species based on one female taken at Tal, 1700m, Annapurna-Region of Nepal, in September 1992. They also gave a key to separate this and two other species. Mengual & Ghorpadé (2010: 69-71, figs 23, 25-27, 30) treated it in their worldwide revision of *Eosphaerophoria*, giving a key to the eleven known species of this Oriental genus and another key to related ten genera. The type locality given by these authors was the Valley of Marsyangdi, 47km NE. Pokhara, 1700m, which was not that given in the original description, though other details were the same. Requires clarification. Vockeroth (1969: 134-135) reviewed this genus of his, made *Tambavanna* Keiser a synonym and noted these species to be "among the most aberrant of the Syrphini." Ghorpadé (2014c: 19, 2015: 7) listed this species from Nepal.]

Epistrophe aequalis (Walker, 1852)

Xylota aequalis Walker, 1852, *Insecta Saundersiana*, 3: 226 (♂; 'East Indies') [NHM, London – examined]

Syrphus distinctus Brunetti, 1915, Rec. Indian Mus., 11: 211 (♂; 'Tolpani, Garhwal District, 9500 ft., Western Himalayas') [ZSI, Calcutta – examined]

India: HP, UK (Brunetti, 1908, 1915, 1923, Nayar 1968a, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 2014c, unpubl., Lambeck & Kiauta, 1973, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Brunetti (1908: 79) treated this as a '*Xylota*'(!), following Walker (1852) and included it in a key to Oriental species of that genus ! Then he described *distinctus* as a *Syrphus* (Brunetti, 1915: 211) based on three males taken at Tolpani on the Garhwal Himalaya. In the FAUNA volume Brunetti (1923: 90-91) gave a redescription of *Syrphus aequalis* "from three perfect ♂♂ in the Indian Museum from Tolpani, Garhwal District, W. Himalayas, 9500 ft., 13.iv.-13.v.1914; and from Simla, x.1911 (*Howlett*). He then wrote "This is the most striking of the Oriental species known to me, the very conspicuous, dense black hair on the hind femora and tibiae being quite unknown in any other. The pinkish and grey bands of the abdomen are also very characteristic. The species bears a close general resemblance to *S. griseocinctus*, but this latter is immediately recognised by the pubescent eyes and by the absence of the black hair on the hind legs." Nayar (1968a: 122-123) included this, as *Syrphus aequalis* Walker, n. comb., based on his first described female taken at Kalatop Forest Rest House near Dalhousie in September 1962 by himself. But I (Ghorpadé 1981a) had noted that this female was "misidentified, as is evident from his description (especially of gena and terga 1 & 2)." This female Knutson *et al.* (1975: 314) first placed in *Epistrophe* Walker, but erroneously from the 'Punjab.' I gave a key to Indian species of *Epistrophe* (Ghorpadé, 1994: 10), listing it from Himachal and U.P. (= Uttarakhand) in India, and from Burma. I examined the holotype of *aequalis* in BMNH, London, which is labeled "Type [circular green bordered label] / East Indies, ex Coll. W.W. Sunders / India, (Dipt. Saund.) / Xylota aequalis / Ind/ Epistrophe aequalis (Walker) ♂, K.D. Ghorpade det. 1979." I also examined the holotype of *distinctus*, labeled "Tolpani, Garhwal, 9500', 13-3-14 / Syrphus distinctus Brun Typ ♂ / 1729/HI / TYPE / Epistrophe aequalis (Walker) ♂, K.D. Ghorpade det. 1981" [ZSI, Calcutta]. I also wrote (Ghorpadé, 1981a) that the "record of *aequalis* from Nepal by Lambeck & Kiauta (1973) is a misidentification for *griseocincta* (Brunetti)." This was again erroneously copied by Kapoor *et al.* (1979: 58). I also wrote (Ghorpadé 1981a) that this species is "a remarkable bee mimic and recalls *Afrosyrphus* Curran in general habitus. The brush of stiff black hairs on the hind femur and tibia, and the two pale fasciae on terga 2 to 4 each, easily distinguish this species. My specimens were taken at Dalhousie while hovering some 1.5-2.5m above ground by the roadside." Knutson *et al.* (1975: 314), Ghorpadé (2014c: 19), Shah *et al.* (2014: 292), and Mitra *et al.* (2015: 68) listed it.]

Epistrophe griseocincta (Brunetti, 1923)

Syrphus griseocinctus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 77, Pl. II, fig. 10 (♂; 'Bogarkote [*sic*], Kumaon, W. Himalayas, 8000 ft') [ZSI, Calcutta – examined]

India: JK, UK; Nepal (Brunetti, 1923, Nayar 1968a, Lambeck & Kiauta, 1973, Knutson *et al*., 1975, Kapoor *et al*., 1979, Ghorpadé, 1981a, 1994, 2014c, 2015, Agarwala *et al*., 1983a, 1984, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Brunetti (1923: 77, Pl. II, fig. 10) described this as a *Syrphus* from Kumaon Himalaya, a single male taken at "Bogarkote, Kumaon, W. Himalayas, 8000ft, 29.iv.1914 (*Tytler*)." He remarked "This species closely resembles *aequalis*, Walk., but is recognized by the pubescent eyes and by the absence of the long, dense black hair on the hind legs." I examined the holtype male in ZSI, Calcutta labeled "Bagarkote [*sic*], 8000', 29.4.14 / Bagarkote [*sic*] 8000 ft., Kumaon, W. Himalayas, 29-iv-14, Tytler / S. griseocinctus ♂ Brun. Type / TYPE / 1817/H2 / Syrphus griseocinctus Brun. Type ♂ det. Brun. 1923 / Epistrophe griseocincta (Brunetti), det. K.D. Ghorpade 1981." Nayar (1968a: 124-125) reported a female from NW. of Kalatop Forest Rest House, 2440m, taken by him. When I visited the CNC, Ottawa in August 1983, I examined 1♂ 2♀ of this species taken at 11,000 ft in Nepal in May 1967. Lambeck & Kiauta (1973: 72-73, fig. 3) took a female at Tengpoche Gonda, 3850m, in September 1972 but misidentified it as *Epistrophe aequalis* (Walker) – see notes on this latter species under *aequalis* above. Knutson *et al.* (1975: 314) listed this from "Uttar Pradesh" as *Epistrophe* (*Epistrophe*). I gave a key to Indian species of *Epistrophe* (Ghorpadé, 1994: 10), listing it from Jammu & Kashmir, U.P. (= Uttarakhand), Himachal, West Bengal, in India, and from Burma and Nepal. Agarwala *et al.* (1983a: 239, 1984: 17) gave prey records. Ghorpadé & Shehzad (2103: 20) suggested it could occur in Pakistan. Ghorpadé (2014c: 19, Shah *et al.* (2014: 293, 2015: 7), and Mitra *et al.* (2015:68) listed it. See also Sack (1932b: 166) and Thompson & Rotheray (1998: 102, 105) for discussion and key to this genus in the Palaearctic.]

Epistrophella quinquevittata (Brunetti, 1923)

Syrphus quinquevittatus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 81, Pl. II, fig. 16 (♂; 'Kalimpong, Darjiling District, 600-4500 ft') [ZSI, Calcutta – examined]

Nepal (Brunetti, 1923, Vockeroth, 1969, Knutson *et al*., 1975, Ghorpadé, 1981a, 2014c, 2015, unpubl., Mitra *et al*., 2015).

[NOTE: Brunetti (1923: 81) described this as a *Syrphus* based on a male from Kalimpong and a female from Shillong. I studied the holotype male in BMNH (London) which is labeled "Kalimpong, Darjiling dist., E. Himalayas, 600-4500ft., 24.IV-10.V.15, F.H. Gravely / S. quinquevittatus ♂ Brun Type / TYPE / 1830/H2 / Syrphus quinquevittatus Brun Type ♂, det. Brun. 1923 / Epistrophe horishana (Matsumura) ♂, K.D. Ghorpade det. 1981" [ZSI, Calcutta]. At the CNC, Ottawa I examined 5 ♂ of this species taken at Godavari and Pulchauki 6000' near Kathmandu in Nepal in July-August 1967. This is a good species, best placed in *Epistrophella* Dušek & Láska. Knutson *et al.* (1975: 314) placed this as a junior synonym of *horishana* (Matsumura), following Shiraki (1930: 372), treating both as a *Syrphus*. Dr F.C. Thompson (*pers. comm*.) examined the type of *horishana* and considers it a *Macrosyphus*, in which genus Matsumura had first placed it. Vockeroth (1969: 61) curiously placed *horishana* in *Epistophella*, but this is a junior synonym of *shibakawae* (Matsumura, 1917) ! This species was treated as an *Epistrophe* Walker by me (Ghorpade, 1981a) and *Epistrophella* considered a non-Oriental genus restricted to the Palaearctic region. More work needs to be done to derive the correct solution. See Thompson & Rotheray (1998: 99, 103) for a key to this genus in the Palaearctic.]

Episyrphus arcifer (Sack, 1927)

Syrphus arcifer Sack, 1927, Stettin. Ent. Ztg., 88: 306 (♂♀; 'Kankau and Fuhosho, Taiwan') [SMF, Frankfurt]

Nepal (Knutson *et al.*, 1975, Kapoor *et al*., 1979, Ghorpadé, 2014c, 2015)

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "This species has been recorded from Nepal but I have not seen any material from any other part of the subcontinent." Subsequently, during my Smithsonian postdoctoral tenure (1982-1983) I visited Ottawa and found a male in their collections labeled "Nepal, Ktmd., Godavari 5000', 29.vi.67" [CNC, Ottawa]. I had also written in my doctoral thesis "This species is fairly large for the genus *Episyrphus* and the pattern of markings on terga is peculiar. One other syrphid, *Milesia macularis* Wiedemann, from India (*op. cit.*) has an almost identical tergal pattern (see Brunetti, 1923: 266-268, fig. 52), and the wasp model must be a sympatric species of aculeate Hymenoptera. The presence of a mesonotal hair collar, otherwise found only in *Asarkina, Dideopsis, Asiobaccha*, and some *Allobacha* in this *Episyrphus* species is interesting." Knutson *et al.* (1975: 314), Kapoor *et al.* (1979: 58), and Ghorpadé (2014c: 19, 2015: 7) listed it from Nepal.]

Episyrphus balteatus (De Geer, 1776)

Musca balteata De Geer, 1776, Mem. pour serv. Hist. Ins., 6: 116 (♂♀; 'Europe' = Sweden) [NRS, Stockholm]

Syrphus nectarea Fabricius, 1787, Mantissa insect., 2: 341 (LT♂, here designated; 'Dania') [UZM, Copenhagen]

Syrphus pleuralis Thomson, 1869, *in*: K. svenska Fregatten Eugenies resa, 2(1): 497 (♂♀; 'China') [NRS, Stockholm]

Episyrphus fallaciosus Matsumura, 1917, Ent. Mag., Kyoto, 2(4): pl. VI, fig. 13; 1917, *ibid*., 3(1): 18 (♀; 'Honshū, Kiushū, Japan') [NIAS, Tsukuba ?]

Afghanistan; Pakistan; India: CH, GJ ?, HP, JK, PB, UK, UP ?; Nepal (Brunetti, 1907a, 1908, 1913a, 1917, 1923, de Meijere, 1908, Matsumura, 1917, Sack, 1922, 1932a, Hervé-Bazin, 1926, Curran, 1926, 1928, Misra, 1932, Bhatia & Shaffi, 1933, Rahman, 1940, Beeson, 1953, Batra, 1956, 1960, Coe, 1964, Nayar, 1964a,b,c, 1965a,b, 1966a,b, 1968a, Nayar & Nayar, 1965, Bańkowska, 1968, 1969, Rao, 1969a, Patel & Patel, 1969, Khan & Yunus, 1970, Ghani & Rao, 1972, Siddiqui & Krishnaswamy, 1972, Gokulpure, 1972, Habib, 1973, Lambeck & Kiauta, 1973, Hamid *et al*., 1974, 1977, Knutson *et al.*, 1975, Lambeck & van Brink, 1975a,b, Patnaik & Bhagat, 1976, Patnaik *et al*., 1977, Roy & Basu, 1978, Kapoor *et al.* 1979, Raychaudhuri *et al.*, 1979, Mathur, 1983, Das & Raychaudhuri, 1983, Datta & Chakraborti, 1984; Agarwala *et al*., 1983a, 1984, Awtar Singh *et al*., 1985, Anand, 1986, Ashwani Kumar *et al.*, 1987, Peck, 1988, Abrol, 1993; Ghorpadé, 1981a,b,c, 1994, 2009, 2014c,d,e, 2015, unpubl., Aslamkhan *et al*., 1997; Arif, 2001, Mitra *et al*., 2003b, Claussen & Weipert, 2003, Parui *et al*., 2006, Ghorpadé *et al.*, 2011, Bhattacharya *et al*., 2012a, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Ghorpadé & Pathania, 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "This species was earlier thought to be widespread in the Palaearctic, Afrotropical and Oriental regions, even reaching Australia. However, the present study of a vast amount of material . . . has revealed that *balteatus, s. str.*, is confined to the Palaearctic, entering the Oriental only in NW. India and Pakistan. The markings on the sterna readily identify this species in both sexes." The many papers cited above may be consulted for more information, and the Indian States this has been recorded from are cited above." Papers dealing with localities outside of Pakistan and NW. India (Himalayas) should correctly refer to the next species *viridaureus*; true *balteatus (s. str.*) occurs here only on the high W. Himalaya and in Pakistan andAfghanistan. I here formally designate the Lectotype male of *Syrphus nectarea* Fabricius (with terminalia in microvial) labeled "TYPE [red label] / Syntype M. nectarea F., Lyneborg det. 1979 / LECTOTYPE, Musca nectarea Fab., Ghorpade des. 1980 [red label] / Episyrphus balteatus (De Geer) ♂, K.D. Ghorpade det. 1980" [UZM, Copenhagen]. A female Paralectotype is labeled "TYPE [red label] / S. nectareus / PARALECTOTYPE, Musca nectarea Fab., Ghorpade des. 1980 [yellow label] / Episyrphus balteatus (De Geer) ♀, K.D. Ghorpade det. 1980" [UZM, Copenhagen]. During my visit to CNC, Ottawa in August 1983, I found 3♂ 4♀ of this species taken at Upper Bakrota, Dalhousie (HP) reared from larvae attacking a *Myzus* sp. aphid in June-July 1964. And a ♀ from Moti Tibba reared from *Phylloxera* sp. in September 1964, as well as a male from Gulubhanjyang, 7500-8500' in pasture near Kathmandu, Nepal in June 1967.

Brunetti (1907a: 169, 1908: 57) mentioned specimens taken at Simla, Theog and Matiana on the Simla Hills, and also from localities in NE. India (Brunetti, 1913a: 159). He later wrote of '*balteatus*, DeGeer' that it was "Very common in the Himalayas and also in the plains of India and Assam, extending to Java, China and Japan." But true *balteatus* has now been established only to fly in temperate climes on the high Himalayas and that which is found on the plains and in NE. India and eastwards is *viridaureus* Wied., *q.v.* In his paper on Simla Hills Diptera, Brunetti (1917: 83-84) gave "Simla, 26-iv-07 (*Capt. Evans*), Theog, 27-iv-07; Valley of Sutlej River, 6-v-10," and repeated his erroneous view of it being widely distributed. In theFAUNA volume, Brunetti (1923: 82-84, Pl. I, figs 19-20) gave a description "partly based on Verrall's description of British, or at least European, specimens, and is partly from Indian examples." Therefore being mixed ! Brunetti also wrote "Specimens from Shanghai and Hankow, China, more nearly approach the European form," and mentioned de Meijere's "interesting notes on the typical form and the two varieties, *nectarinus* and *alternans*." See my notes on *viridaureus* below. Brunetti agreed that "*S. balteatus* is distinctly variable" and wrote that "I have generally adopted the principle that anything that looks like *balteatus, is balteatus*. He gave notes on variation and mentioned specimens from "Peshawur (19.iii.1913, *Howlett*), and from Pusa, 29.viii.1912 with different abdominal bands. De Meijere (1908: 297-299) should be seen for his comments on the varieties *nectarinus* Wied., and *alternans* Macq. which he separated in a key with the 'typische Form.' For *nectarinus* he mentioned Matheran 800m (*Biro*) [in Maharashtra], and also named *triligatus* Walk., and *viridaureus* Wied. very briefly without any useful notes on them. See also Curran (1926: 112) for notes on the Wiedemann types of *nectarinus* and *viridaureus* (= *alternans*), the former known only from China and the latter widely distributed in the Orient. Hervé-Bazin (1926: 65) gave '*S. balteatus*' from Laos and Cochinchina and made reference to de Meijere (1908).

Like true *balteatus* in Europe, this Indian (mostly *viridaureus*) species is exceedingly abundant and widespread and much applied entomology work has been done on its occurrence, prey records and structure (see citations of authors listed above, *q.v.*, *loc. cit.*). Without checking specimens identified as *balteatus* by each author, all such reports of this species in the papers mentioned below must be approached with caution; many could actually be *viridaureus*, especially in the plains areas ! Misra (1932) saw flies hovering near aphid infested mango trees at Tirhut (Bihar). Bhatia & Shaffi (1933: 561-564, Pl. LXIV) described its life-history in detail and illustrated the fly and immature stages (but these are of *viridaureus*). They wrote that this "is one of the commonest species of the genus *Syrphus* and has been reported from all over India. In Pusa the fly is fairly common and is available during most of the months in the year. From January to March the flies of this species [also *balteatus* in these cold season months ?] are seen in sufficient number in the fields and can be collected at any time in the day. They are seen hovering over flowers in search of food which they find in honey [*sic*] stored in the nectaries of the flowers." Besides feeding on cotton aphids, the larvae also "were found mainy feeding on young nymphs of coccids which attack the shoots of the cotton plant." Matsumura & Adachi (1917: 18) described *Episyrphus fallaciosus* Matsumura as new and wrote "Somewhat resembles to *E. balteatus* Deg." See also Ghorpadé (1981c: 89-91). Sack (1922: 3) listed this (as *Syrphus*) and its varieties *nectarrinus* [*sic*] Wd., and *alternans* Mg. [*sic*] from Taiwan. Then he gave *Epistrophe balteata* from Lombok, Sumbawa, and Flores, the Lesser Sundas of Indonesia (Sack, 1932a: 229-230). Curran (1928: 198-200) included it in a key to the many Malayan '*Syrphus*' species. Rahman (1940: 71-72) noted it to be "commonest of Indian syrphids both in hills and plains; most abundant during January-March at Pusa." Beeson (1953: 340) wrote it is "a common hoverfly throughout India, predaceous on aphids and coccids," and quoted Bhatia & Shaffi (1933). Nayar (1964a,b,c, 1965a,b, 1966a,b) in a series of papers on '*Syrphus balteatus*' wrote on many aspects, morphology, anatomy, etc., of this fly, but his male terminalia (Nayar, 1965a: figs 19-20) suggest it to be *viridaureus*, not *balteatus*, which should be noted and so corrected. Batra (1956: 22, 1960) reared this from cabbage aphids at Baragraon (5100') and Naggar in the Kulu Valley. Coe (1964: 162) wrote of *balteatus* and a "curious variety" from Nepal, the latter from "blooms of *Guizotia abyssinica*," and having 'a grayish black longitudinal stripe' on terga which was 'very noticeable' in the field. Nayar & Nayar (1965: 241) recorded it (*as Epistrophe*) from the Agra environs, but this also is probably misidentified for *viridaureus*. Nayar (1968a: 123-124) listed specimens taken near Dalhousie in September; specimens need to be examined to confirm '*balteatus*' or correct it. Bańkowska (1968: 203, 1969: 281-282) recorded *balteatus* from Afghanistan and gave specimen data. Rao (1969a: 787) gave *Aphis gossypii, A. spiraecola* and *Myzus persicae* as larval prey for this species (see Ghorpadé, 1981b: 65). Patel & Patel (1969: 86) gave cabbage aphid as prey for *balteatus* at Anand in Gujarat, but this needs confirmation of species identity. Khan & Yunus (1970) gave the biology of '*balteatus*,' at Lyallpur [= Faisalabad] in Pakistan and prey records, but the identity requires confirmation. Siddiqui & Krishnaswamy (1972: 14) gave it feeding on *Adelges* spp. in Pakistan and NW. Himalayas as well as other aphid and coccid prey (*q.v.*). Gokulpure (1972: 848) reported '*Syrphus balteatus*' from Madhya Pradesh, but identity needs confirmation and is probably *viridaureus*. Habib (1973: 75-76) noted this from Abbottabad andRawalkot in Pakistan on *Brevicoryne brassicae* aphids. Lambeck & Kiauta (1973: 73-74) reported *balteatus* from Tribhuvan (1400m) and Chauni (1400m) in Nepal and wrote "In the post monsoon period it is rather common in the rice fields of the Kathmandu Valley and is often on wings also at [*sic*] cloudy weather. It does not seem to be bound to a certain vegetation." They mentioned "Nayar, 1967a" [= 1968a] collected it in Tibet," but this is wrong. Nayar only wrote about specimens taken by Sneh Gupta at Narkanda, 60km away from Simla on the 'Hindustan—Tibet' Road, 9560 ft. Lambeck & van Brink (1973: 90) gave Nagin Lake and Arts Emporium near Srinagar from where specimens were taken, reportedly as the first from Kashmir, and described karyotypes (Lambeck & van Brink, 1975a: 5). Ghosh (1974) recorded several aphid prey of this species (as '*balteatus*'). Hamid *et al.* (1974: 79; 1977: 107) noted it on *Acyrthosiphon pisum* in Pakistan from June to September. Patnaik & Bhagat (1976: 44) and Patnaik *et al.* (1977: 585) recorded *Episyrphus balteatus* from Puri District in Orissa but this must certainly be *viridaureus* ! Roy & Basu (1978: 165) gave bionomics of this species (as '*Syrphus*') from Kalyani in West Bengal on mustard aphids but this again is certainly a misidentification for *viridaureus*. Raychaudhuri *et al.* (1979: 165) gave aphid prey of '*balteatus*' from Gangtok, Sikkim, this again requiring correct identification. Kapoor *et al.* (1979: 53,58) wrote "This species is very common in Kathmandu" and listed '*Epistrophe alternans*' (= *viridaureus*) also from Nepal. Das & Raychaudhuri (1983: 32) gave "aphid hosts" for '*balteatus*' from Barog (c. 1531m) in Himachal but identity should be checked and confirmed or corrected. Mathur (1983: 232) wrote that *Syrphus balteatus* "is one of the most common predators feeding on many aphid species found around Jullundur" [Punjab], but species identity requires confirmation. Agarwala *et al.* (1983a: 239, 1984: 17) listed aphid prey for '*balteatus*' and *alternans* in the Indian region. Datta & Chakraborti (1984: 238) cited specimens taken in many localities in Jammu & Kashmir and gave flower records. Awtar Singh *et al.* (1985: 193) reported '*balteatus*' as a "very common species" at Chandigarh, Pinjore, Solan, Surajpur, and Ambala throughout the year and gave flowers visited. Anand (1986: 198) listed aphid prey at Delhi for '*Syrphus balteatus*.' Ashwani Kumar *et al.* (1987: 86, figs 4, 10, 16, 22, 28) described and illustrated immatures of '*alternans*' collected in Ludhiana, Punjab. Abrol (1993: 267) listed this as a pollinator of *Brassica*, carrot and

onion in Jammu &Kashmir. In their paper on Nepal Syrphidae, Claussen & Weipert (2003: 354-356) listed specimens taken of what purportedly were assumed to be *alternans*, *balteatus* and *nectarinus* separately, treating these three as distinct species and separating them in a key. See Ghorpadé (2009: 9-10) for synonymy and a clear analysis of *viridaureus* and clinal variation in that species, "where larger and darker specimens (*nectarinus*) fly in the northern colder, wetter areas, and smaller, lighter [paler] specimens (*alternans*) in the hotter areas in the south, mainly in the more open, dry Indian peninsula." Arif (2001: 115-117, 126) had listed this based on 9♂ 3♀ taken at Faisalabad, Jhelum, Sialkot, Makran, Hazara and Kharan in wild grasses in September 1996 from Pakistan. Mitra *et al.* (2003b: 102) listed one specimen taken in June at the Pin Valley N.P. in Himachal. Parui *et al.* (2006: 96) cited specimens taken at Nangal, Ropar, in the Punjab and at Bella village and Rampur, Una in Himachal Pradesh. Bhattacharya *et al.* (2012a: 90) reported two males taken at Chambaghat, Solan District in April. Ghorpadé & Shehzad (2013: 12-13) gave records of this species in Pakistan and added notes. Ghorpadé & Pathania (2014: 4) cited specimens taken in Ludhiana and listed it from the Punjab Doab. Ghorpadé (2014d: 9-10) gave records from Afghanistan and then from Chandigarh (Ghorpade, 2014e: 10). Knutson *et al.* (1975: 314-315), Peck (1988: 22), Ghorpadé (2014c: 19, 2015: 7), Shah *et al.* (2014: 293), and Mitra *et al.* (2015: 68) listed it.]

Episyrphus viridaureus (Wiedemann, 1824)

Syrphus viridaureus Wiedemann, 1824, Analecta Ent., p. 35 (♂; 'Batavia, Java') [UZM, Copenhagen - examined]

Syrphus nectarinus Wiedemann, 1830, Aussereurop zweifl. Insekt, 2: 128 (LT ♀; 'China') [UZM, Copenhagen – examined]; Ghorpadé, 2009, Colemania, 15: 10. (as *stat. rev.*)

Syrphus alternans Macquart, 1842, Dipt. Exot., 2(2): 89 (♂♀; 'Coromandel, India') [MNHN, Paris]; Ghorpadé, 2009, Colemania, 15: 10. (as *stat. rev.*)

Syrphus triligatus Walker, 1857, J. Linn. Soc. Lond., 1: 19 (♂; 'Mt Ophir, Malaya') [NHM, London]; Ghorpadé, 2009, Colemania, 15: 10. (as *n. syn.*)

Syrphus heterogaster Thomson, 1869, *in:* K. svenska Fregatten Eugenies resa, 2(1): 498 (♀; 'China') [NRS, Stockholm - examined]; Ghorpadé, 2009, Colemania, 15: 10. (as *n. syn.*)

Syrphus balteatus var. *formosae* Sack, 1913, Ent. Mitt., 2: 5 (♂; 'Formosa' = Taiwan) [SMF, Frankfurt ?]; Ghorpadé, 2009, Colemania, 15: 10. (as *n. syn.*)

Syrphus graptus Hull, 1944, Psyche, Camb., 51: 22 (♂; 'Sozan, Formosa) [MCZ, Cambridge, MA]; Ghorpadé, 2009, Colemania, 15: 10. (as *n. syn.*)

Baccha (Baccha) bistriatus Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1: 113, figs 1-7 (♀; 'Chandigarh') [IARI, New Delhi - examined]; Ghorpadé, 2014, Colemania, 44: 20. (as *n. syn.*)

Pakistan; India: BI, CH, DL, GJ, HP, HR, PB, UK, UP; Nepal (Curran, 1926, 1928, Misra, 1932, Coe, 1964, Anand *et al.*, 1967, Patel & Patel, 1969, Vockeroth, 1969, Ghani & Rao, 1972, Siddiqui & Krishnaswamy, 1972, Lambeck & van Brink, 1973a, Knutson *et al.*, 1975, Ghorpadé, 1981a,b,c, 1994, 2009, 2014,d,e,f, unpubl., Mathur, 1983, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Anand, 1986, Kohli *et al.*, 1988, Peck, 1988, Aslamkhan *et al.*, 1997, Mitra *et al.*, 2003b, 2015, Claussen & Weipert, 2003, Wright & Skevington, 2013, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Ghorpadé & Pathania, 2014).

[NOTE: The extensive notes given under *balteatus* above contain much information that could apply to this Oriental, tropical species and should also be consulted. I examined the holotype male of *viridaureus* Wiedemann labeled "♂ / Mus. Westerm. / TYPE [red label] / S. viridaureus Wied., Batavia, Aug. 1815 / HOLOTYPE [red label] / Episyrphus viridaureus Wied., Det. FCThompson, 74 / Episyrphus viridaureus (Wiedemann) ♂, K.D. Ghorpade det. 1980" in UZM, Copenhagen. I here formally designate the Lectotype female of *Syrphus nectarinus* Wiedemann Fabricius labeled "♀ / Mus. Westerm. / TYPE [red label] / S. nectarinus Wied., China, Trentepohl / Episyrphus nectarinus Wiedemann, Det. FCThompson, 1974 / Episyrphus viridaureus (Wiedemann) ♀, K.D. Ghorpade det. 1980" in UZM, Copenhagen. Curran (1926: 112) noted that *nectarinus* Wiedemann "apparently is a good species," but placed *alternans* as a synonym of *viridaureus* Wiedemann after studying types. See Ghorpadé (1981c, 2009) for detailed notes on the identity of this species. Curran (1928: 198-200) included *alternans* and *nectarinus* separately in a key to the many Malayan *Syrphus* species. During my visit to CNC, Ottawa in August 1983, I found a ♂ and ♀ of this species taken at Upper Bakrota, Dalhousie (HP) reared from larvae attaching a *Myzus* sp. aphid in August 1965. Also 45 ♂ 49 ♀ from Pulchauki, 800o', Godavari 5000-6000', Royal Botanical Garden, and Balaju, 4500' near Kathmandu, and from Lothar 450. near Birganj, and Patibhanjyang, 6000-7500' in pasture, from May to September in Nepal by the CNC Expedition in 1967. During my Postdoctoral tenure in the Smithsonian Institution [USNM, Washington, DC] I also examined 1♂ 6♀ of this species taken by Amnon Freidberg at the Botanical Garden, Godavari, and at Sundarijel near Kathmandu, Nepal in May 1980.

In my doctoral thesis (Ghorpadé 1981a) I had written "There has always been a controversy regarding the status of *balteatus* and other closely related 'species' like *alternans*, *nectarinus*, *viridaureus*, etc., in the Palaearctic regions. Brunetti (1923: 82-84) felt that only one species, *balteatus*, was involved and that the others were only variations. Curran (1928, 1931a,b) felt

careful studies of larvae and morphology of adults along with data on their life cycles, etc., would show that several 'cryptic' species were involved. The present study has resulted in an 'in-between' situation. Only one widespread and highly variable species occurs in the Oriental part of the range, it being replaced in the Palaearctic, temperate areas, by *balteatus*. The Oriental species is to be called *viridaureus* by priority and many nominal species, described for extreme variant specimens are to be synonymised as given above. The Indochinese peninsula and the Malay archipelago contain other, more distinct species of *Episyrphus*, like *arcifer*, *contax*, *divertens*, *obligatus*, etc., but, except for the first, none of these occur on the Indian subcontinent. I have seen specimens of *divertens* from Sri Lanka through Ms Mayadunagge taken in thecourse of her research work there, and this is a first record of that species in Sri Lanka. The typically Palaearcic *balteatus* enters the Indian area only in Kashmir and in the higher Himalaya in Himachal Pradesh and Uttar Pradesh [= Uttarakhand], and of course, in northern Pakistan and Afghanistan. However, it is easily separated from the more widespread Oriental *viridaureus* by diagnostic markings on the sterna." See Wright & Skevington (2013) for Australian records.

The many papers cited above may be consulted for more information and the Indian States this species has been recorded from are cited above. Before my revisionary work, not many papers (authors) have even referred to *viridaureus*, this name being overlooked (!), and just *nectarinus* and *alternans* being used for variant specimens, as detailed in my notes to *balteatus* above (*q.v.*). My key (Ghorpadé, 1994: 10) will help authors to finally approach reality and find correct names easily. Misra (1932: 537) noted this in large numbers (as '*balteatus*') on mango aphids at Tirhut (Bihar). Anand *et al.* (1967) recorded it (as '*balteatus*') from Delhi (also Meerut, Babugarh, Bulandshahr and Saharanpur in Uttar Pradesh, and from Karnal in the Punjab ?). Siddiqui & Krishnaswamy (1972: 14) gave it (as '*Episyrphus alternans*') feeding on *Adelges* spp. in Pakistan and NW. Himalayas. Knutson *et al.* (1975: 315), Peck (1988: 22-23), Ghorpadé (2014c: 20, 2015: 7), Shah *et al.* (2014: 293), and Mitra *et al.* (2015: 68) listed it. See Thompson & Rotheray (1998: 95) for a key to this genus in the Palaearctic.]

Episyrphus Unnamed sp. 1 [undet.]
Pakistan (Aslamkhan *et al*., 1997).

[NOTE: Specimens need to be examined and species identity confirmed, if material available.]

Eriozona analis Kertész, 1901

Eriozona analis Kertész, 1901, Természetr. Füz., 24: 414 (♂; 'Sikkim') [HNHM, Budapest]
Eriozona ruficauda Brunetti, 1907, Rec. Indian Mus., 1: Pl. XI, fig. 2; 1908, *ibid*., 2: 56 (♀; 'Sikkim, India') [ZSI, Calcutta – examined]

India: UK; Nepal (Brunetti, 1907b, 1908, 1915, Hervé-Bazin, 1924, Mani, 1962, Vockeroth, 1969, Knutson *et al.*, 1975, Kapoor *et al*., 1979, Ghorpadé, 1981a, 1994, 2014c, 2015, Shah *et al.*, 2014, Mita *et al.*, 2015)

[NOTE: Kertész (1901: 414-415) described this in a paper on new and unknown Diptera in the Hungarian National Museum in Budapest. Brunetti (1923: 105) wrote "Described by Kertész from a single rather damaged ♂ from Sikkim, presumably in the Hungarian Museum." He described *ruficauda* (Brunetti, 1907b: Pl. XI, fig. 2, 1908: 56) "from three ♀♀ from Sikkim in the Indian Museum collection." In the FAUNA volume (Brunetti, 1923: 104-105) he synonymised *ruficauda* with *analis* Kertész "as they represent only one sex each and shew slight differences." Mani (1962: 214) reported it from Kumaon and Garhwal in the NW. Himalaya. Vockeroth (1969: 115-116) reviewed the genus which he opined was very close to *Megasyrphus* Dušek & Láska, and listed *analis* from the China-Tibet border. Knutson *et al.* (1975: 315) listed it from Nepal also. I examined the holotype female (antennae lost) of *ruficauda* in ZSI, Calcutta which was labeled "Sikkim, Knyvett / 4527/15 / Eriozona ruficauda Brunetti ♀ TYPE / TYPE / Eriozona analis Kertész, det. K.D. Ghorpade 1981." In my doctoral thesis (Ghorpade, 1981a) I had written "The holotype female of *ruficauda* Brunetti has its antennae missing. I also examined eight males from Szechwan, China [AMNH, New York, USNM, Washington, DC] and from Tibet [ZFMK, Bonn]. I have seen only one female from Nepal [CNC, Ottawa] taken in June at 3609m by the Canadian Nepal Expedition, besides the holotype of *ruficauda* from Sikkim [ZSI, Calcutta]. The species evidently occurs in near nival habitats and has been mostly collected at altitudes of 11,000 ft. (4000m) or higher. Note that in the FAUNA volume Brunetti (1923: 105) continued to list his *himalayensis* (Brunetti, 1915: 217), curiously, as an *Eriozona*, but which actually is a *Cheilosia* (see above under that species notes for details). Hervé-Bazin (1924: 291-292) corrected this to '*Chilosia*,' writing it seemed a distinct species of that genus. I also discussed generic relationships of *Eriozona* with *Megasyrphus* and ended in stating "Besides the very different lateral aspect of the face, these two genera exhibit many (seven) differences, and I prefer to keep them distinct. I (Ghorpadé (1994: 6) keyed it out in a key to Indian subregion Syrphini genera. Knutson *et al.* (1975: 315), Kapoor *et al.* (1979: 59), Ghorpadé (2014c: 20, 2015: 7), Shah *et al.* (2014: 293), and Mitra *et al.* (2015: 68) listed it. See also Sack (1932b: 179) and Thompson & Rotheray (1998: 101) for discussion and key to this genus in the Palaearctic.]

Ischiodon scutellaris (Fabricius, 1805)

Scaeva scutellaris Fabricius, 1805, Syst. Antliat., p. 252 (LT ♂; 'Tranquebar, India') [UZM, Copenhagen - examined]

Syrphus coromandelensis Macquart, 1842, Dipt . exot., 2(2): 80 (♂; 'Cote de Coromandel') [MNHN, Paris]

Sphaerophoria annulipes Macquart, 1855, Mem. Soc. Sci. Agric. Arts, Lille, (2) 1: 96 (LT ♀; 'Marquesas Is.') [UM, Oxford – examined]

Sijrphus splendens Doleschall, 1856, Natuurk. Tijdschr. Ned.-Indië, 10: 410 (LT sex ?; 'Java') [ZM, Amsterdam]

Syrphus erythropygus Bigot, 1884, Annls Soc. Ent. Fr., (6) 4: 87 (LT ♂; 'Indes') [UM, Oxford - examined]

Melithreptus novaeguineae Kertész, 1899, Természetr. Füz., 22: 178 (♂; 'Friedrich-Wilhelmshafen and Erima, New Guinea') [MNH, Berlin]

Ischiodon trochanterica Sack, 1913, Ent. Mitt., 2: 6 (♂; 'Kanshizei, Polishe, Suihenkyaku, Tainan, and Takao, Formosa') [SM, Frankfurt]

Melithreptus ogasawarensis Matsumura, 1916, *Thousand Insects of Japan*, p. 23 (♂; 'Bonn Is.) [NIAS, Tsukuba ?]

Ischiodon platychiroides Sack, 1913, Ent. Mitt., 2: 6 (LT ♂; Antimonan, Philippines') [ZMUH, Helsinki - examined]

Epistrophe magnicornis Shiraki, 1963, *Insects Micronesia*, 13: 141 (♀; 'Wena, Truk,, Caroline Is.') [USNM, Washington, DC - examined]

Sphaerophoria macquarti van der Goot, 1964, Beaufortia, 10: 220 (*nom.nov*. for *annulipes* Macquart, 1855 not 1842)

Afghanistan; Pakistan; India: BI, CH, DL, GJ, HP, HR, JK, PB, RJ, UK, UP; Nepal (Howlett, 1909, Kertész, 1910, 1913, Sack. 1913, Fletcher, 1914, 1916, Brunetti, 1915, 1923, 1925, Hervé-Bazin, 1924, 1926, Curran, 1928, 1931a, Sack, 1932b, Bhatia & Shaffi, 1933. Mani, 1939, Bhatia, 1939, Ahmad, 1940, Rahman, 1940, Rakshpal, 1945, Beeson, 1953, Lal & Gupta, 1953, Lal & Haque, 1956, Deoras, 1957, Bindra & Saxena, 1958, Venkatraman *et al.*, 1960, Coe, 1964, Upadhyaya & Soares, 1964, Lal & Haque, 1965, Kundu *et al.*, 1967, Anand *et al.*, 1967, Bańkowska, 1968, 1969, Rao, 1969a, Patel & Patel, 1969a,b, Kalyanam, 1970, Saxena *et al.*, 1970, Gokulpure, 1972, Habib, 1973, Joshi & Sharma, 1973, Ghorpadé, 1973, 1974, 1981a,b, 1994, 2014c,d,e,unpubl., Ghosh, 1974, Knutson *et al.*, 1975, Patel *et al.*, 1976, Patnaik & Bhagat, 1976, Patnaik *et al.*, 1977, Varma *et al.*, 1978, Roy & Basu, 1978, Kapoor *et al.*, 1979, Agarwala *et al.*, 1983a, 1984, Mathur, 1983, Das & Raychaudhuri, 1983, Datta & Chakraborti 1984, Awtar Singh *et al.*, 1985, Anand, 1986, Agarwala & Saha, 1986, Ashwani Kumar *et al.*, 1987, Peck, 1988, Singh & Mishra, 1988, Sharma & Bhalla, 1988, 1991, Abrol, 1993, Parui & Mitra, 2000, Mitra & Parui, 2002, Mitra *et al.*, 2004, 2015, Puttannavar *et al.*, 2005, Ramegowda *et al.*, 2006, Parui *et al.*, 2006, Laska *et al.*, 2006, Ghorpadé *et al.*, 2011, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014).

[NOTE: The first few synonyms given above under this species, of names proposed by Fabricius, Macquart, Doleschall and Bigot and the museums where the types have been deposited (in Denmark, France, Great Britain and Holland), show the first countries that began trading and colonial activities in India, and the people associated sampling early specimens of insects in this subcontinent. In my doctoral thesis (Ghorpadé, 1981a) I had written "This is one of the most widely distributed and commonly encountered species of the Syrphini in the Indian sub-continent, especially at lower elevations. The larvae feed on a wide variety of prey (Ghorpadé, 1981b: 69-70), and the adults are invariably present wherever plants are infested with aphids. It has been referred to *Xanthogramma* and *Sphaerophoria*, species of which genera also possess a striking yellow lateral mesonotal margin and black and yellow abdominal markings. After showing that *aegyptius* (Wiedemann) was distinct and confined to S. Europe and Africa (Vockeroth, 1969: 105-106), he wrote an excellent paper (Vockeroth, 1971: 1635) elucidating the relationships and identities of Old World '*Sphaerophoria*' species, synonymising many species (of Frey, 1948, and Shiraki, 1963, for example) based on his examnation of types. Yerbury and Brunetti both stated (see Brunetti, 1923: 314) that this species was never seen by them on the wing, which is strange. The male fly never hovers in swarms and females are adept at seeking out prey, flying in between low-growing plants and are thus not generally visible easily to the collector, as they tend to fly very low, like species of Paragini, close to the ground (males also) and always in the immediate proximity of grass or low vegetation or crop plants and this habit may be responsible for their "invisibility" to the uninformed, inexperienced collector. The many papers cited above and noted below may be consulted for more information and for the Indian States this species has so far been recorded from (see above). I may also mention, that as noted under *Agnisyrphus angara* (*q.v., op. cit.*), one female specimen of *I. scutellaris*, taken in Delhi [NHM, London], was found to also carry the incorrect labels "N.E. INDIA, Delhi, iii.47, T. Jermyn, B.M. 1949-53 / 'B'." So even Delhi was labeled as "N.E. India" (!) and it is transparently clear that the NHM, London museum staff had then erroneously labeled T. Jermyn and R.C. Jermyn collections as "N.E. India." This error

requires to be remembered and corrected by researchers working with the Jermyn Indian material accessed in the NHM, London museum in 1949.

I have examined the following types and also designated some Lectotypes during my doctoral and postdoctoral research, and now validate the latter here : of *scutellaris* Sack, labeled "TYPE [red label] / S. scutellaris, e Tranqueb. Daldorf / LECTOTYPE, Scaeva scutellaris Fab., Ghorpade des. 1980 [red label] / Ischiodon scutellaris (Fabricius) ♂, K.D. Ghorpade det. 1980" [UZM, Copenhagen]; of *platychiroides* Sack, labeled "Philipp, Antimonan, XI.1915 / Spec. typ. [pink label] / Mus. Zool. H:fors, Spec. typ. No 14038, Ischiodon platychiroides Frey / Ischiodon scutellaris (Fabricius) ♂, K.D. Ghorpade det. 1980" [ZMUH, Helsinki]; of *magnicornis* Shiraki, labeled "Truk Atoll, Moen Is, V-31-46, H Townes 419 / on Sorghum vulgare / Holotype [red label] / Epistrophe magnicornis sp. n., det. T. Shiraki / Ischiodon scutellaris (Fabricius) ♀ K.D.Ghorpade det. 1983 [USNM, Washington, DC]; of *annulipes* Macquart, labeled "Sphaerophoria annulipes. ♀. Macq. n. sp. / Sphaerophoria annulipes. LectoTYPE Macq. designated Vockeroth '71 [red label] / Ischiodon scutellaris (Fabricius) ♀, K.D. Ghorpade det. 1983" [UM, Oxford]; and of *erythropygus* Bigot, labeled "S. erythropygus Big = Ischiodon scutellaris F. / S. erythropygus. ♂., Indes, J. Bigot [black bordered rectangular white label] / LECTOTYPE, Syrphus erythropygus BIG., Ghorpade des. 1983 [red label] / Ischiodon scutellaris (Fabricius) ♂, K.D. Ghorpade det. 1983" [UM, Oxford].

Howlett (*in* Maxwell-Lefroy, 1909: 611, Pl. LXIV) made mention of this abundant syrphid on the Indian plains and illustrated it in that classic work *Indian Insect Life*. In his world catalogue, Kertész (1910) gave 'Coromandel' [= coast] as locality record in India. Bainbrigge Fletcher (1914, 1916) cited this species in his economic entomology works of that early period in British India. Sack (1913: 5-7, figs 3-4) erected a new genus *Ischiodon* for his new species *trochanterica* from Formosa [= Taiwan] which is now a synonym of *scutellaris* Fabricius. Kertész (1913: 273-274) recorded it also from Taiwan and confirmed the correct assignment of *scutellaris* Fabr. and *aegyptius* Wied. to *Ischiodon* Sack. Brunetti (1915: 217) was probably unaware of this new genus and cited '*Sphaerophoria scuttellaris*, F.' [*sic*] specimens in the Indian Museum, and gave localities "from Maho, base of Nepalese Himalayas; 17-iii-09; Ferozepore, 28-iv-05; Agra, 3-iv-05 [both *Brunetti*] . . . Bhanwar, 26-ii-07; Bettiah, Champaran, 8-iii-08; Dharampur, 24-ii-07 . . . Kulti Sitarampore, 10-viii-09 [*Lord*]. I also took it myself at many places in India and the East but exact data are not available." Earlier he had cited this species (Brunetti, 1913a: 164) from NE. India, but later (Brunetti, 1915: 217) mentioned this "clerical error" he had made for *S. javana* Wied., while reporting on the Diptera of the Abor Expedition. Brunetti (1917: 85) briefly stated that "the species in this genus [*Sphaerophoria*] offer exceptional difficulties, beyond the two common ones, *scutellaris*, F. and *javana*, Wied." In his FAUNA volume (Brunetti, 1923: 97-99, fig. 17) he cited it as '*Ischiodon scutellaris*, Fabr.,' gave the extensive synonymy and a detailed description and figure of its habitus. He wrote "The species is common in many parts of India and Assam practically all the year round, and is one of the most widely distributed Syrphids in the East. . . The species has been bred more than once from larvae predaceous on Aphidae on chrysanthemums and watermelons." Later (Brunetti, 1925: 76) he corrected his earlier statement "that the stick-like processes are present on the trochanters in both sexes is incorrect, they being present in the ♂ only, as stated by Sack. I have a note of the species being bred from larvae preying on Aphidae on roses at Dehra Dun, 29-XI-18 [*Chatterjee*]." Hervé-Bazin (1924: 290-291) wrote on this genus and corrected Brunetti's (1923) synonymy, and recognised only two species of *Ischiodon*. He went on to discuss the synonymy (Hervé-Bazin, 1926: 69-70) and gave China and Hanoi [= Vietnam] as the then easternmost known provenances of this species in the Orient. Curran (1928: 243-244, 1931a: 321) gave Malay records, a description and differences of *Ischiodon* from *Sphaerophoria*, and the two known species. Sack (1932a: 230) listed it from Flores in the Lesser Sundas of Indonesia. Sack (1932b) gave Baluchistan as locality record. Bhatia & Shaffi (1933: 548) gave aphids on *Solanum*, *Chrysanthemum*, *Calotropis*, watermelon, cotton, cabbage, wheat, sissoo and mustard as prey at Pusa (Bihar). Mani (1939: 99) gave a cynipoid Eucoilinae parasitoid, *Dieucoila indica* Mani, of its immatures collected and reared on barley aphid in Delhi. Another parasitoid, *Pachyneuron karnalensis* Mani was reared from puparia of a '*Syrphus* sp.' [most probably this species] taken from wheat leaves at Karnal (Punjab) (Mani, 1939: 85). Ahmad (1940) listed it from the Laghman Valley in Afghanistan, and Rahman (1940: 72) also from Lyallpur [= Faisalabad] in Pakistan, noting that it was "commonest of our syrphids, active throughout the year," its larvae feeding on aphids on wheat, mustard, cabbage, cotton and watermelon. Rakshpal (1945: 235) reported it from Gwalior, Madhya Pradesh. Beeson (1953: 339) gave this as "commonly predacious on Aphidae" in Indian forests. Lal & Haque (1956) experimented on maggot efficiency, effect of nutrition *in vitro*, in Delhi. Deoras (1957: 306) listed it as *Xanthogramma (Ischiodon) scutellare* Fb., from the then suburban Kurla area of Bombay [= Mumbai]. Bindra & Saxena (1958) gave larvae of this species feeding on mustard aphid at Gwalior (M.P.). Venkatraman *et al.* (1960) found a fungus killing this syrphid visiting umbelliferous flowers around I.A.R.I. Campus, New Delhi, the syrphid pollinating cultivated plants and predating on several aphids. Coe (1964: 265) cited a female taken "from cut rice fields above River Maewa, c. 4,000 ft" in January at Donbhan in Taplejung District in eastern Nepal, using Hull's (1949) nomenclature '*Xanthogramma (Ischiodon) scutellaris* (Fabricius)." Upadhyaya & Soares (1964) wrote on the *vena spuria* in the wing of this species as a diagnostic character of Syrphidae. Kundu *et al.* (1967) listed parasitoids of its immatures at Delhi from where

Anand *et al.* (1967) also recorded it. Anand *et al.* (1967) recorded it from Delhi (also Meerut, Babugarh, Bulandshahr and Saharanpur in Uttar Pradesh, and from Karnal in the Punjab). Kundu *et al.* (1967) reared parasitoid microhymenoptera from imatures of this species at Sultanpur, Pratapgarh and Barabanki (U.P.), in Amritsar (Punjab), and Delhi. Bańkowska (1968: 202, 1969: 284) gave specimen collection label data from Afghanistan. Rao (1969a) gave *Aphis gossypii* and *A. spiraecola* as larval prey for this species (see Ghorpadé, 1981b: 65). Patel & Patel (1969a,b) gave the bionomics of *Xanthogramma scutellare*, prey records and larval parasitoids studied at Anand in Gujarat. Rao (1969a: 787) listed *Aphis gossypii*, and *A. spiraecola* on citrus as prey. Kalyanam (1970) gave prey but as for '*Syrphus latifasciatus*' in error (see notes under that species below. Saxena *et al.* (1970) noted it feeding on gram and pea aphids in the IARI farm in Delhi. Gokulpure (1972: 848) recorded it from Damoh in Madhya Pradesh. Habib (1973: 75-76) noted this from Abbottabad andRawalkot in Pakistan on *Brevicoryne brassicae* aphids, as a '*Xanthogramma* sp.' Joshi & Sharma (1973) gave it from Udaipur and occurring throughout Rajasthan, and gave notes on toxicity of insecticides . Patel *et al.* (1976) listed *Aphis craccivora* as prey in Kapadwanj taluk in central Gujarat as prey. Patnaik & Bhagat (1976: 43) and Patnaik *et al.* (1977: 585) gave prey from Puri District in Orissa. Ghosh (1974) recorded several aphid prey of this species. Varma *et al.* (1978) recorded it feeding on the sugarcane grassy shoot aphid at Lucknow. Roy & Basu (1978) took it on mustard aphids at Kalyani in West Bengal. Kapoor *et al.* (1979: 59) listed it from Nepal. I (Ghorpadé, 1981b: 69-70) gave a long list of prey recorded in the Indian subcontinent. Agarwala *et al.* (1983a: 240) listed pea aphids as prey at Kalimpong, West Bengal. Mathur (1983: 232) noted it as "a very common and important predator feeding on several aphid species at Jullundur (Punjab). Das & Raychaudhuri (1983: 32) gave aphid prey recorded at Solan, c. 1450m, Himachal Pradesh. Agarwala *et al.* (1984: 17) gave many aphid prey records from the Indian region. Datta & Chakrabarti (1984: 238) took just a single female at Raipur in Jammu & Kashmir in October, on *Panicum* sp., and I (Ghorpadé, unpubl.) have seen two females at Srinagar. Awtar Singh *et al.* (1985: 193) found it a common species throughout the year at Chandigarh, Pinjore and Surajpur on wild weeds, grass, chrysanthemum and cucurbits. Anand (1986: 199) took it (as '*Ischioden scutellaris*') on mustard aphids and its flowers at Delhi. Ashwani Kumar *et al.* (1987: 86-87, figs 6, 12, 18, 24, 30) described and illustrated its immature stages studied at Ludhiana (Punjab). Abrol (1993: 267) found it pollinating *Brassica*, carrot and onion in Jammu and Kashmir. This species has also been taken in the hot and arid desert of Thar (Parui & Mitra, 2000: 73). It was found visiting flowers of *Anogeissus* sp. and *Cassia tora* in the Jessore and Balaram-Ambaji WLS in northern Gujarat (Mitra & Parui, 2002: 45). Claussen & Weipert (2003: 356) took specimens in the Karnali Province of Nepal between 2800 and 3100m altitudes. Mitra *et al.* (2004c: 401) collected it at Sakelri and north Sukhna Lake near Chandigarh in September. Puttannavar *et al.* (2005: 44) and Ramegowda *et al.* (2006: 22) recorded its larvae feeding on the sugarcane woolly aphid, *Ceratovacuna lanigera* in northern Karnataka. Parui *et al.* (2006: 96-97) took a male at Ropar FRH in the Punjab in June. Knutson *et al.* (1975: 315), Peck (1988: 23-24), Kapoor *et al.* (1979: 59), Ghorpadé (2014c: 20, 2015: 7), Shah *et al.* (2014: 297), and Mitra *et al.* (2015: 68) listed it.

Láska *et al.* (1987: 651) in a recent paper transferred *scutellaris* to the genus *Simosyrphus* Bigot, 1882 along with *grandicornis* (Macquart, 1842) and *aegyptius* (Wiedemann, 1830), also studying and treating what they announced as similar genera, *i.e.*, *Scaeva* (*Semiscaeva*) Kuznetzov, 1985, with *S. (S.) selenitica* (Meigen, 1822), *S. (S.) mecogramma* (Bigot, 1860), and *S. (S.) dignota* (Rondani, 1857), and also *Scaeva (s. str.) pyrastri* (Linnaeus, 1758), *S. (s.str.) albomaculata* (Macquart, 1842), and *S. (s. str.) latimaculata* (Brunetti, 1923), and studying molecular and immature stages characters of all. These revolutionary changes in phylogeny require to be carefully checked and corroborated before acceptance by me and perhaps other specialists. Use of minutely differing characters to 'split' generic taxa is dangerous as my training has been to look at similarities among genera and differences between species. There is no argument in accepting that *Scaeva, Metasyrphus, Eupeodes, Ischiodon* and *Simosyrphus* are close phylogenetically (see Vockeroth, 1969 and Ghorpadé, 2007) but 'lumping' *Ischiodon* and *Simosyrphus* and splitting subgroups of *Scaeva* subgenerically is to my mind risky and confusing, not clear. There still is a debate, in my mind at least, about *Metasyrphus* and *Eupeodes* and other genus groups of that clade so I prefer to let taxonomy remain as it was ('let it be') and not upset long followed genus groupings, which Vockeroth (1969: 62-68, 70-72, 102-106) masterfully demonstrated in that excellent generic revision of his of the tribe Syrphini. Readers may note that my own *Scaeva*—group (Ghorpadé, 2007: 16) contained *Eupeodes, Ischiodon, Lapposyrphus, Macrosyrphus, Metasyrphus, Scaeva*, and *Simosyrphus* ! Should these be 'lumped,' 'split' or left as they are with their characteristic differences as acknowledged so far ?

However, occurrence of this species even in the temperate, cold, high plateau of Afghanistan, where *Metasyrphus* and *Scaeva* rule the sky, biodiverse in the temperate regions but disappearing in the hot, steamy tropics, where *Ischiodon* rules, is notable. Also that *scutellaris* was first named and described as a *Scaeva* by that master, J.-C. Fabricius, the celebrated student of Carolus Linnaeus, may suggest true relationships recognized by these legends, in early times, and justify Láska *et al*'s new proposition after all ? Name change notwithstanding, being irritable to economic entomologists and bibliographers, who have no clue of the principles and workings of taxonomy

and who also do not consider, or understand, the real benefits of good, correct taxonomy to all of applied science.

Lastly, in my own recent papers (Ghorpadé *et al.*, 2011: 80-81, Ghorpadé & Shehzad, 2013: 13, Ghorpadé & Pathania, 2014: 5, Ghorpadé, 2014d: 10, 2014e: 11) more records and notes have been given which should be consulted. See also papers of other authors cited below the synonymy but not expanded on above. Knutson *et al.* (1975: 315), Peck (1988: 23), Ghorpadé (2014c: 20, 2015: 7), Shah *et al.(*2014: 297), and Mitra *et al.* (2015: 68) listed it. See also Sack (1932b: 204) and Thompson & Rotheray (1998: 99) for discussion and key to this genus in the Palaearctic.]

Ischyrosyrphus Unnamed sp. 1 [undet.].
India: JK (Datta & Chakraborti, 1984, Ghorpadé, 1981a, 2014c).

[NOTE: Datta & Chakraborti (1984: 238-230) listed an *Ischyrosyrphus* sp. from Pahalgam, Indian Kashmir, taken on *Cannabis sativa* in September. The male specimen needs to be studied for correct identity. In my doctoral thesis (Ghorpade, 1981a) I had written "The type of *sivae* Bigot was not found in the Bigot Collection (most of which is now in UM, Oxford), nor was it found in the NHM, London, and it is presumed lost. Bigot's *sivae* seems to be a species of *Dideoides* Brunetti, judging from the large size ("19 millim.") and other external characters such as the wholly yellow face and the longitudinal dark vittae on the scutum. The abdominal pattern described by Bigot for *sivae* is very similar to that of *Dideoides tigerinus* and these two species may be synonyms." Vockeroth (1969: 79-80) wrote 'Previous authors seem to have overlooked the designation of *I. sivae* Bigot as type of the genus [*Ischyrosyrphus*] and have followed Verrall (1901, p. 321) in accepting *Musca glaucia* L., as type. Unfortunately Brunetti (1923, p. 66) was neither able to find the type of *sivae* in Bigot's collection nor to recognize the species among other specimens. I prefer to use the name *Ischyrosyrphus* in its accepted sense unless it can be definitely shown that *sivae* is not congeneric with the other species included here" [= *glaucius* Linaeus, *laternarius* Muller, *strandi* Duda, *velutinus* Williston, and *xylotoides* Johnson]. He also commented "*Leucozona* differs strikingly from *Ischyrosyrphus* in the abdominal colour pattern and wing markings, but apart from the distinctly margined abdomen of the former the species of the two genera are almost identical in structure and should perhaps be treated as forming a single genus." See also Sack (1932b: 164) and Thompson & Rotheray (1998: 101) for discussion and key to this genus in the Palaearctic.]

Leucozona brunettii Ghorpadé, 1994
Leucozona brunettii Ghorpadé, 1994, Colemania, No. 3, p. 11 (♂; 'Mussoorie') [UZM, Copenhagen - examined]

India: UK (Ghorpadé, 1994, 2014c, Shah *et al*., 2014, Mitra *et al*., 2015)

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had considered erecting a new genus '*Himasyrphus*' for this and had written "An extremely peculiar syrphid with a produced black face and strikingly attractive colour markings, recalling *Leucozona lucorum* (Linnaeus) of the Palaearctic region. It is named in honour of the late Enrico Brunetti, who laid a solid foundation for the study of Indian Syrphidae. His works have been instrumental in guiding my early attempts at systematic research on Indian Syrphidae and his uncanny concept of a species (even though he confused apparently similar Palaearctic and Himalayan species and used colour by choice, and was sometimes subjective), and his basically correct descriptions and illustrations of older species which had been characterized poorly by early workers, have, in no meagre way, served to increase my understanding of these species." The holotype male is labeled "India, Uttar Pradesh, Mussoorie, c. 1500-2200m, 3-14.viii.1978, Copenhagen Zool. Mus. Exp." [UZM, Copenhagen]. I (Ghorpadé, 1994: 11) separated Indian species of this genus in a key. Ghorpadé (201c: 20), Shah *et al.* (2014: 298), and Mitra *et al.* (2015: 68) listed it.]

Leucozona kingdonwardi Ghorpadé, 1994
Leucozona kingdonwardi Ghorpadé, 1994, Colemania, No. 3, p. 11 (♂; 'Nepal 28°00'N, 85°00'E.') [CNC, Ottawa – examined]

Nepal (Ghorpadé, 1994, 2014c, unpubl.)

[NOTE: I named and described this new species based on a male and nine females; the holotype male is labeled "28°00'N. 85°00'E., Mal. Tr. 6, 10,500', 21-27 May 1967, Can. Nepal Exped." / HOLOTYPE, Leucozona kingdonwardi Ghorpade, 1983 [red label]." Paratype females were from the Adung Valley in NE. Burma and from Szechuan Province in China. The Chinese specimens were collected by D.C. Graham, one identified and labeled as "Dasysyrphus ? n. sp. ?, det. 1966, J.R. Vockeroth" and another labeled "Ken Chuan Shien, Aug 7-14, 1924 / Epistrophe PARATYPE morna Curran [yellow label]." Ghorpadé (1994: 11) included it in a key and then (Ghorpadé, 2014c: 20) listed it in his checklist.]

Leucozona pruinosa Doczkal, 2002

Leucozona (Leucozona) pruinosa Doczkal, Volucella, 6: 41 (♀; 'Zongdian, 3100-3400m, Yunnan, China') [SMNS, Stuttgart]

Nepal (Doczkal, 2002, Ghorpadé, 2014c)

[NOTE: Doczkal (2002: 41) also mentioned two Paratype males from West Nepal, Bajura District, at Simikot, 16km and 19km SW. Kuwadi Khola. He also provided a key to the Old World species of the '*Leucozona lucorum* Complex.' No terminalia were illustrated showing differences between species and Doczkal curiously selected a female as holotype for this species, from Yunnan. China ! Probably his *Leucozona lucorum* "complex" theory (Doczkal, 1998) needs verification ?]

Leucozona virendra Ghorpadé, 1994

Leucozona virendra Ghorpadé, 1994, Colemania, No. 3, p. 11 (♀; 'Dhakuri') [USNM, Washington, DC – examined]

India: UK (Ghorpadé, 1994, 2014c, Shah *et al*., 2014, Mitra *et al*., 2015)

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had considered to erect a new genus '*Ischyrozona*' for this and had written "Resembling *Leucozona lucorum* (Linnaeus) but distinct as elaborated. Named after Dr V.K. Gupta, Gainesville, Florida, U.S.A. (formerly Prof. of Zoology, Univ. of Delhi, India), who collected this specimen and under whose care I learnt the modern techniques of Insect Systematics and built on my basic training in his laboratory during 1973-1974 at New Delhi." Ghorpadé (1994: 11) included it in a key and then (Ghorpadé, 2014c: 20) listed it in his checklist. See also Sack (1932b: 179) and Thompson & Rotheray (1998: 101) for discussion and key to this genus in the Palaearctic.]

Leucozona Unnamed sp. 1 [undet.].

India: JK (Ghorpadé, 1981a, unpubl.).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "I have seen a female in the IARI, New Delhi, 'Pusa Collection' a female specimen labeled "Kashmir, 8500ft., 17-24 July 1923, Fletcher coll." which seems to be another species of this genus. The wing is patchily brownish below the stigma, running toward the wing base in the centre. The frons is wholly yellow, the face white pollinose, and the dark median vitta on face reaching the oral cavity. The lower face near the oral cavity is also brownish black. The eyes are brown haired above and white haired below. Abdomen colour similar to that of *L. virendra* but with tergum 3 black and yellow on the anterior margin medially, sinuate, with the yellow marking resembling two wide yellow spots meeting in centre."]

Macrosyrphus confrater (Wiedemann, 1830)

Syrphus confrater Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 120(♀; 'China') [UZM, Copenhagen – examined]

Syrphus mundulus Walker, 1852, *Insecta Saundersiana*, 3: 23o (♂; 'East Indies') [NHM, London]

Syrphus cranapes Walker, 1852, *Insecta Saundersiana*, 3: 231 (LT♀; 'East Indies') [NHM, London]; Ghorpadé, 2009, Colemania, 15: 10. (*LT designated*)

Syrphus macropterus Thomson, 1869, *in:* K. Svenska fregatten Eugenies resa, Zool., Dipt., 2(1): 498 (♀; 'China') [NRS, Stockholm]; Ghorpadé, 2019, Colemania 15: 10. (as *n. syn.*)

Syrphus trilimbatus Bigot, 1884, Annls Soc. Ent. Fr., (6) 4: 86 (♂; 'Indes') [UM, Oxford]

Syrphus torvoides de Meijere, 1914, Tijdschr. Ent., 57: 155 (♀; 'Nongkodjadjar, Java') [ZM, Amsterdam – examined]; Ghorpadé, 2019, Colemania 15: 11. (as *n. syn.*)

Syrphus (Metasyrphus) okinawae Matsumura *in* Matsumura & Adachi, 1917, Ent. Mag., Kyoto, 2: Pl. VI, fig. 16; *ibid*., 3: 23 (LT ♂ des. Vockeroth, 1973, 'Kumamota, Okinawa I.') [NIAS, Taihoku or EIHU, Sapporo ?]; Ghorpadé, 2019, Colemania 15: 11. (as *n. syn.*)

Afghanistan; Pakistan; India: BI, CH, DL, GJ, HP, HR, JK, PB, RJ, UK, UP; Nepal (Sack, 1913, Brunetti, 1923, Hervé-Bazin, 1924, 1926, Curran, 1928, 1931a, Bhatia & Shaffi, 1933, Pruthi & Bhatia, 1938, Ahmad, 1940, Rahman, 1940, Rahman & Khan, 1941a,b, Singh, 1942, Lal & Singh, 1948, Beeson, 1953, Alam & Hafiz, 1963, Coe, 1964, Nayar & Nayar, 1965, Anand *et al*., 1967, Nayar, 1968a, Rao, 1969a, Vockeroth, 1969, 1973, Ghani & Rao, 1972, Siddiqui & Krishnaswamy, 1972, Zaka-ur-Rab, 1973, Ghorpadé, 1973b, 1981a, 1994, 2009, 2014c,d,e, unpubl., Ghosh, 1974, Hamid *et al*., 1974, 1977, Patel *et al*., 1975, Knutson *et al*., 1975, Diller, 1977, Roy & Basu, 1978, Chaturvedi, 1981, Mathur, 1983, Das & Raychaudhuri, 1983, Agarwala *et al*., 1983a, 1984, Verma & Pathak, 1984, Awtar Singh *et al*., 1985, Anand, 1986, Ashwani Kumar *et al*., 1987, Peck, 1988, Abrol, 1993, Aslamkhan *et al*., 1997, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "A large species, widely distributed in the Oriental region. Several 'species' have been described, based on extreme variant specimens, but my studies were of a large material from India and SE. Asia, including holotypes of *confrater* and *torvoides*. Vockeroth's notes (pers. comm.) on the types of *cranapes*, *macropterus*, *mundus*, *torvoides*, and *trilimbatus* tend to support the treatment of *confrater* as a single, highly variable and widely distributed species. Hence I have synonymised all other species in Vockeroth's (1969: 65) list under *confrater* Wiedemann. The type-species of the 'subgenus' *Macrosyrphus* (of *Syrphus*) Matsumura, *okinawae* Matsumura from the Ryukyu Islands, is certainly another synonym; Vockeroth (1973: 1075-1076) was unable to find differences in the male terminalia and stated character differences within the variability of *confrater*. This species is an important predator of *Adelges* spp. (Homoptera: Adelgidae) and of *Eriosoma lanigerum* (Homoptera: Eriosomatidae) attacking conifers and apples respectively, and is mainly distributed on the Himalayas and adjacent mountains. It occurrence in peninsular India and other southern climes may possibly be by accidental transportation there along with its prey on the host plant ?" But I have seen and taken many large flies of this species on the Ghats which appeared to be in their 'home territory.' At the CNC, Ottawa I examined 2 ♀ labeled "B65-101(1), India, 9/viii/95 / *Myzus* sp. ? *ornatus* / 69.-5816/5815." See also my notes (Ghorpadé, 2009: 10-11) on synonymy, and a list of its recorded prey (Ghorpadé, 1981b: 67-68). Chaturvedi (1981: 404) identified it from the Valley of Flowers (11,500 ft) on the Garhwal Himalaya.

The many papers cited above may be consulted for more information and the Indian States this has been recorded from are cited above. Some of them are mentioned here : Sack (1913: 2) recorded it from Taiwan as a *Didea* ! Brunetti (1923: 92-94; Pl. II, fig. 17) described and illustrated this species (as *Syrphus*) and mentioned some apparently alien characters of some specimens. Hervé-Bazin (1924: 290, 1926: 66) gave notes on Brunetti's FAUNA and separated it from *nitidicollis* Meigen, which is now placed in *Epistrophe*. Curran (1928: 203, 1931a: 315) gave a description and included it in a key (as '*confrator*') to Malayan *Syrphus*. He also wrote "This species and the preceding [*chrysotoxoides* Curran], in the strict sense, belong to the genus *Dideoides* Brun. This genus [*Dideoides*] cannot stand on the characters proposed by Brunetti, although it is quite valid if we limit the genus *Syrphus* to those species with the lower lobe of the squamae pilose. If that is done *Epistrophe* of Walker becomes the next available name, but this might easily be limited to those species without any trace of a raised abdominal margin." Bhatia & Shaffi (1933: 565-566, Pl. LXV) gave its life history and recorded prey species, these from most parts of India. Pruthi & Bhatia (1938: 736) noted this feeding on cotton aphids in Delhi. Ahmad (1940) recorded it from the Kabul plateau in Afghanistan feding on plum and apricot aphids. Rahman (1940) from the Punjab, Rahman & Khan (1941a,b) from the Kulu Valley in Himachal (as 'Punjab'), Singh (1942) from Chaubattia and Ramgarh in Kumaon, and Lal & Singh (1948) from Ranikhet, Chaubattia and Ramgarh in the Kumaon Hills feeding on *Eriosoma lanigerum*. Beeson (1953: 340) noted this (as '*Syrphus*') feeding on aphids on the hills and the plains, quoting Bhatia & Shaffi (1933). Alam & Hafiz (1963) recorded it feeding on *Eriosoma lanigerum* on *Malus pumila* at Rawalpindi, Peshawar and Changamanga in Pakistan, Nayar & Nayar (1965: 241) from the Agra area, Nayar (1968a: 124) from Kalatop—Lakkarmandi near Dalhousie, Himachal), Vockeroth (1969) from the Punjab, and Ghani & Rao (1972) from Dalhousie. Siddiqui & Krishnaswamy (1972: 14) gave it feeding on *Adelges* spp. in Pakistan and NW. Himalayas, specifically Dalhousie, and gave other aphid prey. Vockeroth (1973: 1075-1076, fig. 1) mentioned "It belongs to the *confrater* group; the name *Macrosyrphus* is available should this group be given generic or subgeneric status. As first reviser I synonymize *Macrosyrphus* with *Metasyrphus*." He illustrated the abdomen of *okinawae* Matsumura and kept it separate from *confrater*, but I synonymised it and raised *Macrosyrphus* to the status of a good genus (Ghorpadé, 2009: 11). Coe (1964: 263) reported it from Nepal, Kapoor *et al.* (1979: 59) listed it from there, and recently it was also recorded by Claussen & Weipert (2003) from that country. Anand *et al.* (1967) recorded it from Delhi on aphids infesting cotton, cabbage and chrysanthemum. Zaka-ur-Rab (1973) found it a major predator of the woolly aphid in Kashmir valley. Ghosh (1974) recorded several aphids as prey of this species (as '*Syrphus*'). Hamid *et al.* (1974: 79; 1977: 107) noted it (as '*Syrphus*') on *Acyrthosiphon pisum* in Pakistan from July to September. Diller (1977) recorded its *Diplazon* sp. (Hymenoptera: Ichneumonidae) parasitoids from India. Rao (1969a) gave *Aphis gossypii and A. spiraecola* as larval prey for this species (see Ghorpadé, 1981b: 65). Patel *et al.* (1975: 40) listed *Aphis craccivora* as prey in Gujarat. Roy & Basu (1978: 168-169, figs 2, 4, 5) described and illustrated immature stages and adults, rearing it on mustard aphids at Kalyani, West Bengal. Chaturvedi (1981: 404) took it on umbelliferous flowers at the Valley of Flowers in Garhwal Himalaya. Das & Raychaudhuri (1983: 33) gave aphid prey at Solan, c. 1450m, in Himachal, Mathur (1983: 232) gave prey at Jullundur, Punjab, Agarwala *et al.* (1983a: 240) at Kalimpong, West Bengal, Agarwala *et al.* (1984: 18) gave many prey species from the Indian subregion, and Verma & Pathak (1984) reported its role in secondary spread of pearl millet ergot disease. Awtar Singh *et al.* (1985: 192) cited it as a rare species from May to December at Chandigarh and Solan on cotton and chrysanthemum. Anand (1986: 198) gave aphid prey on wheat, cotton, cabbage and chrysanthemum at Delhi, and Ashwani Kumar *et al.* (1987: 86, figs 3, 9, 15, 21, 27) described and illustrated immature stages reared on aphids at Ludhiana, Punjab. Abrol (1993: 267) reported it as a pollinator (as '*confacter*') in lowland tropical areas (500-1350m) on peach, plum, pear, carrot,

onion, and *Brassica*, in subtropical temperate transition areas (1350-3000m) on *Brassica*, *Dacus* and sunflower, and in the temperate zone (Kashmir Valley, 1560- 4200m) on *Brassica*, carrot and onion, in Jammu & Kashmir. Puttannavar *et al.* (2005: 44) and Ramegowda *et al.* (2006: 22) recorded it as a predator of the sugarcane woolly aphid, *Ceratovacuna lanigera* in northern Karnataka. In recent years I gave records from Afghanistan (Ghorpadé, 2014d) and Pakistan (Ghorpadé & Shehzad, 2013), giving references, as well as from Chandigarh (Ghorpade, 2014e: 11) and the Punjab Doab (Ghorpade & Pathania, 2014: 5-6).

I examined the holotype of *confrater* Wiedemann labeled "♀ / Mus. Westerm. / TYPE [red label] / S. confrator [*sic*] Wied., China, Trentepohl / Metasyrphus confrater Wiedemann. Det. FCThompson, 1974 / Macrosyrphus confrater (Wiedemann) ♀, K.D. Ghorpade, det. 1980" [UZM, Copenhagen]. Also of *torvoides* de Meijere labeled"E. Jacobson, Nongkodjadjar, JAVA, Jan 1911 / Syrphus torvoides det. de Meijere, Type / TYPE [red label] / Macrosyrphus confrater (Wiedemann) ♀, K.D. Ghorpade, det. 1982" [ZMA. Amsterdam]. My studies of extensive material from India and SE. Asia, and holotypes of the synonyms listed above, tend to support the treatment of *confrater* as a single, highly variable and widely distributed, peregrine, species. Even male terminalia are subject to variation as was observed in three series of specimens of populations from Dalhousie, Mussoorie and China. Knutson *et al.* (1975: 317), Peck (1988: 32), Ghorpadé (2014c: 20, 2015: 7), Shah *et al.* (2014: 296; as '*Eupeodes*'), and Mitra *et al.* (2015: 68) listed it.]

Megasyrphus himalayensis Kohli, Kapoor & Gupta, 1988

Megasyrphus himalayensis Kohli, Kapoor & Gupta, 1988, J. Insect Sci., 1(2): 123 (♀; 'Kalatop') [IARI, New Delhi]

Megasyrphus deodarae Ghorpadé, 1981a, Ph.D. Thesis (unpubl.) : *nom. nud.*

Pakistan; India: HP, JK; Nepal (Kohli *et al.*, 1988; Ghorpadé, 1981a, 1994, 2014c, 2015, Arif, 2001, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "*Megasyrphus deodarae* is close to *annulipes* (Zetterstedt) but distinct, being more hairy and almost twice as large. . . Only females were collected, either hovering near foliage of deodar (*Cedrus deodara*) trees, or flying haphazardly along the chalky, excavated hillsides besides the mountain roads. This behavior is purposeful, and akin to the similar habit of certain stinging Hymenoptera, especially Vespidae, and serves, perhaps, to accentuate the external mimetic resemblance to these wasps. Curiously, I collected it only around Dalhousie, on the Chamba Hills, and always in deodar forest, hence the species name I had selected for this new hover-fly. But then Kohli *et al.* (1988: 123-124, figs 44-47) named anddescribed this very same species from the same area so my then yet unpublished name became a *nomen nudum*. Claussen & Weipert (2003: 356-357, fig. 17) reported a male taken at Hochtal Gothichaur, 2900-3050m, in Karnali Province in Nepal and gave a key to Oriental species. Ghorpadé & Shehzad (2013: 14) reported on a Pakistani record by Arif (2001) as a "*Eriozona*," and I have seen specimens taken in Indian Kashmir. Arif (2001: 113-114, 126) had listed this as '*Eriozona*' based on 4♂ taken at Gujranwala and Sialkot in sunflower fields and wild vegetation in October 1998 and June 1999 from Pakistan. Ghorpadé & Pathania (2014: 7) cited it from the Punjab Doab. Ghorpadé (2014c: 20, 2015: 7), Shah *et al.* (2014: 298), and Mitra *et al.* (2015: 68) listed it. See Thompson & Rotheray (1998: 103) for a key to this genus in the Palaearctic.]

Melangyna remota (Brunetti, 1923)

Syrphus remotus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 78, Pl. II, fig. 15 (♂; 'Kufri, Simla Hills, 8000 ft.') [ZSI, Calcutta – examined]

Melangyna remota (Brunetti): Ghorpadé, 2009, Colemania, 15: 6. (as *n. comb.*)

India: HP, JK, UK; Nepal (Brunetti, 1907a, 1908, 1917, 1923, Vockeroth, 1969, Knutson *et al.*, 1975, Ghorpadé, 1981a, 1994, 2009, 2014c, 2015, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: The holotype male is labeled "Kufri, Alt. c. 8000 ft., Simla Hills, 11-V-09, Annandale / S. remotus Brun Type ♂ / TYPE / 1828/H2 / Syrphus remotus Brun Type ♂ det. Brun 1923 / Melangyna remota (Brunetti) ♂, K.D. Ghorpade det. 1981" [ZSI, Calcutta]. It is in good condition but head is lost. The abdomen appears to show a slight margin. This could be Brunetti's (1907a: 169; 1908: 57; 1917: 84) "*umbellatarum* F." from Matiana ? The male from Nepal shows some differences. See Ghorpadé (2009) for some more notes. I examined this male from Nepal 27°58' N., 85°oo' E., 11,100 ft in CNC, Ottawa. This differs from *remota* holotype, and other specimens in my collection that I have seen are from Srinagar, 1893m, Dalhousie, 2133m, Kufri, 2600m, Narkanda, 2743m, Dhakuri, 2621m, and Pindari Glacier, 4115m, taken from May-June and September-October. In my doctoral thesis (Ghorpade, 1981a) I had also written "However, the figure (Brunetti, 1923: Pl. II, fig. 15) of the holotype male abdominal pattern is not true to that of the type examined in ZSI, Calcutta." Vockeroth (1969: 81-87) separated this Holarctic genus into four 'subgenera,' two new ones described by him, *Austrosyrphus* and *Melanosyrphus*, from New Guinea, Australia and New Zealand which could be good genera. He recognized *Melangyna* Verrall and *Meligramma* Frey in

the Holarctic, these separated by feeble characters and in his own words being "extremely similar in all external characters apart from colour pattern." He (Vockeroth (1980) later revised the Nearctic species of *Melangyna* (*Meligramma*) of which he recognized three species. Thompson (2008: 12-13) accepted this subgenus for a single New Zealand species, as Vockeroth had done. Knutson *et al.* (1975: 320) cited *remotus* Brunetti as an unplaced species of *Syrphus*, and did not recognize any *Melangyna* species as Oriental then. Ghorpadé (1994: 5) included this genus in a key to Indian subregion genera, with *remota* as the only species here. Ghorpadé (2014c: 20, 2015: 7), Shah *et al.* (2014: 298), and Mitra *et al.* (2015: 68) listed it.]

Melangyna umbellatarum (Fabricius, 1794)

Syrphus umbellatarum Fabricius, 1794, *Ent. Syst.*, 4: 307 (sex ?; 'Hafnia' = Copenhagen, Denmark) [?]

India: HP (Brunetti, 1907a, 1908, 1917, Peck, 1988).

[NOTE: Brunetti (1907a: 169; 1908: 57) stated this to have been taken in the Simla District by Annandale, "new to the Oriental fauna." He mentioned a *S. umbellatarum* F. male specimen taken at Matiana as "absolutely identical with European ones." Then (Brunetti, 1917: 84) he mentioned this from Matiana again, in the Simla Hills, but this needs confirmation by examination of specimens if available. Ghorpadé (2014c: 20, 2015: 7), and Peck (1988: 29) listed it. See also notes under *remota* above. See also Sack (1932b: 163) and Thompson & Rotheray (1998: 101, 103) for discussion and key to this genus in the Palaearctic.]

Meliscaeva lefroyi Ghorpadé, 1994

Meliscaeva lefroyi Ghorpadé, 1994, Colemania, No. 3, p. 11 (♂; 'Gulmarg') [UZM, Copenhagen – examined]

India: HP, JK, UK (Brunetti, 1923, 1925; Coe, 1964, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 2014c, unpubl., Peck, 1988, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "This species is apparently restricted to extreme NW. Himalayas, where it is sympatric with *tribeni* (Nayar). It is named in honour of the late Prof. Harold Maxwell-Lefroy, the first Imperial Entomologist of the Imperial Department of Agriculture for India, in erstwhile Brtish India, whose classic *Indian Insect Life* (1909) is still the only comprehensive, general, popular volume on Indian insects, and who commenced amassing a valuable reference collection of different insect groups occurring in this sub-continent (see also Ghorpadé, 2012a). The holotype male is labeled "India, Jammu & Kashmir, Gulmarg, 2600-3000m, 17.viii.-5.ix.1978, Copenhagen Zool. Mus. Exp." [UZM, Copenhagen]. Paratypes were collected from Kalatop, 2438m, nr Dalhousie, Dhenkund, 2743m, Moti Tibba, nr Mussoorie, 2005m, Dwali, 2743m, Khati, 2210m, and Dhakuri, 2621m, all these from August to October. Brunetti (1923: 85) listed specimens of '*cinctellus*, Zett,' (which does not occur in our limits) from "Simla, ix.1908 (*Nurse*), and Thaumaspur, Nepal, 18-20.ii.1908" which could actually be this species ? Later he (Brunetti, 1925: 76) reported a '*cinctellus*' from Darjling "on more than one occasion" and stated that "the identity was fully confirmed by both Mr. Hervé-Bazin and myself" on comparison with European specimens. That was before male terminalia were employed and *Meliscaeva* species are very close to each other outwardly but are several distinct species as their different terminalia confirm (see Ghorpadé, 1994: 11-12 for a key to Indian species). Coe (1964: 262) cited '*Syrphus cinctellus* (Zetterstedt) "from edge of small mixed wood, c. 6,000 ft., below Sangu, Taplejung District, Nepal" and also from "Dudh Kosi Tal, 10,350 ft., east of Katmandu, Nepal" which could actually be this species or the next ? Kapoor *et al.* (1979: 59) listed this from Nepal (as '*Meliscaeva cinctella*'). I (Ghorpadé, 1994: 11-12) gave a key to separate the many Indian subregion species, including this. Ghorpadé & Shehzad (2013: 20) thought this possible in Pakistan. Peck (1988: 31; as '*cinctella*'), Ghorpadé (2014c: 20), Shah *et al.* (2014: 299), and Mitra *et al.* (2015: 69) listed it.]

Meliscaeva tribeni (Nayar, 1968)

Baccha tribeni Nayar, 1968, Agra Univ. J. Res. (Sci.), 16: 128 (♂; 'Narkanda, 67km on the Hindustan-Tibet Road, from Simla, 2743m') [ZSI, Calcutta – examined]

Meliscaeva tribeni (Nayar): Ghorpadé, 2009, Colemania, 15: 6. (as *n. comb.*)

India: HP, UK; Nepal (Nayar, 1968a; Knutson *et al.*, 1975; Ghorpadé, 1981a, 1994, 2009, 2014c, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: Along with l*efroyi* Ghorpadé, this species seems to be restricted to the NW. Himalayas (Ghorpadé, 1981a). It was described by Nayar (1968a: 128, fig. 3) as a *Baccha*, presumably on account of its slender abdomen. His description was extremely poor and his figure misleading – the black cross marking shown by him on tergum 3 is not actually present on the tergum but a result of the interior muscles showing up below the translucent tergum; I have one other such specimen with this kind

of postmorten marking in my collection. The holotype (a greasy specimen, glued to the pith base, with broken left wing, antennae lost) male is labeled "HOLOTYPE [red label] / Baccha tribeni sp. nov. det. J. L. Nayar / Narkanda, India, 9000 ft / Coll. Tribeni Singh, 22.IX.1960 / 3730/H6 / Meliscaeva tribeni (Nayar) ♂, K.D. Ghorpade det. 1981" [ZSI, Calcutta]. Other specimens I have examined are from Dalhousie, 2133m, Dhenkund, 2743m, Kalatop, 2438m, nr Dalhousie, Mussoorie, 2005m, Khati, 2210m, and Dhakuri, 2621m, all these taken from August to October. See also notes under *lefroyi* above and notes in Ghorpadé (2009: 6). Ghorpadé (2014c: 20), Shah *et al.* (2014: 299), and Mitra *et al.* (2015: 69) listed it. See Thompson & Rotheray (1998: 97) for a key to this genus in the Palaearctic.]

Meliscaeva Unnamed sp. 1 [undet.]
India: HP, UK (Brunetti, 1923).

[NOTE: Specimens cited by Brunetti (1923: 85) from Simla (see under *lefroyi* above) need to be examined and species identity confirmed, if material still available in ZSI, Calcutta or NHM, London.]

Meliscaeva Unnamed sp. 2 [undet.]
Nepal (Brunetti, 1923, Coe, 1964).

[NOTE: Specimens cited by Brunetti (1923: 85) and Coe (1964: from Thaumaspur, Nepal (see under *lefroyi* above) and by Coe (1964: 262) need to be examined and species identity confirmed, if material available as above.]

Metasyrphus bucculatus (Rondani, 1857)
Syrphus bucculatus Rondani, 1857, Dipt. Ital. prodromus, 2: 134 (LT♂; 'Agri parmensis, Italy') [MZSN, Firenze]
Metasyrphus frequens Matsumura, 1917, Ent. Mag., Kyoto, 3: 148 (LT♂; 'Japan) [EIHU, Sapporo ?]
Metasyrphus hideonis Matsumura, 1917, Ent. Mag., Kyoto, 2: Pl. VI, fig. 9 (LT♂; ' Japan) [EIHU, Sapporo ?]
Syrphus latilunulatus Coe, 1931, Entomologists' mon. Mag., 67: 178 (LT♂; 'Monifieth, Nethy Bridge, Stowford Cleave, Great Britain') [NHM, London]
Metasyrphus (Metasyrphus) pseudonitens Dušek & Láska, 1980, Acta ent. Bohemoslov., 77: 125 (♂; 'Bashtulgal, Nuristan, Afghanistan') [NMP, Prague]

Afghanistan; Pakistan; India: HP, JK, PB, UK; Nepal; Bhutan (Brunetti, 1907a, 1908, 1923, Coe, 1964, Bańkowska, 1968, 1969, Vockeroth, 1969, 1986, Dušek & Láska, 1973, 1976, 1980, Ashwani Kumar *et al.*, 1987, Peck 1988, Ghorpadé, 1981a, 1994, 2014c,d,e, unpubl., Mazánek *et al.*, 1998, Claussen & Weipert, 2003, Ghorpade & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This species is distributed along the Himalayas and neighbouring mountains from Afghanistan to China and Japan. The records of *luniger* and *nitens* by earlier workers from the Indian area are obviously misidentifications for this species. Dr Pavel Laska informed me (*in litt.*) that *pseudonitens* is probably a synonym of *Metasyrphus latilunulatus* (Collin) and Yoshiro Ikezaki considers it a synonym of *frequens* Matsumura." See more details in Dušek & Láska (1980: 125-127) and Mazánek *et al.* (1998: 29-37, figs 1-19). Coe (1964: 262) recorded it from Nepal as "*Syrphus ? nitens* Zetterstedt var." I separated it in a key to Indian subregion '*Eupeodes*' (Ghorpadé, 1994: 10-11). Bańkowska cited this in error as '*latilunulatus*' from E. Afghanistan. See also notes in Ghorpadé & Shehzad (2013) for Pakistani records and in Ghorpadé (2014d,e) from Afghanistan and the Chandigarh area. Brunetti (1907a: 169; 1908: 57) mentioned a *Syrphus luniger* male from Theog on the Simla Hills. Vockeroth (1969: 62-66; 1986: 199-200) debated the question of *Eupeodes* Osten Sacken and *Metasyrphus* Matsumura as one and the same genera, but I prefer to treat this as a mixed group of very similar species but separated by geographical preference, like *Macrosyrphus* which I treat as a distinct genus. Dušek & Láska (1976: 265-266) included it in a key to European species of *Metasyrphus*. Dušek & Láska, 1980: 125, 127, figs 6-7, 17, 23-24, 26-27) described and illustrated it (as '*pseudonitens* n. sp., separated it in a key and gave a differential diagnosis, citing specimens from Afghanistan. Ashwani Kumar *et al.* (1987: 86, figs 2, 8, 14, 20, 26) described and illustrated its immature stages. Ghorpadé (1994: 10-11) separated it in a key to Indian *Eupeodes*, as '*pseudonitens*,' commenting on synonymy. Claussen & Weipert (2003: 356) listed many specimens taken in Nepal. Ghorpadé & Pathania (2014: 7) listed it from the Punjab Doab. Ghorpadé (2004e: 12) gave more notes from the Punjab Doab. Ghorpadé (2014d: 10) cited records from Afghanistan, wherefrom as many as nine species of *Metasyrphus* have so far been recorded. Peck (1988: 36; as '*pseudonitens*'), Ghorpadé (2014c: 20), Shah *et al.* (2014: 296), and Mitra *et al.* (2015: 69) listed it.]

Metasyrphus corollae (Fabricius, 1794)

Scaeva corollae Fabricius, 1794, Ent. Syst., 4: 306 (sex ?; 'Killiae') [UZM, Copengagen; destroyed]

Afghanistan; Pakistan; India: CH, HP, JK, PB, UK, UP ?; Nepal (Sack, 1913, Brunetti, 1923, Nayar & Nayar, 1965, Nayar, 1968a, Bańkowska, 1968, 1969, Alam *et al*., 1969, Vockeroth, 1969, 1986, Lambeck & van Brink, 1973, 1975a,b, Knutson *et al*., 1975, Kapoor *et al*., 1979, Dusek & Laska, 1980, Awtar Singh *et al*., 1985, Peck, 1988, Abrol, 1993, Ghorpadé, 1981a,b, 1994, 2014c,d,e, unpubl., Aslamkhan *et al*., 1997, Claussen & Weipert, 2003, Chandel *et al*., 2004, Irshad, 2008, Saeed *et al*., 2008, Sajjad *et al*., 2008, 2010, Sajjad & Saeed, 2010, Ali *et al*., 2011, Shehzad, 2011, unpubl., Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "This is a very widespread Palaearctic species, also occurring across northern Africa and the northern fringes of the Oriental Region. In the Indian area, *corollae* is common along the Himalayas and on the Khasi Hills in NE. India, being also found on the Indo-Gangetic Plain in winter months (November to February). I have not found any specimens from Nepal, not even in Ottawa in the Canadian Nepal Expedition material, but Kapoor *et al.* (1979: 59) listed it from there, as well as Claussen & Weipert (2003: 356, 377) as '*Eupeodes*.' It is easily distinguished from other Indian species of this genus by its enlarged male terminalia, visible without dissection. Another very interesting observation is that unlike *Macrosyrphus confrater*, males of *corollae* and the other species of *Metasyrphus* never hover in male swarms, or even individually. This is the type-species of *Metasyrphus*, and as such is very distinct (at least the male) from those of the *luniger*-group. Perhaps it deserves to be treated as a monotypic genus and species of the *luniger*-group (without lingula in the terminalia) separated as a distinct genus, *Posthosyrphus* Enderlein, two of the other species-groups of Vockeroth (1969: 63)." I prefer to treat as separate genera *Macrosyrphus* Matsumura and *Lapposyrphus* Dušek & Láska. For the present though, *corollae* and species of the *luniger*-group are retained as *Metasyrphus*, especially as females are indistinguishalble generically." Vockeroth (1986: 199-200) again discussed the synonymy of *Eupeodes* Osten Sacken and *Metasyrphus* Matsumura (*q.v.*). Sack (1913: 5) recorded it from Taiwan. Nayar & Nayar (1965: 241) listed it from the Agra area. Their list of some 16 syrphid species from Agra environs is interesting as it lists several high altitude species like this one, but possibly more research and sampling needs to be done to ascertain if these mountain flying species descend to the Indo-Gangetic Plains at least in in northern Indian winter months, being probably multivoltine ? Nayar (1968a: 13) cited a female from Manaslu Gorge, 2129-2440m near Manali taken in May. Bańkowska (1968: 204, 1969: 282) cited many specimens taken in NE. and E. Afghanistan between 500 and 4200m. Lambeck & van Brink (1973: 90, 1975a: 5) wrote "Our records confirm its distribution in northern India along the slopes of the Himalaya," and described its karyotypes. Kapoor *et al.* (1979: 59) listed it from Nepal. Ghorpadé (1981b: 68) listed prey for this species in this subcontinent. Awtar Singh *et al.* (1985: 192-193) listed it from Mohali and Chandigarh as a rare species visiting wild weeds and *Calendula* sp. flowers. Abrol (1993:266-267) reported it pollinating peach, plum, pear, carrot, onion and *Brassica* in the lowland subtropical areas (300-1350m), and *Brassica*, *Dacus* and sunflower in the subtropical temperate transition areas (1350-30000m) in Jammu & Kashmir. Ghorpadé (1994: 10-11) separated it in a key to Indian *Eupeodes*. Claussen & Weipert listed specimens taken in Nepal. See Ghorpadé & Shehzad (2013: 14) for records from Pakistan. Ghorpadé (2014d: 10) cited records from Afghanistan. Ghorpadé & Pathania (2014: 7) and Ghorpadé (2004e: 12) listed it from the Punjab Doab. Knutson *et al.* (1975: 317), Peck (1988: 32), Ghorpadé (2014c: 21), Shah *et al.* (2014: 296), and Mitra *et al.* (2015: 69) listed it.]

Metasyrphus klapperichi Dušek & Láska, 1980

Metasyrphus klapperichi Dušek & Láska, 1980, Acta ent. Bohemoslov., 77: 121 (♀; 'Sarekanda, 4200m, Gebirge Badakschan, Afghanistan') [NM, Prague]

Afghanistan (Dušek & Láska, 1980, Peck, 1988, Ghorpade, 2014c,d).

[NOTE: See Ghorpadé (2014d: 10) for notes on this species known only from Afghanistan in this sub-continent. Dušek & Láska, 1980: 121-122, figs 3, 15) described and illustrated it, separated it in a key and gave a differential diagnosis, citing specimens from Afghanistan in the collection of J. Klapperich who donated it to the National Museum, Praha [= Prague]. Ghorpadé (2014d: 10) cited records from Afghanistan. Peck (1988; 32) and Ghorpadé (2014c: 21) listed it.]

Metasyrphus latifasciatus (Macquart, 1829)

Syrphus latifasciatus Macquart, 1829, Ins. Dipt. N. Fr., 4: 94 (♂; 'Arras, France') [MNHN, Paris]

Afghanistan; Pakistan; India: CH ?, HP, JK, PB; Nepal (Brunetti, 1923, Coe, 1964, Nayar & Nayar, 1965, Nayar, 1968a, Kalyanam, 1970, Lambeck & van Brink, 1973, 1975a,b, Knutson *et al*., 1975, Dušek & Láska, 1976, 1980, Datta & Chakraborti, 1984, Awtar Singh *et al*., 1985, Peck, 1988, Ghorpadé, 1981a,b, 1994, 2014c,d,e, Aslamkhan *et al*., 1997, Arif, 2001, Claussen &

Weipert, 2003, Mitra *et al*., 2004b, Ghorpade & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015, Shehzad, unpubl.).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written that this species "is perhaps restricted to the higher altitudes of the Himalayas in this subcontinent; curiously I collected no males. The records from Agra (Nayar & Nayar, 1965) and Dalhousie (Nayar, 1968a) are possibly misidentifications." Brunetti (1923: 87-88) mentioned a female taken at Simla in May 1914 by Capt. Evans. Nayar & Nayar (1965: 241) listed it from Agra (see my notes under *corollae* above) and Nayar (1968a: 125) cited a female from NW. of Kalatop FRH, 2440m, taken by him in September 1962. Lambeck & van Brink (1973: 90) reported 3 speciens from Nagin Lake and Gulmarg in Indian Kashmir, and wrote "Within India it seems restricted to the slopes of the Himalaya" and "the species occurs, at least in this area [Kashmir], at lower elevations as well." They (Lambeck & vanBrink, 1975a: 7) described its karyotypes as well. Ghorpadé (1981b: 68) listed prey ostensibly of this species (as '*Syrphus*') from the Indian subcontinent, as published by Kalyanam (1970), but in error, as Kalyanam misidentified it for what was actually *Ischiodon scutellaris (op. cit., q.v.*). Datta & Chakraborti (1984: 241; as '*Syrphus*') collected several specimens in many localities in Jammu & Kashmir visiting many flowers. Awtar Singh *et al.* (1985: 193) listed it from Dhanas near Chandigarh as a rare species visiting *Brassica campestris* flowers. Dušek & Láska (1976: 279, figs 1, 4, 13, 21, 25, 37-4-, 51, 65-66, 1980) described and illustrated male terminalia and gave notes on variability, and included it in a key to *Metasyrphus* species from this area. Ghorpadé (1994: 10-11) separated it in a key to Indian *Eupeodes*. Arif (2001: 105-106, 126) had listed this based on 3♂ 1♀ taken at Makran on ornamental plants in September 1998 from Pakistan. Claussen & Weipert (2003: 356) listed one female specimen taken in Nepal. Mitra *et al*. (2004b: 120-121) noted it visited flowers of *Rosa webbiana*, a common pink rose of the Western Himalaya, being active throughout the day even in strong wind at an altitude of 2775m in Himachal Pradesh. Ghorpadé & Shehzad (2013: 14) gave records from Pakistan and Ghorpadé (2014d: 10, 2014e: 12) from Afghanistan and Chandigarh. Ghorpadé & Pathania (2014: 7) listed it from the Punjab Doab. Knutson *et al*. (1975: 317), Peck (1988: 34), Ghorpadé (2014c: 21), Shah *et al.* (2014: 297), and Mitra *et al.* (2015: 69) listed it.]

Metasyrphus luniger (Meigen, 1822)
Syrphus luniger Meigen, 1822, Syst. Beschr. Europ. Zweifl. Insekt., 3: 300 (♂; 'Europe') [MNHN, Paris ?]

Afghanistan; India: HP, PB (Brunetti, 1907a, 1908, 1917, 1923, Fluke, 1952, Bańkowska, 1968, Knutson *et al*., 1975, Dušek & Láska, 1973, 1980, Chaturvedi, 1981, Ghorpadé, 1981a, 2014c,d, Peck, 1988, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Brunetti (1907a: 169; 1917: 84) listed a male from Theog, Simla Hills, 27-v-07 (misidentified as a *Scaeva*), and from the Simla District (Brunetti, 1908: 57), besides from Simla, 7000 ft (Brunetti, 1923: 87). Dušek & Láska (1980: 123-124) cautioned against misidentification for *stackelbergi* which is "Similar to the larger *M. luniger* but differs by its broader postocular orbits and more produced face." Earlier (Dušek & Láska, 1973: 419-421, figs 2, 9, 15, 24, 29-30, 36-37, 45, 54, 61, 65-69) they had given a detailed description and several illustrations of this species from European specimens. Fluke (1952: 4) gave these key characters for this species : "spots on the third and fourth tergites distinctly broader and their inner ends much closer to the bases of the segments than their outer ends." Chaturvedi (1981: 404) ostensibly identified it from the Valley of Flowers (11,500 ft) in the Garhwal Himalaya. Ghorpadé (2014d: 10) gave records from Afghanistan, and from the Indian Punjab (Ghorpadé & Pathania, 2014: 15). Perhaps Bankowska's (1968: 203) '*luniger*' was actually *stackelbergi* ? Ghorpadé & Pathania (2014: 7) listed it from the Punjab Doab. Knutson *et al.* (1975: 317), Peck (1988: 35), Ghorpadé (2014c: 21), Shah *et al.* (2014: 297), and Mitra *et al.* (2015: 69) listed it.]

Metasyrphus nitens (Zetterstedt, 1843)
Scaeva nitens Zetterstedt, 1843, Dipt. Scand., 2: 712 (♀; 'Ostrogothia') [ZIUL, Lund]

Afghanistan (Fluke, 1952, Coe, 1964, Bańkowska, 1968, 1969, Dušek & Láska, 1976, 1980, Ghorpadé, 1981a, 2014c,d, Peck, 1988).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "Coe (1964: 262) recorded this species from Nepal with a doubt. I examined that male specimen in BMNH, London and found it to be a misidentification for *M. frequens* (= *bucculatus, q.v., op. cit.*). It should be noted that *nitens* and *luniger*, which are widespread Palaearctic species, *may* occur on the Northwest Himalaya but that I have yet to see actual specimens of these species from the Indian area. Fluke (1952: 4) in a landmark paper that began segregating species then 'lumped' as *Syrphus*, gave characters of *nitens* in his key to North American species of *Metasyrphus* thus : "considerable yellow pile on the sides of the face, front without prominent black spots, but with a pair of side pollinose spots." The fauna of *Metasyrphus* from Afghanistan (Dušek & Láska, 1980) suggests what we could expect in our area. Dušek & Láska (1976: 279-280, figs 2, 7-8, 20, 25, 30-33, 46-47, 54-55, 70-72) described and

illustrated its male terminalia, gave notes on variability and a differential diagnosis of this species. Ghorpadé (2014d: 11) gave records from Afghanistan, based on citations by Bańkowska (1968: 204, 1969: 281) of several specimens taken there. Peck(1988: 36) and Ghorpadé (2014c: 21) listed it.]

Metasyrphus nuba (Wiedemann, 1830)

Syrphus nuba Wiedemann, 1830, Aussereurop. Zweifl. Insekt., 2: 136 (♀; 'Nubia' = Sudan, Africa) [SMF, Frankfurt]

Syrphus interrumpens Walker, 1871, Entomologist, 5: 273 (♀; 'Cairo, Wady Nash,' Egypt) [NHM, London]

Syrphus rufinasutus Bigot, 1884, Annls Soc. Ent. Fr., (6) 4: 88 (♀; 'Morocco') [MNHN, Paris]

Didea? annandalei Brunetti, 1919, Rec. Indian Mus., 16: 299 (♂; 'Consulate Garden, Nasratabad, Seistan,' Iran) [ZSI, Calcutta – examined]; Ghorpadé, 2009, Colemania, 15: 7. (as *n. comb., n. syn.*)

Syrphus novigradensis Coe, 1960, Proc. R. ent. Soc. Lond., 29(5+6): 73 (♂; 'Novi Grad, Dalmatia') [BMNH, London]

Afghanistan; Pakistan ?; India : HP ?, JK ?; Nepal (Brunetti, 1919, 1923, Bańkowska, 1968, Nayar 1968a, Dušek & Láska, 1976, 1980, Peck, 1988, Ghorpadé, 1981a, 1994, 2009, 2014c,d, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This species was recognized and redescribed, including male terminalia, by Dušek & Láska (1976: 276; as *interrumpens*). They synonymized *rufinasutus* Bigot and *novigradensis* Cor, and gave its distribution as 'Yugoslavia, Palestine, Syria, Israel, Armenia and Nepal.' I did not collect this species but examined the holotype male of *Didea? annandalei* Brunetti [in ZSI] and another female sent by Dr Vockeroth, from Nepal. It is very similar to *latifasciatus* and should occur on the western Himalaya." The holotype of *annandalei* Brunetti is labeled "Consulate garden, Nasratabad, Seistan, XI-XII.78, N.A. & S.K. / Didea annandalei Brun. TYPE ♂ / TYPE / Metasyrphus interrumpens (Walker) ♂, K.D. Ghorpade det. 1981" [ZSI, Calcutta]. The Nepalese female was from Balaju, 1372m, Kathmandu, Nepal [CNC, Ottawa]. Brunetti (1923: 58) unexplainably listed this as '*Dideoides annandalei*, Brun.' in his FAUNA volume. Nayar (1968a: 127) repeated this name and mentioned a female taken by him at Narkanda, 67km on Hindustan-Tibet Road from Simla in September 1962, but gave many differences from Brunetti's description, and so probably misidentified it. Bańkowska (1968: 204) cited it as '*rufinasutus*' from 'Umgeb. V. Kabul, 1740m in E. Afghanistan based on one female taken in June. Dušek & Láska (1976: 276, 279, figs 3, 5, 10, 16-17, 22-23, 41-43, 50, 52-53, 67-69) mentioned material from Nepal, described and illustrated male terminalia and gave a differential diagnosis of *interrumpens* Walker. Ghorpadé (1994: 10-11) separated it in a key to Indian *Eupeodes*. See my notes (Ghorpadé, 2014d: 11) on Afghanistan records and detailed notes on nomenclature (Ghorpadé, 2009: 6-7). I separated it in a key to *Metasyrphus* (as '*Eupeodes*') in Ghorpadé (1994: 10-11). Peck (1988: 36), Ghorpadé (2014c: 21), Shah *et al.* (2014: 297), and Mitra *et al.* (2015: 69) listed it.]

Metasyrphus stackelbergi Dušek & Láska, 1980

Metasyrphus (Metasyrphus) stackelbergi Dušek & Láska, 1980, Acta ent. Bohemoslov., 77: 122 (♂; 'Sarekanda, 4200m, Gebirge Badakschan, Afghanistan') [NM, Prague]

Afghanistan (Bańkowska, 1968, Dušek & Láska, 1980, Peck, 1988, Ghorpade, 2014c,d).

[NOTE: Described from Afghanistan as a species close to *luniger*, and so cited by Peck (1988: 37) and noted by Ghorpadé (2014d: 11). Dušek & Láska, 1980: 122, 124, figs 4-5, 16, 18, 21, 25) described and illustrated it, separated it in a key and gave a differential diagnosis, citing specimens from Afghanistan, and dedicated it to the late Prof. A.A. Stackelberg (Leningrad). Identifications of *luniger* from this area could be mistakes for *stackelbergi*, which should be noted. Perhaps Bankowska's (1968: 203) '*luniger*' was actually this species ? Peck (1988: 36), and Ghorpadé (2014c: 21) listed it.]

Metasyrphus tjanshanicus (Peck, 1966)

Syrphus tjanshanicus Peck, 1966, Ent. Obozr., 45(1): 189 (sex ?; 'Sary-Dzhaz valley, Kirghizia') [?]

Afghanistan (Bańkowska 1968; Dušek & Láska 1980, Peck 1988, Ghorpade, 2014c,d).

[NOTE: The above references mention this from Afghanistan. Bańkowska (1968: 203) cited one female taken of '*tjanshanicus*' from E. Afghanistan at 2500m. Dušek & Láska, 1980: 129, figs 13-14, 22, 32) described and illustrated its male terminalia, and separated it (as '*Metasyrphus* (*Metasyrphus*)) in a key, citing specimens from Afghanistan. Ghorpadé(2014d: 10) also cited records from Afghanistan. Peck (1988: 37) and Ghorpadé (2014c: 21, 2014d: 11) listed it as '*tjanschanicus*,' in error. Peck (1988: 36) and Ghorpadé (2014c: 21) listed it. See also Sack (1932b: 190) and Thompson & Rotheray (1998: 103) for discussion and key to this genus in the Palaearctic.]

Parasyrphus aeneostoma Matsumura, 1917
Syrphus (Parasyrphus) aeneostoma Matsumura, 1917, Ent. Mag., Kyoto, 2(4): Pl. VI, fig. 19; *ibid*., 3(1): 39 (LT♂; 'Honshu, Nikko') [EIHU, Sapporo]

India: JK ?; Nepal (Vockeroth, 1973, Peck. 1988, Mutin, 1990, Ghorpadé, 1994, 2014c, unpubl., Mitra *et al*., 2015).

[NOTE: I had introduced *Parasyrphus* to the Indian subregion fauna (not included by Knutson *et al*., 1975) in a key to species I had identified from this subcontinent (Ghorpadé, 1994: 12). This species was confirmed only from Nepal here; specimens (23♂, 22♀) seen in CNC (Ottawa) taken on their Canadian Nepal Expedition. Curiously Claussen & Weipert (2003: 357) did not include this species in their Nepal paper and key to Nepalese species. I have also seen specimens from Jammu & Kashmir that probably are also of this species ? Mutin (1990) also did not include this species in his revision of this genus. Vockeroth (1969: 88-90, figs 15, 52-54, map. 12) revised this genus (as '*Phalacrodira* Enderlein'), calling it "one of the most clearly defined in the tribe Syrphini." He later (Vockeroth, 1973: 1078-1079, figs 3-4) synonymised this under *Parasyrphus* Matsumura with type secies *aeneostoma* Matsumura, by monotypy. Mutin (1990: 130) named it as the type species of *Parasyrphus* Matsumura but then did not include it in his revision of the genus or his key to species. Peck (1988: 38), Ghorpadé(2014c: 21), and Mitra *et al*. (2015: 69) listed it.]

Parasyrphus kashmiricus Ghorpadé, 1994
Parasyrphus kashmiricus Ghorpade, 1994, Colemania, No. 3, p. 12 (♂; 'Pahalgam') [USNM, Washington, DC - examined]

India: JK (Ghorpadé, 1994, 2014c, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "Along with *thompsoni* sp. nov., this new species marks the first record of the genus *Parasyrphus* from the Oriental region, though some zoogeographers would tend to consider the Kashmir valley as Palaearctic. These two new species are very close to *lineola* (Zetterstedt, 1843) from Europe, but are distinct in several respects." The holotype male is labeled "India: Jammu & Kashmir: Pahalgam, 2200m, 17.x.1974, K.D. Ghorpade, A 140." Ghorpadé, (1994: 12) included this in a key to Indian subregion species of this genus. Ghorpadé (2014c: 21), Shah *et al*. (2014: 301), and Mitra *et al*. (2015: 69) listed it.]

Parasyrphus kirghizorum (Peck, 1969)
Syrphus kirghizorum Peck, 1969, Ent. Obozr., 48(1): 201 (sex ?; 'Koilyu valley, Tien Shan, Kirghizia') [?]

Nepal (Peck, 1988, Mutin, 1990, Claussen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 357, 378, figs 39-40) reported this species from Karnali and Seti Provinces in Nepal and gave a key to Nepalese species of this genus. Mutin (1990: 132, 134, 138-140; fig. 2) described and illustrated male terminalia and separated it in a key to this genus. Peck (1988: 38) and Ghorpadé (2014c: 21) listed it.]

Parasyrphus lineolus (Zetterstedt, 1843)
Scaeva lineola Zetterstedt, 1843, Dipt. Scand., 2: 714 (sex ?; 'Sweden') [?]

Nepal (Vockeroth, 1969, Peck. 1988, Mutin, 1990, Claussen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 357) included this species (as '*lineola*') in a key to Nepalese species of this genus. Mutin (1990: 133, 135, fig. 3) described and illustrated male terminalia and separated it in a key to this genus. Peck (1988: 38) and Ghorpadé (2014c: 21) listed it.]

Parasyrphus makarkini Mutin, 1990
Parasyrphus makarkini Mutin, 1990, Taxonom. Nasek. Gelm., p. 143 (♂; ' ? ') [?]

Nepal (Mutin, 1990, Claussen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 358, 378, figs 41-47) reported this species from Karnali Province in Nepal taken in a Yellow Pan Trap and gave a key to Nepalese species of this genus. Mutin (1990: 133, 143-144, fig. 3) described and illustrated male terminalia and separated it in a key to this genus. Ghorpadé (2014c: 21) listed it.]

Parasyrphus montanus (Peck, 1972)
Syrphus montanus Matsumura, 1917, Ent. Mag., Kyoto, 2(4): Pl. VI, fig. 19; ibid., 3(1): 39 (♂; 'Honshu') [EIHU, Sapporo]

Nepal (Peck. 1988, Mutin, 1990, Claussen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 358, 378, figs 48-50) reported this species from Karnali Province in Nepal and gave a key to Nepalese species of this genus. Mutin (1990: 133, 144-147, fig. 5) described and illustrated male terminalia and separated it in a key to this genus. Ghorpadé (2014c: 21) listed it.]

Parasyrphus punctulatus (Verrall, 1873)

Syrphus punctulatus Verrall, 1873, Entomologists' mon. Mag., 9: 254 (sex ?; 'near Shirley Common, at the Plashet Wood, near Lewes, at Boxhilland here (Denmark Hill)') [BMNH, London]

Nepal (Vockeroth, 1969, Peck, 1988, Mutin, 1990, Claussen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 358, 378, figs 51-56) reported this species from Karnali Province in Nepal and gave a key to Nepalese species of this genus. Mutin (1990: 133, 135, 148-149, fig. 6) described and illustrated male terminalia and separated it in a key to this genus. Ghorpadé (2014c: 21) listed it.]

Parasyrphus sherpa Ghorpadé, 1994

Parasyrphus kashmiricus Ghorpade, 1994, Colemania, No. 3, p. 12 (♂; 'Nepal, 27°58'N, 85°oo'E') [CNC, Ottawa - examined]

Nepal (Ghorpadé, 1994, 20014c, unpubl.)

[NOTE: I described this new species from a male and five females in CNC, Ottawa, taken on the Canadian Nepal Expedition. The holotype male is labeled "Nepal 27° 58' N, 85° 00' E., 18.v.1967, Canadian Nepal Expedition," the paratypes have the same labels. I also examined 20 ♂ 23 ♀ of more specimens taken at the same coordinates from 9,900 to 11, 400 ft in May-June there in Nepal [CNC, Ottawa]. Ghorpadé, (1994: 12) included this in a key to Indian subregion species of this genus. Ghorpadé (2014c: 21) listed it in his checklist.]

Parasyrphus thompsoni Ghorpadé, 1994

Parasyrphus thompsoni Ghorpade, 1994, Colemania, No. 3, p. 12 (♂; 'Gulmarg') [USNM, Washington, DC - examined]

India: HP, JK, UK (Ghorpadé, 1994, 2014c, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This new species differs from *kashmiricus* n. sp.. as indicated in the key and in the descriptions. The records from Dalhousie and Harsil establishes *Parasyrphus* well into the Oriental region, though it is a Palaearctic element. It is named after an accomplished syrphid specialist and colleague, Dr F. Christian Thompson of the National Museum of Natural History, Washington, D.C., as a token of my esteem for his high quality of research and his unending encouragement and support of my own work on Oriental—Papuan Syrphidae." The holotype male is labeled "India: Jammu & Kashmir: Gulmarg, 2590m, 18.x.1974, K.D. Ghorpade, A 141." Ghorpadé (1994: 12) included this in a key to Indian subregion species of this genus. Ghorpadé (2014c: 21), Shah *et al.* (2014: 301) and Mitra *et al.* (2015: 69) listed it. See Thompson & Rotheray (1998: 95) for a key to this genus in the Palaearctic.]

Parasyrphus Unnamed sp. 1 [undet.].

Nepal (Claussen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 358, 378) could not identify to species one female taken in Karnali Province and listed it as "aff. *P. lineola* (Zetterstedt, 1843)," and included it in a key to Nepalese species of this genus. separating it by "frons completely and evenly dusted; slightly broader." Ghorpadé (2014c: 21) listed it in his checklist.]

Scaeva albomaculata (Macquart, 1842)

Syrphus albomaculatus Macquart, 1842, Mem. Dipt. Exot., 2(2): 86 (sex ?; 'Mont-Sinai,' Egypt and 'Alger,' Algeria) [MNHN, Paris]

Lasiopticus albomaculatus var. *sulphureus* Sack, *in* Visser *et al*., 1935, Wissenschaft Ergebn. Niederl. Exped. Karakorum,, 1: 401 (LT ♂; 'Karakash valley, betw. Kawak Pass and Sanju Pass') [ZMA, Amsterdam] **n. syn.**

Afghanistan; Pakistan; India: JK (Sack, *in* Visser *et al.*, 1935, Ahmad, 1940, Rahman, 1940a, van Doesburg, 1955, Bańkowska, 1968, 1969, Rao, 1969a, Ghosh, 1974, Mathur, 1983, Agarwala *et al*., 1984, Dušek & Láska, 1985, Kuznetzov, 1985, Peck, 1988, Ghorpadé, 1981a,b, 1994,

2014c,d,e, Láska *et al*., 2o06, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "This is a typical Palaearctic intrusion into extreme northwestern parts of the Indian Subregion. It has not so far been recorded from India proper (though I have seen specimens from Jammu & Kashmir, unpubl.), but may possibly turn up in the Kashmir Valley. However, Sack's (1935) record of the variety *sulphureus* Sack (which I synonymize here) from the Karakorum Range gives strong support to this possibility. I examined the syntypes and here designate a Lectotype male labeled "3700-3200m, 16.IX-5.X.1929 / Karakash valley, betw. Kawak pass and Sanju pass / Nederlandsche Karakorum-Expeditie, J.A. Sillem leg. / COTYPE: Lasiopticus albomaculatus Macq. var. sulphureus 1933, P. Sack / Lasiopticus albomaculatus Mcq. *v* sulphureus Sack / LECTOTYPE, Lasiopticus albomacularus var. sulphureus Sack, Ghorpade des. 1982 [red label] / Scaeva albomaculata (Macquart), K.D. Ghorpade det. 1982." [ZMA, Amsterdam]. Paralectotypes 2 females with same labels as for lectotype except for my PARALECTOTYPE [yellow label]. One more female syntype designated Paralectotype and labeled "Camps 51 & 53, 5600-5300m, 26-31.VIII.1929 / Nederlandsche Karakorum-Expeditie, J.A. Sillem leg. / COTYPE: Lasiopticus albomaculatus Macq. var. sulphureus 1933, P. Sack / Lasiopticus albomaculatus Mcq. *V* sulphureus Sack / PARALECTOTYPE, Lasiopticus albomacularus var. sulphureus Sack, Ghorpade des. 1982 [yellow label] / Scaeva albomaculata (Macquart), K.D. Ghorpade det. 1982." [ZM, Amsterdam].

This species has often been confused for the more common Indian species *latimaculatus* (Brunetti) but can easily be separated using the characters given in the key (Ghorpadé, 1994: 121-13). Van Doesburg (1955: 41) listed several females taken at Shyok-Tal, 3750m on the Karakorum Expedition by A. Peter in June. Ahmad (1940) listed it from the Laghman Valley in Afghanistan. Bańkowska (1968: 201, 1969: 285) cited many specimens collected in Afghanistan. Rao (1969a) gave *Myzus persicae* as larval prey for this species (see Ghorpadé, 1981b: 65). Ghosh (1974: 196-197) recorded *Lipaphis erysimi* and *Myzus persicae* as prey of this species. Ghorpadé (1981b: 69) gave aphid prey for this but these records could actually be of *latimaculata* ? Mathur (1983: 231) mentioned larvae feeding on *L. erysimi* and *M. persicae* aphids around Jullundur (Punjab, India) from December to February. Agarwala *et al.* (1984: 18) gave its recorded aphid prey. Kuznetzov (1985: 402, figs 70-71) included it in his revision of *Scaeva*, giving figures and a key. Dušek & Láska (1985: 218-219, figs 5, 10, 23, 32, 43, 48) listed specimens from Afghanistan and Pakistan in their revision of *Scaeva*, with a discussion of other related genera. I gave a key to Indian species (Ghorpadé, 1994: 12-13), and records from Afghanistan (Ghorpadé, 2014d: 11). Records from Pakistan were cited in Ghorpadé & Shehzad (2013: 14), Ghorpadé & Pathania (2014), and Ghorpadé (2014e: 15). Láska *et al.* (2006: 648-650, figs 9C,D, 10C) gave diagnostic characters of immatures, illustrations and noted it as "south part of Palaearctic to north part of Oriental region" in range.. Prey records were given in Ghorpadé (1981b: 69) but these are probably misidentifications. Ghorpadé (2014c: 21, Shah *et al.* (2014: 302), and Mitra *et al.* (2015: 69) listed it.]

Scaeva caucasica Kuznetzov, 1985

Scaeva (Scaeva) caucasica Kuznetzov, 1985, Ent. Obozr., 64: 402 (♂; 'Central Caucasus') [?]

Afghanistan; India : JK; Nepal (Kuznetzov, 1985, Dušek & Láska, 1985, Kuznetzov, 1985, Claussen & Weipert, 2003, Laska *et al*., 2006, Ghorpadé, 2014c,d, 2015).

[NOTE: Kuznetzov (1985: 402-403, figs 1-5) described this as new in his revision of *Scaeva*, giving figures and a key. Claussen & Weipert (2003: 359, 378) gave notes on this species described from the Caucasus, which they reported from the Annapurna region and Karnali Province in Nepal and cited Dušek & Láska (1985: 218) who mentioned a male from 'Kashmir, 8000-9000 ft, vi. 1901, Nurse,' in the BMNH, London that was misidentified as *pyrastri* (see also Ghorpadé, 2015). Ghorpadé (2014d: 11) gave records from Afghanistan.]

Scaeva hwangi Ho, 1987

Scaeva hwangi Ho, 1987, *Agricultural Insects, Spiders, Plant Diseases and Weeds of Xizang*, Vol. 2, p. 194 (♂; 'Xigaze, 3836m, Xizang" [= Tibet]) [SAC, Shanghai]

Nepal (Ho, 1987, Ghorpadé, 2014c)

[NOTE: Ho (1987: 194, 203, fig. 7) described this from one male taken at Xigaze, 3836m, in May on the northern, Chinese slope of the Himalayas in SE. Tibet, and it obviously also occurs on the southern Nepali side, and is thus included in this paper. Ghorpadé (2014c: 21) listed it.]

Scaeva latimaculata (Brunetti, 1923)

Lasiopticus latimaculatus Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 68, Pl. II, fig. 3, 4 (♂; 'Allahabad') [BMNH, London]

Xanthogramma indica Nayar, 1968, Agra Univ. J. Res. (Sci.), 16: 129 (♀; 'Kalatop, 2440m, nr Dalhousie') [ZSI, Calcutta - examined]; Ghorpadé, 2009, Colemania, 15: 7. (as *n. comb., n. syn.*)

Scaeva montana Violovitsh, 1975, Ent. Obozr., 54: 177 (♂; 'Takob River 1800m, Hissar Range, Tadzikistan') [ZIAS, Leningrad – examined PT]; Ghorpadé, 2009, Colemania, 15: 7. (as *n. syn.*)

Xanthogramma pruthii Deoras, 1943, Indian J. Ent., 4: 217 (♀; 'Delhi') [IARI, New Delhi - examined]; Ghorpadé, 2009, Colemania, 15: 7. (as *n. comb., n. syn.*)

Afghanistan; Pakistan; India: CH, DL, HP, JK, PB, RJ, UK, UP; Nepal (Brunetti, 1923, Ahmad, 1940, Deoras, 1943, Anand et al., 1967, Nayar, 1968a, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Agarwala *et al.*, 1984, Dušek & Láska, 1985, Kuznetzov, 1985, Awtar Singh *et al.*, 1985, Anand, 1986, Ashwani Kumar *et al.*, 1987, Peck, 1988, Ghorpadé, 1981a,b, 1994, 2009, 2014c,d,e, unpubl., Aslamkhan *et al.*, 1997, Mitra *et al.*, 2003b, 2004a,b, Laska *et al.*, 2006, Mengual, 2012, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This species is often mistaken for *albomaculata* (Macquart) but is distinctly smaller in size and us much more common in northern India. I studied types of the three synonyms above and confirmed they all were *Scaeva latimaculata*." Details can be noted in Ghorpadé (2009: 7-8). See also Mengual (2012), Dušek & Láska (1985: 219), Ghorpadé & Shehzad (2013: 14) and other citations above for further details. Deoras (1943: 217, figs 1-3) described *pruthii* as a *Xanthogramma* based on a few specimens taken at Delhi, and one from Turbot in Mekran (Pakistan). The larvae were reared on *Myzus persicae* aphids on *Luffa graveolens* in November 1941. Anand *et al.* (1967) recorded it (as '*Xanthogramma pruthi*' [sic]) from Delhi (also Meerut, Babugarh, Bulandshahr and Saharanpur in Uttar Pradesh, and from Karnal in the Punjab ?). Nayar (1968a: 129-130, fig. 4) described as new *indica*, again as a *Xanthogramma*, based on a female from Kalaptop, 2440m, nr Dalhousie taken by him in September. Kapoor *et al.* (1979: 53, 59) listed it from Kirtipur in Nepal. Agarwala *et al.* (1984: 18) gave aphid prey. Kuznetzov (1985: 402, figs 37, 43-48) included it (as '*montana*') in his revision of *Scaeva*, giving figures and a key. Dušek & Láska (1985: 219, figs 14, 24, 33, 49) included this in their revision of *Scaeva*, with a discussion of other related genera. Awtar Singh *et al.* (1985: 193) listed this from Chandigarh on wild weeds from January to March. Anand (1986) listed it (as "*Xanthogramma pruthi* [*sic*] Deoras") on dry grass at Delhi. Ashwani Kumar *et al.* (1987: 83, 86, figs 1, 7, 13, 19, 25) described its immature stages and gave illustrations. I gave a key to Indian species of *Scaeva* (Ghorpadé, 1994: 12-13), and records of this species from Pakistan and India (Ghorpadé, 2014c: 21). The prey records listed as of *Scaeva albomaculata* (Ghorpadé, 1981b: 69) are probably of this species. Láska *et al.* (2006: 650, figs 6C,D, 9E, 10D) gave diagnostic characters of immatures, illustrations and noted it as "southern Palaearctic from Iran eastwards into Oriental region" in range. Láska *et al.* (2006: 650) described its immature stages. Mitra *et al.* (2003b: 102) cited it from the Pin Valley NP in Himachal Pradesh in June. Mitra *et al.* (2004a,b) reported this from Kalatop-Khajjiar WLS visiting *Melilotus officinalis* flowers of Fabaceae. Ghorpade & Pathania (2014: 7) listed it from the Punjab Doab. Ghorpadé (2014d: 11) gave records from Afghanistan, and from the Punjab Doab (Ghorpadé, 2014e: 12-13). Ghorpadé (2009: 7-8) transferred *pruthii* Deoras (1943) and *indica* Nayar (1968a) from *Xanthogramma* to this genus (see also Mengual (2012: 106). In that paper I had also synonymised *montana* Violovitsh (1975) with this species. My examination of the types of these three species are here given : Holotype ♀ of *pruthii*, was labeled "Carrot, Delhi, P.B. Mukherjee, 21.III.1938 / Xanthogramma pruthii sp. n. Deoras det. / HOLOTYPE / TYPE – Figured / D25/108 / Scaeva latimaculata (Brunetti) ♀, K.D. Ghorpade, 1981." [IARI, New Delhi]. Allotype ♂ of *pruthii* was labeled "Linseed, Delhi, P.B. Mukherjee, 24.III.1938 / Xanthograma pruthii sp.n. Deoras det. / ALLOTYPE / TYPE – Figured / D25/109 / Scaeva latimaculata (Brunetti) ♂, K.D. Ghorpade det. 1981 [IARI, New Delhi]. Holotype ♀ of *indica* was labeled "HOLOTYPE [re label] / Xanthogramma indica sp. nov., det. J.L. Nayar / Kalatop, 8000 ft., Coll. J.L. Nayar, 25.IX.1962 / 3733/H6 / Scaeva latimaculata (Brunetti) ♀, K.D. Ghorpade det. 1981." [ZSI, Calcutta]. Paratype ♂ of *montana* was labeled "[a silver circular card / label in Russian and 10.VII.72 / Paratypus Scaeva montana Violovitsh, 1974 [red label] / Scaeva latimaculata (Brunetti) ♂, K.D. Ghorpade det. 1983. Also another Paratype ♀ with same labels, except date 3.VII.72. Knutson *et al.* (1975: 318), Ghorpadé (2014c: 21), Shah *et al.* (2014: 302), and Mitra *et al.* (2015: 69) listed it.]

Scaeva lunata (Wiedemann, 1830)

Syrphus lunatus Wiedemann, 1830, Aussereurop zweifl. Insekt., 2: 121 (♀; 'Macao, China') [UZM, Copenhagen]

Syrphus opimius Walker, 1852, *Insecta Saundersiana*, 3: 232 (♂; 'East Indies') [NHM, London]

Lasiopticus seleniticus : Brunetti, 1923, *Fauna Brit. India*, Dipt., 3: 67, Pl. II, fig. 2. (*misident.*)

Afghanistan; India: CH ?, HP, PB, UK, UP (Brunetti, 1907a, 1908, 1917, 1923, Mani, 1962, Anand *et al.*, 1967, Bańkowska 1968, 1969, Ghosh, 1974, Knutson *et al.*, 1975, Das &

Raychaudhuri, 1983, Agarwala *et al*., 1984, Dušek & Láska, 1985, Awtar Singh *et al*., 1985, Kuznetzov, 1985, Anand 1986, Peck, 1988, Ghorpadé, 1981a,b, 1994b, 2014c,d,e, Mitra *et al*., 2003b, 2004b, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "From the original description of *opimius* and a revised one by Brunetti (1923: 78) based on the sole existing type, it is not possible for me to place it. I have not been able to examine the type, but Dr Pavel Láska (*pers. comm*.) who has, writes that it is very similar to *selenitica* (Meigen) but 'differs in a few respects." Vockeroth also studied the type and informed me (*pers. comm*.) that it is probably different from *selenitica*. I had earlier felt that this was either a synonym of *selenitica* or a closely allied species. However, until I examine the type, I can only leave it here as an unrecognized species pendng Dušek & Láska's forthcoming revision of *Scaeva*." "The above description of the male (of *selenitica*) has been taken from a male from China (MCZ, Cambridge, MA). This species is rather uncommon here and there may be some confusion regarding its identity with actual *selenitica* (Meigen) whch is common in the Palaearctic Region." Bańkowska (1968: 201: as '*Scaeva selenitica*'*;* 203: as '*Syrphus opimius*'; 1969: 284: as '*selenitica*') cited specimens taken in Afghanistan. Anand *et al.* (1967) recorded it (as '*Lasiopticus seleniticus* Brunetti') [*sic*] from Delhi and Babugarh (U.P.) on aphids infesting mustard. Ghosh (1974: 196-197) recorded *Lipaphis erysimi* as prey of this species (as '*seleniticus*'). Ghorpadé (1981b: 69) gave aphid prey for this, as '*selenitica*,' Das & Raychaudhuri (1983: 33) cited an aphid prey at Solan, c. 1450m, in Himachal Pradesh. Agarwala *et al.* (1984: 18) gave aphid prey for '*selenitica*.' Kuznetzov (1985: 405, figs 14-17, 31-34, 38) included it (as '*selenitica*') in his revision of *Scaeva*, giving figures and a key. Dušek & Láska (1985: 216-217, figs 20, 29, 51) published a very comprehensive revision of *Scaeva* with a key and a discussion on phylogeny, where they separated *selenitica* from the Palaearctic, and *lunata* from the 'South-east Palaearctic and Oriental region.' They list specimens of *lunata* seen from Afghanistan and India (Shillong). They also included *selenitica* (1985: 213, figs 4, 7-8, 17-18, 30, 41) and wrote "Records from the south Palaearctic and Oriental region require confirmation, since confusion with *S. dignota* and *S. lunata* could occur." Awtar Singh *et al.* (1985: 193) listed this (as '*Lasiopticus seleniticus*') from Kasauli and Chandigarh as a rare species visiting wild weed and mango flowers in February. I gave a key to Indian specie of *Scaeva* (Ghorpadé, 1994: 12-13), and records from India and Afghanistan (Ghorpadé, 2014d: 11-12; also as '*selenitica*') and the Punjab Doab (Ghorpadé, 2014e: 13). Mitra *et al.* (2003b: 102) cited it from the Pin Valley NP in Himachal Pradesh (as '*selenitica*') in June. Mitra *et al.* (2004b: 121) recorded this species (as '*selenitica*') visiting dark purple flowers of *Scrophularia* sp. (Scrophulariaceae) in Pin Valley NP in Himachal Pradesh. Ghorpadé (2014c: 21), and Mitra *et al.* (2015: 69) listed it].

Scaeva pyrastri (Linnaeus, 1758)
Musca pyrastri Linnaeus, 1758, *Syst. Nat*. ed. 10, 1: 594 (LT ♂; 'Sweden') [NHM, London]

Afghanistan; Pakistan; India: JK, PB, UK (Brunetti, 1907a, 1908, 1917, Bańkowska, 1968, 1969, Ghosh, 1974, Thompson *et al*., 1982, Mathur, 1983, Agarwala *et al*., 1984, Dušek & Láska, 1985, Kuznetzov, 1985, Peck, 1988, Abrol, 1993, Ghorpadé, 1981a,b, 1994, 2014c,d,e, unpubl., Láska *et al*., 2006, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al*., 2014, Mitra *et al*., 2015).

[NOTE: Brunetti (1907a: 169, 1908: 57, 1917: 84) listed this from Theog, 27-iv-07, and Simla, 5-vii-07 on the Simla Hills. But in the FAUNA volume (Brunetti, 1923: 66-69) he did not include this species but what he determined as '*seleniticus*, Meig.' From these localites (*q.v., loc. cit*.). I gave a key to Indian species of *Scaeva* (Ghorpadé, 1994: 12-13), and records from Pakistan and India. Ghosh (1974: 196) recorded *Lipaphis erysimi* as prey of this species. Mathur (1983: 232) mentioned its larvae "found feeding on several species of aphids including those on Brassicas during October" at Jullundur (Punjab, India). Ghorpadé (1981b: 69) gave prey records. I gave a key to Indian species of *Scaeva* (Ghorpadé, 1994: 12-13), and records from India and Pakistan. Kuznetzov (1985: 404, figs 6-10, 36) included it in his revision of *Scaeva*, giving figures and a key. Agarwala *et al.* (1984: 18-19) gave aphid prey. Dušek & Láska (1985: 217-218, figs 1-2, 11-12, 16, 21-22, 31, 35, 39-40, 46-47) wrote "In the boundary area between the Palaearctic and Oriental regions the form occurs which has the body generally longer haired, more black hairs present in the lower half of face and larger black spots on the sternites than the typical form. Spots on tergites 3 and 4 strikingly narrowed in middle (Figs. 12, 22), face usually broader. We have examined only two males the terminalia of which were different. One (India, Nainital, 6600' = 2000m, 27.xi. 1934, leg. J.A. Graham" [in NHM, London]. And "A solitary female was found in a curious locality in the southern hemisphere (Key Isl. near Papua New Guinea, deposited in the Bishop Musum Honolulu, sent via Dr. Ghorpade). It does not belong to the 'long haired' form, and differs from typical specimens by having facial tubercle almost pale and all the hairs on the lower half of the face pale." Abrol (1993: 266-267) recorded this pollinating *Brassica, Dacus, Allium* flowers in lowland subtropical areas (300-1350m) areas in Jammu & Kashmir, and *Brassica, Dacus* and sunflower in subtropical temperate transition areas (1350-300m) there. Láska *et al.* (2006: 648-650, figs 6C,D, 9A,B,, 10A,B) gave diagnostic characters, illustrations and noted it as "Holarctic and marginally Oriental

region" in range. Ghorpadé & Shehzad (2013: 14-15) gave records from Pakistan, and Ghorpadé (2014d: 12) from Afghanistan, and the Punjab Doab (Ghorpadé, 2014e: 13). Ghorpadé (2014c: 21), Shah *et al.* (2014: 302), and Mitra *et al.* (2015: 69) listed it. See also Sack (1932b: 180) and Thompson & Rotheray (1998: 101) for discussion and key to this genus in the Palaearctic.]

Sphaerophoria angulata Claussen & Weipert, 2003

Sphaerophoria angulata Claussen & Weipert, 2003, *Zur Schwebfliegenfauna Nepals*, p. 359 (♂; 'Hochtal Gothichaur, 2900m') [SJW, Plaue or Weipert Colln ?]

Nepal (Claussen & Weipert, 2003, Claussen & Mutin, 2007, Ghorpadé, 2014c, 2015).

[NOTE: This was described (Claussen & Weipert, 2003: 359-360, figs 57-61) from many specimens mainly from Karnali Province of Nepal "Closely similar to *Sphaerophoria viridaenea* Brunetti, 1915 . . ." distinguished only by male terminalia differences. See also my notes under *viridaenea* below and Clausen & Mutin (2007).]

Sphaerophoria assamensis Joseph, 1970

Sphaerophoria assamensis Joseph, Eos, Madrid, 45: 168 (♂; 'Dunn bridge, 1524m, Kameng, Assam') [ZSI, Calcutta - examined]

Nepal (Joseph, 1970, Knutson *et al.*, 1975, Claussen & Weipert, 2003, Claussen & Mutin, 2007, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: Joseph (1970: 168-170, figs 2-4) described this from several specimens taken in the Kameng and Subansiri Frontier Divisions of Arunachal Pradesh, commenting it was similar to *viridaenea*. I examined the type male in ZSI, Calcutta that was labeled "INDIA: NEFA, Kameng Div., Dunn Bridge, 21.IV.1966, 1524m, A.N.T. Joseph / Z.S.I. & D.R.D.O. Jt. NEFA Survey Stn. No. 1, April-May, 1966 /Sphaerophoria assamensis Joseph, 1969, det. A.N.T. Joseph / HOLOTYPE / 4269/H6." [ZSI, Calcutta]. Most Paratype males were labeled "INDIA: NEFA, Subansiri Div., Tamen, 18.V.1966, 457m, A.N.T. Joseph / Z.S.I. & D.R.D.O. Jt. NEFA Survey Stn. No. 17 /Sphaerophoria assamensis Josep[h, 1969, det. A.N.T. Joseph / HOLOTYPE / 4269/H6." [ZSI, Calcutta]. Other paratypes with this same lebel data, but one male labeled "Chukru, 22.V.1966, 1128m, Stn. No.19, 426/H6." The female paratype is labeled "Kameng Div., Tawang, 27.IV.1966, 3200m, A.N.T. Joseph, Stn No. 6 / 4277/H6." [ZSI, Calcutta]. Claussen & Weipert (2003: 360) cited a single male taken in the Koshi Province of Nepal, extending its range to that country. See notes in Claussen & Mutin (2007) on this and other species of the *Sphaerophoria novaeangliae* species-group. Knutson *et al.* (1975: 318), Ghorpadé (2014c: 21), and Mitra *et al.* (2015: 69) listed it.]

Sphaerophoria bengalensis Macquart, 1842

Sphaerophoria bengalensis Macquart, Dipt. Exot., 2(2): 104 (LT♂; 'Bengale') [MNHN, Paris]

Sphaerophoria flavoabdominalis Brunetti, 1915, Rec. Indian Mus., 11: 214 (LT♂; 'Dharampur, Simla Hills'; as "form 1") [ZSI, Calcutta - examined]; Ghorpadé, 2009, Colemania, 15: 11. (as *n. syn.)*

Sphaerophoria turkmenica Bankowska, 1964, Annales Zoologici, 22(15): 345 (♂; 'Berg Siunt, West Kopet Dag, Turkmenistan' [ZIAS, Leningrad]; Ghorpadé, 2009, Colemania, 15: 11. (as *n. syn.*)

Afghanistan; Pakistan; India: BI, DL, HP, JK, PB, UK, UP; Nepal (Kertész, 1910, Brunetti, 1915, 1917, 1923, 1925, Bańkowska, 1964, 1967, 1968, 1969, Joseph, 1968, Vockeroth, 1969, 1971, Knutson, 1973, Lambeck & Kiauta, 1973, Lambeck & van Brink, 1973, 1975a, Knutson *et al.*, 1975, Kapoor *et al.* (1979: 59), Skufjin, 1982, Peck, 1988, Abrol, 1993, Ghorpadé, 1981a,b, 1994, 2009, 2014c,d,e, Ghorpadé & Shehzad, 2013, Ghorpadé & Pathania, 2014, Shah *et al.*, 2014).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "A widely distributed species, from Iran and Turkmen SSR along the Himalayas to Bengal. The occurrence of this species as far south as Deolali (east of the Western Ghats near Nasik, north of Poona) is noteworthy. Vockeroth's (1969: 134) record from 'S. India' is questionable. Some specimens may be difficult to separate from *indiana* Bigot, but the male terminalia and scutellar hair colour, as well as other characters given in the key should make determination easy. I have seen syntypes of Brunetti's 'form *flavoabdominalis*' in the ZSI (Calcutta) and have designated a Lectotype male (with distal portion of abdomen along with terminalia cut and not with the specimen on pin), and a Paralectotype (with head lost). The description and figures, also of male terminalia of *turkmenica* (Bankowska, 1964: 345-347, figs 166-175, Knutson 1973: fig. 95) show it also to be identical with *bengalensis*, and a junior synonym. This species belongs to the *scripta*-group, *sensu* Knutson (1973)." Brunetti (1915: 212-215) gave fairly long notes on this genus which would repay consultation. He first separated this as "Form I, *flavoabdominalis*" based on males and females taken in "Baluchistan, Persia, Simla, Nepal, Punjab, Bushire," and gave exact locations as Katmandu, Dharampur, Agra, Ferozepore and Purneah, mentioning that he "took this form in abundance at both Agra and Ferozepore . . . in fields of dry grass, stubble and general vegetation." This form, was taken at Simla, 6-8-v-07 (Brunetti, 1917:

85). In his FAUNA volume (Brunetti, 1923: 100) he omitted to include this species, writing "The only other species described from the East is Macquart's *bengalensis*, but as he definitely allies his species with *menthastri*, L. (*'taeniata*, Meig.'), the preference is given to Bigot's name." See also Vockeroth (1963, 1971), Bańkowska (1964), Speight (1973), and Skufjin (1982). Brunetti (1925: 76) then wrote – "My reference to this species [= *bengalensis*] (Fauna, p. 100) is not clear. The commonest Indian species of the genus is what I have regarded as *indiana* Big. and which may be a form of the equally common European *scripta* L. The other Indian species may be Macquart's *bengalensis*, which may be synonymous with, or a variety of the common European *menthrastri* L. [*sic*] (*taeniatus* Mg.)." Bankowska (1964: 345) named and described this from Turkmenistan and other parts of the USSR, and then reported it from Afghanistan (Bańkowska, 1967: 194, 1968: 201, and 1969: 283 (both as '*turkmenica*'). Vockeroth (1969: 134) cited *turkmenica* in his treatment of *Sphaerophoria*. Vockeroth (1971: 1628-1629, 1634) wrote an excellent paper on Old World species of *Sphaerophoria*, and designated a lectotype male in MNHN, Paris. He treated *flavoabdominalis* as a tentative synonym owing to Joseph's (1968) errors. Lambeck & Kiauta (1973: 74) made longish notes on this species and *indiana*, and mentioned papers by Vockeroth (1971) and Joseph (1968). Knutson (1973: fig. 95) figured its terminalia. Knutson *et al.* (1975: 318) listed this with *flavoabdominalis* as a synonym from many states in India and from Pakistan and Nepal. Kapoor *et al.* (1979: 59) listed it from Nepal. Skufjin (1982: 140-141, figs 13, 24) wrote of Russian specimens, gave illustrations, and listed it from north Caucasus. Abrol (1993: 266-267) recorded this as pollinating carrot, onion and*Brassica* sp. in the lowland tropical areas (300-1350m) of Jammu & Kashmir, and *Brassica*, *Dacus* and sunflower in the temperate zone (1560m) in the Kashmir valley. Ghorpadé (1981b: 73) listed prey (under "*menthastri* (L.)" for this species. I gave a key to separate Indian subregion species of this most species diverse genus of Indian Syrphini (Ghorpadé, 1994: 13), and gave notes on its synonymy (Ghorpadé, 2009: 11). Ghorpadé (2014e: 13) gave notes on its occurrence in Afghanistan (2014d: 12), and near Chandigarh and the Indian Punjab (2014e, Ghorpadé & Pathania, 2014) and Pakistan (Ghorpadé & Shehzad, 2013: 15). Lambeck & van Brink (1973: 91, 1975a: 8) reported it from the Kashmir Valley and hinted at a synonymy with *bengalensis* Macquart. Lambeck & Kiauta (1973: 74) mentioned the confusion with identities of species of this genus in the Indian subcontinent and reported this from Nepal. Joseph (1968: 248) listed this, with terminalia figures but wrongly as *indiana* Bigot. I had designated a Lectotype male of *flavoabdominalis* Brunetti (Ghorpadé, 1981a) which is labeled "Dharampur, c. 5000 ft., Simla Hills, 6-8.v.07, N.A. / 4 / 9745/H2 / Sph. Form 1 ♂ Brun., fig. in Fauna II / A / 9745 / H2 / LECTOTYPE, Sphaerophoria flavoabdominalis Brunetti ♂, Ghorpade des. 1981 / Sphaerophoria bengalensis Macquart ♂, K.D. Ghorpade det. 1981" [ZSI, Calcutta]. Also designated a Paralectotype female from Agra, India in ZSI, Calcutta. Knutson *et al.* (1975: 318), Peck (1988: 42), Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it.]

Sphaerophoria indiana Bigot, 1884

Sphaerophoria indiana Bigot, Annls Sc. Ent. Fr., (6) 4: 99 (♂; 'Indes') [UM, Oxford]

Sphaerophoria nigritarsis Brunetti, 1915, Rec. Indian Mus, 11: 214 (LT ♂; 'Matiana, Simla Hills') [ZSI, Calcutta – examined]

Pakistan; India: BI, CH, DL, HP, HR, JK, PB, UK, UP; Nepal (Brunetti, 1915, 1917, 1923, Misra, 1932, Rahman, 1940, Isaac, 1946, Beeson, 1953, Bańkowska, 1964, 1968, Coe, 1964, Nayar & Nayar, 1965, Anand *et al.*, 1967, Joseph, 1968, Rao, 1969a, Vockeroth, 1969, 1971, Joseph 1968, 1970, Knutson, 1971, Habib, 1973, Ghosh, 1974, Hamid *et al.*, 1974, Knutson *et al.*, 1975, Lambeck & van Brink, 1975b, Patnaik & Bhagat, 1976, Patnaik *et al.*, 1977, Kapoor *et al.*, 1979, Skufjin, 1982, Mathur, 1983, Agarwala *et al.*, 1984, Datta & Chakraborti, 1984, Awtar Singh *et al.*, 1985, Anand, 1986, Ashwani Kumar *et al.*, 1987, Peck, 1988, Abrol, 1993, Ghorpadé, 1981a,b, 1994, 2014c,d,e, Aslamkhan *et al.*, 1997, Shrestha & Aryal, 2000, Arif, 2001, Claussen & Weipert, 2003, Bhattacharya *et al.*, 2012a, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This species is apparently widely distributed in the southern portions of east Palaearctic, northern Asia, on the Himalaya and in the 'Assam' region of the Indian sub-continent. Bańkowska's (1964: 344) record from 'Ceylon' was questioned by Vockeroth (1971: 1630) writing it 'may be incorrect,' and he felt her '*indiana*' was actually *philanthus* (Meigen), which he wrote were both very similar and that he suspected "they may be variations of a single species but at present it seems preferable to treat them as specifically distinct." This species is very similar to *bengalensis* Macquart and to *philanthus* (Meigen), but is distinct from both, especially the latter, as pointed out by Vockeroth (1971: 1630) and Skufjin (1980: 140). It belongs to the *scripta*-group (see Knutson, 1973). I have studied the lectotype male (in ZSI, Calcutta) with head lost and left wing damaged, and also paralectotypes of both sexes, designated by Joseph (1968)." Brunetti (1915: 216, 1917: 85) treated this as "Form 3, *nigritarsis*," mentioning specimens from Matiana, Theog and Kodiala [*sic*] in Simla District, and from Kurseong. In his FAUNA volume Brunetti (1923: 102-103, Pl. III, figs 1-6) described and illustrated it and wrote "The very common Indian species referred to here as *indiana*, Big., seems universally

distributed throughout India, occurring mostly from December to May, and in September, which causes me to think it may be two-brooded. Common in the Western Himalayas, apparently rather less so in the Eastern ranges [but see below], not found in Nepal. Very abundant at times (Agra and Ferozepore, iv.1905, *Brunetti*) in fields of dry grass. Found in the Bombay Presidency and as far south as Bangalore." I studied the lectotype male of *nigritarsis* (head lost, abdomen cut terminally) that was labeled "LECTOTYPE / Matiana, 8000 ft., Simla Hills, 28-30.iv.07/ 2275/H2 / [terminalia slide] / Sphaerophoria nigritarsis Brun., det. A.N.T. Joseph / Sphaerophoria Indiana Bigot, det. K.D. Ghorpade 1981." [ZSI, Calcutta]. There were also two male and two female paralectotypes. Misra (1932: 537) noted this in large numbers (as '*nigritarsis*') on mango aphids at Tirhut (Bihar). Rahman (1940: 72) noted it as a "common plains syrphid, particularly in W. Himalaya," its larvae predating on aphids on peas and maize. Isaac (1946) noted it on *Myzus persicae* on potato in Delhi. Beeson (1953: 340) gave it as "a common species in Western Himalayas and plains of Punjab, predating on aphids." Bańkowska (1964: 342-344, figs 156-165) gave a description and illustrations of this, but perhaps her material from Russia was of *philanthus* (Meigen) ? Nayar & Nayar (1965: 2341) listed it from the Agra area. Anand *et al.* (1967) recorded it from Delhi and Meerut (U.P.) on aphids infesting cotton, coriander, peas and wheat. Recorded from Pakistan (Aslamkhan *et al*., 1997, Ghorpadé & Shehzad, 2013: 15). Joseph (1968: 248, figs 6, 8-13) misidentified *indiana* for *bengalensis* (*q.v., op. cit.),* but gave description and illustrations of male terminalia of this (Joseph, 1968: 244, 247, figs 3-4) as '*nigritarsis*' Brunetti). Rao (1969a) gave *Myzus persicae* as larval prey for this species (see Ghorpadé, 1981b: 65). Rao (1969a: 787) listed *Myzus persicae* as prey. Vockeroth (1971: 1629-1630, 1634) wrote on Joseph's (1968) errors but made *nigritarsis* Brunetti a new synonym. Habib (1973: 75-76) noted this (as undetermined species of this genus) from Abbottabad andRawalkot in Pakistan on *Brevicoryne brassicae* aphids. Hamid *et al.* (1974: 79) noted it (as '*Syrphus menthastri*') on *Acyrthosiphon pisum* in Pakistan. Ghosh (1974: 196-197) recorded *Lipaphis erysimi* as prey of this species. Lambeck & van Brink(1975b: 18, 20) described its karyotypes from Nepalese specimens. Patnaik & Bhagat (1976: 45) and Patnaik *et al.* (1977: 585) listed is as predator of *Longuinguis sacchari* or sorghum in Puri District, Orissa. Ghorpadé (1981b: 73) listed prey from this area but there could be doubts about species identity. Skufjin (1982: 139-140, figs 11, 22) gave some notes on Russian specimens and some figures. Mathur (1983: 232) recorded it from Jullundur (Punjab, India) and gave notes on prey, life history and occurrence. Agarwala *et al.* (1984: 19) gave prey from Delhi, U.P., and Punjab. Datta & Chakraborti (1984: 239) confused this with some of his specimens of *scripta* (L.) as my examination of these Kashmiri specimens showed up. Awtar Singh *et al.* (1985: 193) reported this from Chandigarh, Pinjore, Solan and Kasauli, common through the year, visiting flowers of chrysanthemum, candy-tuft and grass. Anand (1986: 199) recorded it from Delhi on "cotton, coriander, pea, wheat, dry grass and chrysanthemum." Ashwani Kumar *et al.* (1987: 86, figs 5, 11,17, 23, 29) described immatures and illustrated them. Abrol (1993: 267) reported this pollinating *Brassica*, carrot and onion in the temperate zone (1560m) in the Kashmir valley. Ghorpadé (1981b: 73) gave prey records, some probably misidentified, and later presented a key to separate Indian subcontinent species of this genus (Ghorpadé, 1994: 13). See notes of Ghorpadé (2014d: 12) where 'Mungpoo' (of Bańkowka, 1964) is actually Mungphu in Darjiling District) and my statement that this "species is a more eastern ranging one" contradicts Brunetti's above statement in the FAUNA volume (op. cit.). Coe (1964: 258), Shrestha & Aryal (2000: 46), Kapoor *et al.* (1979: 54, 60), and Ghorpadé (2015: 7) reported it from Nepal. Arif (2001: 10o-102, 126) had listed this based on 4♂ 3♀ taken at Takht Nasarti, Bahrain, Kohat and Darra Adam Khel on ber (*Ziziphus*), rose, sorghum and grasses in March, June and October 1997 from Pakistan. Also Clausen & Weipert (2003: 360) cited specimens taken in Kathmandu Botanical Garden and other locations in Karnali and Koshi Provinces in Nepal. The Lectotype male of *nigritarsis* designated by Joseph (1968) is labeled "LECTOTYPE / Matiana, 8000 ft., Simla Hills, 28-30.IV.07 / 2275/H2 / term. slide / Sphaerophoria nigritarsis Brun. det. A.N.T. Joseph / Sphaerophoria indiana Bigot ♂, K.D. Ghorpade det. 1981." [ZSI, Calcutta]. Shresthya & Aryal (2000: 46) reported it on composite flowers at Turungaya Dil in Nepal. Bhattacharya *et al.* (2012a: 90) cited it from Chambagi, Solan District, Himachal Pradesh in April. Knutson *et al.* (1975: 318), Peck (1988: 42-43), Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it.]

Sphaerophoria interrupta (Fabricius, 1805)

Scaeva interrupta Fabricius, 1805, Syst. Antliat., p. 252 (sex ?; 'Dania') [?]

Pakistan (Alam *et al.*, 1969, Anonymous, 1972, Peck, 1988, Ghorpadé & Shehzad, 2013).

[NOTE: See Ghorpadé & Shehzad (2013: 15) for notes on this questionable, doubtful species, most probably misidentifed. Peck (1988: 46 footnote) listed this as a doubtful species of *Sphaerophoria*." Ghorpadé (2014: 21) listed it.]

Sphaerophoria ladakhensis Ghorpadé, 1994

Sphaerophoria ladakhensis Ghorpade, 1994, Colemania, No. 3, p. 13 (♂; 'Drass') [USNM, Washington, DC - examined]

Pakistan; India: JK (Ghorpadé, 1981a, 1994, 2014c).

[NOTE: I described this new species based on a single male from Drass, 3900m, in Ladakh District of Jammu & Kashmir, taken in June by my then Delhi University colleague, Girish Chandra, and wrote (Ghorpadé, 1981a) "This species belongs to the *novaeangliae*-group and is closely related to that species and to *viridaenea* Brunetti, from which it can be separated by the terminalia, the yellow frontal hairs, the partially yellow haired scutellum and the indistinct black areas on tergum 3. It seems restricted to the extreme high altitude areas of the Ladakh Plateau." Recently a colleague from Pakistan sent photographs of what apparently seemed to be the first record of a female of this species from Pakistan administered Kashmir. See key to this genus for Indian sub-continent species in Ghorpadé (1994: 13). Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it.]

Sphaerophoria macrogaster (Thomson, 1869)

Syrphus macrogaster Thomson, 1869, K. Svenska fregatten Eugenies resa, Zool., Dipt., p. 501 (LT ♂; 'Sydney, Australia') [NRS, Stockholm]

Sphaerophoria koreana Bańkowska, 1964, Annales Zoologici, 22(15): 339 (♂; 'Dephun ad Kujang, Korea') [IZ, Warsaw]

Sphaerophoria poonaensis Joseph, 1967, Bull. Ent., 8(2): 79 (♀; 'Botanical Garden, nr R. Bhima, Poona') [ZSI, Calcutta - examined]; Ghorpadé, 2009, Colemania, 15: 11. (as *n. syn.*)

India: BI ?, DL ?, HR, PB, UP ?; Nepal (Joseph, 1967, 1968, Vockeroth, 1971, Knutson *et al.*, 1975, Bhumannavar, 1977, Kapoor *et al.*, 1979, Skufjin, 1982, Ghorpadé, 1973b, 1981a, 1994, 2009, 2014c,e, unpubl., Claussen & Weipert, 2003, Ghorpadé & Pathania, 2014).

[NOTE: This abundantly common species of the Indian sub-continent plains (see Ghorpadé *et al.*, 2011: 81) was not recognized by this species name until Vockeroth (1971: 1630-1632, fig. 3) examined Thomson's types in the Stockholm museum and studied specimens (including terminalia) from a wide range of locations from the Indian sub-continent to Australia. It was perhaps previously generally misidentified as *indica* Bigot by Brunetti and later authors (see Joseph, 1970) who worked mainly on northern Indian Syrphidae. Curiously Joseph (1968) also did not mention it ! Vockeroth (1971) also made *koreana* Bankowska a synonym, as well as three other names from far eastern Oriental and Australian regions. Bańkowska (1964: 339-342, figs 143-152) described *koreana* as new from Korea and China but her illustrations are of *macrogaster* ! Knutson *et al.* (1975: 318) included it in their Oriental Catalog from Ceylon, China, India [Madras], Nepal;" through the eastern USSR, Japan, Korea, Manchuria, New Caledonia, and New Guinea to Australia. That catalogue did much to update then outdated nomenclature of Oriental Syrphidae, and along with Vockeroth's (1969: 132-134) magnificent revision of the genera of World Syrphini, had formed the foundation, basis, of my research on Indian Syrphini and other Syrphidae from the early 1970s. Joseph (1968) attempted to decipher Brunetti's four 'forms' of *Sphaerophoria,* whose specimens were in the ZSI at Calcutta. But he remained 'stuck' with old nomenclature and inexperience with Palaearctic species, even if adding terminalia characters, and so his work resulted in wrong names for those 'forms,' species – *brunettii* Joseph (= *scripta* L.), *nigritarsis* Brunetti (= *indiana* Bigot), *viridaenea* Brunetti, and *indiana* Bigot (= *bengalensis* Brunetti). In my doctoral thesis (Ghorpade, 1981a) I had written "Widely distributed in the Palaearctic (eastern), Oriental (S. & NE. India to China, Taiwan and New Guinea) and Australian (Australia) regions, and the only species (besides *knutsoni* sp. nov.) occurring in southern India and Sri Lanka. It is very closely related to *vockerothi* Joseph but has sternum 9 and surstylus of different shape, the hind femur with more black hairs and the face in profile distinctive. Smaller in size than the other species of this genus, it seems to belong to the *scripta*-group. I examined the female holotype (with head glued on to pith) of *poonaensis* Joseph (1967: 79-80, fig.) in the ZSI, Calcutta, and discovered its synonymy with *macrogaster (*Thomson). This holotype was labeled "HOLOTYPE / INDIA, Botanical Garden, near Bhima River, Poona, 8.II.1962, K.V.L. Narayana / Z.S.I. Western and Southern India Survey, 1962 / 3937/H6 / Sphaerophoria poonaensis Joseph / Sphaerophoria macrogaster (Thomson) ♀, K.D. Ghorpade det. 1981." One specimen seen (in TNAU, Coimbatore) had a label reading that it was "reared from *Ludwigia parviflora* fruits" at Coimbatore, maybe these fruits were covered with aphids ? See also notes and figure in Skufjin (1982: 141, fig. 15) and Ghorpadé (2009: 11-12). I included it in a key to Indian *Sphaerophoria* species (Ghorpadé, 1994: 13). Ghorpadé (2014e: 14-15) and Ghorpadé & Pathania (2014: 7) reported it from the Indian Punjab. Records from the plains of northern India await publication though it has been reported from all southern States of India and Sri Lanka (Ghorpadé, 1994: 13, Ghorpadé *et al.*, 2011: 81). Claussen & Weipert (2003: 362, 378) recorded a male specimen from Kathmandu in Nepal. Kapoor *et al.* (1979: 60) listed it from Nepal. Ghorpadé (2014e: 14) mentioned a male taken at Jullundur in Punjab on mustard aphid in December that was misidentified by Dr R.W. Crosskey as "*indiana*" [CIBCI, Bangalore]. Knutson *et al.* (1975: 318), Peck (1988: 43), Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it.]

Sphaerophoria philanthus (Meigen, 1822)

Syrphus philanthus Meigen, 1822, Syst. Beschr., 3: 327 (LT ♂; 'Stolberg, nr. Aachen, Germany') [MNHN, Paris]

Pakistan (Bankowska, 1964, Vockeroth, 1971, Arif, 2001, Arif *et al*., 2001, Ghorpadé & Shehzad, 2013).

[NOTE: See Ghorpadé & Shehzad (2013: 15) for notes on this yet to be confirmed species from here, that was probably misidentified. Arif (2001: 94, 97, 126) had listed this based on 10♂ 6♀ taken at Quetta, Ziarat, Panjgur and Sibi in wheat fields and grasses under forest plantations in March and September 1997 from Pakistan. Peck (1988: 44) listed it only from Mongolia on the Asian continent.]

Sphaerophoria rueppellii (Wiedemann, 1830)

Syrphus rueppellii Wiedemann, 1830, Aussereurop. zweifl. Insekt., 2: 141 (LT ♂; 'Nubien, Abyssinia') [SMF, Frankfurt]

Afghanistan; Pakistan ?; India: JK (Bańkowska, 1962, 1964, 1967, 1969, Vockeroth, 1963, 1971, Speight, 1973, Skufjin, 1982, Datta & Chakraborti, 1984, Peck, 1988, Ghorpadé, 1981a, 1994, 2009, 2014c,d, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This Palaearctic (Europe to China, Korea) and north African species is being recorded from within Indian limits for the first time [see also Ghorpadé, 2009: 3-4]. No males were available but the distinct females can be readily identified by the interrupted yellow fasciae on terga, and the hind femur without spinules, the yellow haired first femur and scutellum. One of the smallest species of *Sphaerophoria* known, it seems to belong to the *contigua*-group of Knutson (1973)." Vockeroth (1963: 33) gave notes. Bańkowska (1962: fig. 2) figured the male terminalia, and then (1964: 314-318, figs 37-49) reported specimens from China, and from Afghanistan (Bańkowska, 1967: 194 as '*rueppelli*', 1969: 283, Ghorpadé, 2014d: 12). Vockeroth (1971: 1633-1634) designated the lectotype male from Abyssinia and made three other names synonyms. Speight (1973) gave notes on British species (including this) of this genus and a key to them. Skufjin (1982: 141, fig. 16) gave notes on specimens from USSR and a figure of this (as '*rueppeli*'). Datta & Chakraborti's (1984: 239-240) unidentified *Sphaerophoria* from Kashmir was probably this species ? The record from Pakistan is doubtful and awaits confirmation (Ghorpadé & Shehzad (2013: 15). See Ghorpadé (2009: 3-4, 2014d: 12) for more notes. Peck (1988: 44; as '*rueppelli*'), Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it.]

Sphaerophoria scripta (Linnaeus, 1758)

Musca scripta Linnaeus, 1758, Syst. Nat., Ed. 10, 1: 594 (LT ♂; 'Uppsala, Sweden') [BMNH, London]

Sphaerophoria "form 2" Brunetti, 1915, Rec. Indian Mus., 11: 215 (LT ♂; 'Dharampur, Simla Hills'; as "form 1") [ZSI, Calcutta]

Sphaerophoria brunettii Joseph, 1968, Oriental Ins., 1: 243 (♂; 'Srinagar 1800m') [ZSI, Calcutta – examined]

Afghanistan; Pakistan; India: GJ ?, JK; Nepal (Brunetti, 1915, 1917, Bańkowska, 1964, 1967, 1968, 1969, Joseph, 1968, 1970, Patel & Patel, 1969a, Vockeroth, 1969, 1971, Speight, 1973, Knutson, 1973, Lambeck & van Brink, 1973,1975a, Knutson *et al*., 1975, Kapoor *et al*., 1979, Raychaudhuri *et al*., 1979, Skufjin, 1982, Agarwala, 1983, Agarwala *et al*., 1983a,1984, Datta & Chakraborti, 1984, Peck 1988, Ghorpadé, 1981a,b, 1994, 2014c,d,e, Arif, 2001, Claussen & Weipert, 2003, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This species occurs over all of the Palaearctic (except the eastern) including Iceland, in the Nearctic only in Greenland, in the northern Afrotropical, and enters the Oriental only in Kashmir. It is easily distinguished by the black hind femoral spinules (or long hairs in females) and the elongate abdomen. The holotype male of *brunettii* Joseph (in ZSI, Calcutta) has the abdomen along with terminalia mounted between two very large round cover slips attached to the pin. It is labeled 'HOLOTYPE / Srinagar, alt. c. 6000ft., Kashmir, N.W. Himalayas, VII-IX.16 / 262/H2 / Term. Slides / Sphaerophoria brunettii Joseph / Sphaerophoria scripta (Linne) ♂, K.D. Ghorpadé det. 1981.' " Brunetti (1915: 215-216, 1917: 85) mentions this species (as 'form 2') specimens from "Singara, Bengal, 3—5-iii-07, Noalpur (Nepal), 21-ii-08; Dharampur, Simla, 5000 ft., 6—8-v-07 [Annandale]; Katihar, N. Bengal, 8—9-iii-09 [Paiva]; Bhanwar, Bengal, 26-ii-07." Bańkowska (1964: 324-329, figs 81-100, 1967: 193-194, 1968: 201, 1969: 283) mentioned specimens taken in Afghanistan (see also Ghorpadé, 2014d: 13). Joseph (1968: 243-244, figs 1-2) described *brunettii* as new which is a synonym. Joseph (1968: 243-244, figs 1-2) described *brunettii* as new based on males from Srinagar, 1800m taken by H.T. Pease from July to September (see type data above). See Vockeroth (1969: fig. 87, 1971: 1633-1634) for more notes and his designation of the lectotype male. Patel & Patel (1969a: 86-8 gave this species doubtfully from Anand, Gujarat on cabbage aphid. Joseph (1970: 171)

synonymised his *brunettii* with *scripta*. Speight (1973) gave notes on British species (including this) of this genus and a key to them. Knutson (1973: 7, 16, 21, 24, figs 16, 35-37, 77-78, 88) included notes and illustrations of *scripta* in an excellent revisionary paper on *Sphaerophoria* of the western hemisphere. Lambeck & van Brink (1973: 91, 1975a:7) cited specimens taken from Nagin Lake, Moghul Gardens, and Gulmarg near Srinagar, Jammu & Kashmir and described karyotypes. Raychaudhuri (1979: 165) gave prey of this species from Kalimpong (West Bengal) which may be a misidentification. Kapoor *et al.* (1979: 60) listed this from Nepal. Ghorpadé (1981b: 73) listed a prey species based on Patel & Patel (1969) which may be a misidentification from Gujarat. Skufjin (1982: 138, figs 5, 17) gave notes of occurrence in the USSR, and some illustrations. Agarwala (1983: 37) and Agarwala *et al.* (1983a: 240) gave several aphid prey recorded at Kalimpong (West Bengal) in April-May and November-January. Agarwala *et al.* (1984: 19) added more aphid prey from the subcontinent. Datta & Chakraborti (1984: 239) listed a large number of specimens from Jammu & Kashmir, also with flower records, but mixed with specimens of *indiana* Bigot too (*q.v.*, *op. cit.*). Arif (2001: 97-98, 126) had listed this based on 5♂ 6♀ taken at Hangu, Darra Adam Khel, Khaza Khel, Takkt Nasarti and Chokera in tobacco fields, ber trees and grasses in March, April, June and October 1997 from Pakistan. Claussen & Weipert (2003: 362) listed one male from Tatapani, 2200m, Karnali Province, in Nepal. Ghorpadé & Shehzad (2013: 15) gave notes about its records in Pakistan (see also Ghorpadé, 2014e: 15). Ghorpadé (2014d: 13) summarised records from Afghanistan. Knutson *et al.* (1975: 319), Peck (1988: 45), Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it.]

Sphaerophoria viridaenea Brunetti, 1915

Sphaerophoria viridaenea Brunetti, 1915, Rec. Indian Mus., 11; 216 (LT ♂; 'Simla, 2134m, India'; as 'form 4'); Joseph, 1970, Eos, Madrid, 45: 171 (Lectotype designated) [ZSI, Calcutta - examined]

Afghanistan; Pakistan; India: HP, JK, UK; Nepal (Brunetti, 1915, 1917, 1923, Bańkowska, 1967, 1968, Nayar, 1968a, Joseph, 1968, 1970, Vockeroth, 1969, 1971, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Skufjin, 1982, Peck, 1988, Ghorpadé, 1981a, 1994, 2014c,d, Claussen & Weipert, 2003, Claussen & Mutin, 2007, Ghorpadé & Shehzad, 2013, Shah *et al.*, 2014).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "A distinctive member of the *novaeangliae*-group with incomplete mesonotal lateral yellow margin and the cercal notch in terminalia open. It ranges from Kashmir in the north-west to Darjiling and Kurseong in the east, and is principally a high elevation species. Vockeroth's (1969: 132-134, figs 1, 87-88) record of this species (and of *bengalensis* Macquart, *q.v., op. cit.)* from 'S. India' are certainly erroneous. He also included *rueppellii* Wiedemann, and *scripta* Linnaeus, and *turkmenica* Bańkowska [= *bengalensis* Macq.], but not *indiana* Bigot. The material identified as this species by Bańkowska (1964: 309) is misidentified, and represents a very different, undescribed, species [later described as *reginae* by Claussen & Mutin (2007)]. There are a few specimens in the USNM, Washington, DC, named as '*chinensis* sp. n.' by Dr Lloyd Knutson. The male terminalia, especially the surstylus, is very distinctive, and along with *assamensis* Joseph and *ladakhensis* sp. nov. belong to the *novaeangliae*-group of Knutson (1973). The Lectotype male (in ZSI, Calcutta) has its abdomen cut and the left wing damaged, and is labeled "Simla, alt. 7000ft., 16-V-09, Annandale / 2278/H2 / LECTOTYPE, Sphaerophoria viridaenea Brun., det. A.N.T. Joseph / Sphaerophoria viridaenea Brunetti ♂, K.D. Ghorpade det. 1981." The paralectotype female has its head andabdomen lost."" Brunetti (1915: 216-217) included this in his key (as 'form 4 *viridaenea*') and listed specimens from Simla, Theog and Kurseong, stating "I feel convinced this is a good species on the strength of the unstriped greenish aeneous thorax and very distinct black facial stripe . . ." He mentioned specimens taken at Simla and Theog in May (Brunetti, 1917: 85). In his FAUNA volume (Brunetti, 1923: 101-102, Pl. III, figs 7-8) he also mentioned specimens taken at Darjiling 7000 ft. and treated it as avalid species, giving notes on its characters and similarities with other species. Bańkowska (1964: 309-310, figs 17-24, 1967: 194, 1968: 202) listed specimens taken in Korea, Mongolia and Transbaikalia and also in Afghamistan (see also Ghorpadé, 2014d: 13). Nayar (1968a: 125) listed a male from Kalatop, 240m, nr Dalhousie taken by him in September. Joseph (1968: 247, figs 5, 7, 1970: 171) gave illustrations of male terminalia, and some notes. Joseph (1970: 171) gave some notes on this and designated a lectotype. He mentioned that Brunetti's (1915) male from Theog, 2438m, Simla hills, 2.V.1907, No. 2279/H2, Coll. N. Annandale, was *nigritarsis* [= *indiana* Bigot]. Vockeroth (1971) curiously did not include this species in his detailed review of this genus in the Old World. Skufjin (1982: 136, figs 1, 25 ?) included this in his paper on this genus in the USSR; but his figure 25 said to be of this species is perhaps not correct. Ghorpadé & Shehzad (2013: 15) listed it from Pakistan, and Kapoor *et al.* (1979: 54, 60) from Nepal. Claussen & Weipert (2003: 362, figs 62-67) cited several specimens taken in the Karnali province of Nepal and illustrated its male termnalia. See notes in Claussen & Mutin (2007) on this and other species of the *Sphaerophoria novaeangliae* species-group. Knutson *et al.* (1975: 319), Peck (1988: 46), Ghorpadé (2014c: 21), Shah *et al.* (2014: 303), and Mitra *et al.* (2105: 69) listed it. See also Sack (1932b: 200) and Thompson & Rotheray (1998: 99, 103) for discussion and key to this genus in the Palaearctic.]

Sphaerophoria Unnamed sp. 1 [undet.]
Nepal (Clausen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 362) listed other females of an undetermined species from Nepal, as "sonstige Arten." Ghorpadé (2014: 21) listed it.]

Sphaerophoria Unnamed sp. 2 [undet.]
Nepal (Clausen & Weipert, 2003, Ghorpadé, 2014c).

[NOTE: Claussen & Weipert (2003: 362) listed females of another undetermined species from Nepal, belonging to the *novaeangliae*-group. Ghorpadé (2014: 22) listed it.]

Sphaerophoria Unnamed sp. 3 [undet.]
India: JK (Datta & Chakraborti, 1984, Ghorpadé, 2014c).

[NOTE: Datta & Chakraborti (1984: 239) mentioned specimens of an undetermined species from the Kashmir valley, which could be *rueppellii* (Wied.) (*q.v., op cit.).* Ghorpadé (2014: 22) listed it.]

Syrphus dalhousiae Ghorpadé, 1994
Syrphus dalhousiae Ghorpade, 1994, Colemania, No. 3, p. 14 (♂; 'Dalhousie') [USNM, Washington, DC - examined]

India: HP, JK, UK; Nepal (Curran, 1928, 1931a, Ghorpadé, 1981a,b, 1994, 2014c, unpubl., Abrol, 1993, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This is a distinctive new species with a peculiar oblique black marking on the hind femur and a relatively slender body facies. It is apparently restricted to the northwest Himalaya, and is readily separated from other species of the genus as shown in the key (in Ghorpadé, 1994: 13-14). The holotype is labeled "INDIA, Himachal Pradesh, Dalhousie 2133m, 10.x.1974, K.D. Ghorpade A132 / GHORPADE COLLECTION, Bangalore / HOLOTYPE, Syrphus dalhousiae Ghorpade 1983 [red label] / USNM, Washington, DC." Paratypes were taken in Srinagar 1893m, Dalhousie, 2133m, Simla 2133m, and Mussoorie 2005m. In the CNC, Ottawa, I found a paratype female labeled "B65-101(1), India, 9/viii/65 / Myzus sp. ? ornatus / 69.-5817." Could possibly occur in Pakistan ? (Ghorpade & Shehzad, 2013: 21). Curran (1928: 197-200, 1931a: 311-315) discussed this then rather bulky and polytypic genus, gave a key with many Malayan species but none of actual *Syrphus s. str.* Ghorpadé (1981b: 67) gave a few aphid species as prey of undetermined *Syrphus* spp. from India and Pakistan. Abrol (1993: 266-267) mentioned a '*Syrphus* sp.' as pollinator of carrot, onion and *Brassica* in the lowland tropical zone (300-1350m) in Jammu & Kashmir, and also in the temperate zone (Kashmir Valley, 1560m). Ghorpadé (2014c: 22), Shah *et al.* (2014: 304), and Mitra *et al.* (2105: 69) listed it.]

Syrphus fulvifacies Brunetti, 1913
Syrphus fulvifacies Brunetti, 1913, Rec. Indian Mus., 8: 161 (♀; 'Rotung, N.E. Frontier of India') [ZSI, Calcutta - examined]

Pakistan; India: HP, JK, UK; Nepal (Brunetti 1913a,b, 1923; Singh *et al*., 1955, Coe 1964; Lambeck & van Brink, 1973a, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, unpubl., Aslamkhan *et al*. 1997; Arif, 2001, Arif *et al*., 2001, Claussen & Weipert, 2003, Ghorpade & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al.*, 2015)

[NOTE: In my doctoral thesis (Ghorpadé, 1981a) I had written "This is the commonest and most widespread species of *Syrphus* in the Oriental region and Vockeroth's record of an undetermined species of this genus in Java could be this species, as I have seen two males from Tjibodas in Java in the UZM, Copenhagen. A female from 'Calcutta' (Brunetti Collection in BMNH, London) is probably a mislabeled specimen. This species is a good *Syrphus* and not a *Metasyrphus* as suggested by Coe (1964: 263) and transferred it to that genus by Lambeck & van Brink (1973a: 90)." Brunetti (1913a: 161) named and described this as new based on a single female from Rotung, 26-ix-11, in the 'N.E. Frontier of India,' and commented "This species is remarkably like the very common Palaearctic *S. ribesii*, L., and may possibly be a variety of it, unless the limits of that species are truly known. If so, it differs from *ribesii* by the hind femora being principally black. In this respect itresembles *vitripennis*, Mg., if this latter is really distinct." The holotype female (in ZSI, Calcutta) is labeled "Rotung, 1400 ft., Abor Exp., 26-XII-11, Kemp / Syrph. fulvifacies Brun Typ ♀ / TYPE / 1717/HI." One of the two *Syrphus* spp. in Brunetti (1913b: 267) from the Darjiling area could be this species. In the FAUNA volume, Brunetti (1923: 89-90) mentioned another male from 'Kashmir, 8000-9000 ft., vi. 1901 (*Nurse*).' At the CNC, Ottawa I found 3 ♂ 3 ♀ taken at Godavari, 6000' near Kathmandu, Nepal from June-August. Singh *et al.* (1955: 714) listed this from the North-west (Punjab) Hmalayas from "Kashmir 8000-9000 ft. [Rotung]" [*sic*]. Coe (1964:

263) reported a few specimens taken in Taplejung Disrict of Nepal, mention the entirely clear yellow face and that the Kashmir specimen of Nurse was not in the BMNH, London. He also suggested affinity with *latifasciatus* Macquart, now placed in *Metasyrphus* (*q.v., op. cit.*). Lambeck & van Brink (1973a: 90) recorded this from the Nagin Lake and Gulmarg in Indian Kashmir as '*Metsyrphus (M.) latifasciatus*' and commented "Within India it seems restricted to the slopes of the Himalaya. . ." and "at lower elevations as well." Knutson *et al.* (1975: 319) listed it as an unplaced species of *Syrphus* from 'Assam' in India and from Nepal, Ghorpadé (1994: 13-14) presented a key to species from the Indian subregion. Kapoor *et al.* (1979: 60) listed it from Nepal, and Claussen & Weipert (2003: 362, fig. 68) listed several specimens taken in Bagmati, Karnali, Koshi and Seti Provinces of Nepal, and gave distinguishing characters from *S. vitripennis* Meigen. Arif (2001: 108-109, 126) had listed this based on 6♂ 3♀ taken at Makran in cabbage fields in September 1998 and March 1999 from Pakistan. Ghorpadé & Shehzad (2013: 16) gave records of this species from Pakistan. Knutson *et al.* (1975: 319), Ghorpadé (2014c: 22), Shah *et al.* (2014: 304), and Mitra *et al.* (2105: 69) listed it.]

Syrphus howletti Ghorpadé, 1994

Syrphus howletti Ghorpade, 1994, Colemania, No. 3, p. 14 (♂; 'Srinagar') [USNM, Washington, DC – examined]

India: JK (Ghorpadé, 1981a, 1994, 2014c, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "I collected a series of 8 females from Srinagar (Kashmir), in October 1974, that are consistently different from *vitripennis* (to which they key out in existing keys (e.g., Sack, 1932b; Seguy, 1961, etc.) as follows: 1) femur 3 entirely yellow, yellow pilose, except in some specimens with a few black spinules at extreme apex; 2) scutellum anteriorly and laterally more yellow pilose. I have no males of this 'variety' and I keep these variant specimens aside from *vitripennis* for the present.' Later (Ghorpade, 1994: 14) I described this as new, *howletti*, giving its diagnostic characters in a key. The holotype female is labeled "INDIA, Jammu & Kashmir, Srinagar, 1893m, 16.x.1974, K.D. Ghorpade A138 / GHORPADE COLLECTION, Bangalore / HOLOTYPE, Syrphus howletti Ghorpade 1983 [red label] / USNM, Washington, DC." These specimens, holotype and paratypes, were collected in the Nishat Bagh in Srinagar and the species is named in honour of F.M. Howlett, Second Entomologist, Imperial Department of Agriculture for India, who wrote the Diptera section (pp. 545-657) in Maxwell-Lefroy's (1909) classic '*Indian Insect Life*,' and had collected many Diptera for the Pusa Collection as well. Ghorpadé (1994: 13-14) presented a key to species from the Indian subregion. Ghorpadé & Shehzad (2013: 21) suggested occurrence of this species in Pakistan. Ghorpadé (2014c: 22), Shah *et al.* (2014: 304), and Mitra *et al.* (2105: 69) listed it.]

Syrphus ribesii (Linnaeus, 1758)

Musca ribesii Linnaeus, 1758, *Syst. Nat*., Ed. 10, 1: 593 (LT ♀; 'Svecia' = Sweden) [BMNH, London]

Syrphus himalayanus Nayar, 1968, Agra Univ. J. Res. (Sci.), 16(2): 121 (♀, not '♂'; 'Manali, 2134-2438m') [ZSI, Calcutta ?]; Ghorpadé, 2009, Colemania, 15: 4. (as *n. syn.*)

Afghanistan; Pakistan; India: HP, JK, UK; Nepal ? (Sack, 1913, Brunetti, 1913b, Fluke, 1954, Bańkowska, 1968, Nayar, 1968a, Knutson *et al*., 1975, Ghorpadé, 1981a, 1994, 2009, 2014c,d, Vockeroth, 1983, Peck, 1988, Saleem *et al.*, 2001, Ghorpadé & Shehzad, 2013, Shah *et al*., 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This is the first authentic record of *Syrphus ribesii*, a Holarctic species, in the Indian subregion (see also Ghorpadé, 2009: 4), though Nayar (1968a: 121) had recorded it earlier, but misidentified, from the Monaslu Gorge, north of Manali, as a 'new' species, his *himalayanus*. Though his description and figure are very sketchy and inaccurate, I have no doubt that his *himalayanus* is a junior synonym of *ribesii*. Nayar also gave the sex of his holotype incorrectly – it is obviously a female (see his description of the head) and not a male as indicated by him. I did not find the holotype in the ZSI, Calcutta, among other Nayar types deposited there and examined by me in 1981. It is a large, bright, robust *Syrphus* and the distinctive shapes of the black markings on sterna 2 and 3, and the bare eyes will readily diagnose this species as *ribesii* L. It seems to be quite common, at least on the higher elevations, on the north-west Himalaya. Vockeroth (1983: 177) designated a female labeled '58. ribesii,' in the Linnaean Collection, London [NHM] as lectotype, and two other females with the same data as paralectotypes (see also Thompson *et al*., 1982: 159). Sack (1913: 5) reported it from the island of Taiwan. Curran (1921: 154) revised the *ribesii*-group of *Syrphus* and wrote of this species "The bare eyes distinguish it at once from *S. torvus*, the darker antennae and more numerous spines on femora as well as the more extensively black hind femora from *S. vitripennis*." Brunetti (1913b: 267) mentioned seeing 'Several specimens [from Darjiling area]; two species, of which one is either *ribesii*, L., or allied to it.' Fluke (1954: 2) in a landmark paper on *Syrphus*, initiating the 'unlumping' of this then large genus into many other genera, gave some useful characters in a key

to this genus' speces in North America. For *ribesii* he gave "tiny black hairs very numerous, extending over the apical third, venter [= sterna] usually with black markings. Bańkowska (1968: 203) listed one female from Pagmangebirge, 2300m, taken in May in E. Afghanistan. See also Ghorpadé (2014d: 13). Knutson *et al.* (1975: 319) listed it as 'Not Oriental.' Vockeroth (1983: 177) wrote of this species that it "shows more variation than most species of the genus in antennal colour, frontal colour, development of a brown median facial stripe, and extent and form of yellow markings of tergites 2 to 4. This has led to the extensive synonymy indicated above." He also gave a key to Nearctic species of *Syrphus*, including this species, *torvus* and *vitripennis*, that may be ueful to workers here. Ghorpadé (1994: 14) presented a key to *Syrphus* species in the Indian subcontinent. Ghorpadé & Shehzad (2013: 16) gave records of this species from Pakistan. Ghorpadé (2014d: 13) gave a record from Afghanistan. Peck (1988: 47), Ghorpadé (2014c: 22), Shah *et al.* (2014: 304), and Mitra *et al.* (2105: 69) listed it.]

Syrphus torvus Osten Sacken, 1875

Syrphus torvus Osten Sacken, 1875, Proc. Boston Soc. Nat. Hist., 18: 139 (ST ♂♀; 'in the subalpine region of Mt. Washington, White Mountains, Massachusetts, Rhode Island, Canada, the Rocky Mountains in Colorado') [MCZ, Cambridge, MA]

Pakistan; India: HP, JK, UK; Nepal (Brunetti, 1907a, 1908, 1917, 1923, Curran, 1921, Fluke, 1954, Coe, 1964, Lambeck & Kiauta, 1973, Knutson *et al.*, 1975, Kapoor *et al.*, 1979, Ghorpadé, 1981a, 1994, 201c, Peck, 1988, Arif, 2001, Claussen & Weipert, 2003, Ghorpadé& Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This species is also fairly common on the higher elevations of the Himalayas, especially in its western section. The hairy eyes will readily separate this large *Syrphus* from all other Indian ones [see also key in Ghorpadé, 1994: 13-14]. Brunetti (1907a: 169, 1908: 57) wrote about *Syrphus*: 'This genus I dare not touch upon at present in view of the large number of supposed species described from Oriental regions, and their close affinities. I have seen several species from the hills that are common in Europe, the specimens showing generally little or no difference; amongst them are . . . *torvus*, Os. Sac. . .' At the CNC, Ottawa I found 7 ♂ taken at 11,100' in Nepal in May. Brunetti (1907a: 169, 1908: 57, 1917: 84) mentioned 'Two of each sex from Matiana, 28—30-iv-07' from the Simla District. He also wrote "Several other undetermined species of this genus [*Syrphus*] yet remain, but it is impossible at present to deal with them in view of so many European species being known to occur in the [Simla] district." In the FAUNA volume (Brunetti, 1923: 76-77) he gave a full description and repeated the above specimen data, mentioning that these specimens had 'black, instead of yellow, hairs on the face,' Curran (1921: 157) revised the *ribesii*-group of *Syrphus* and wrote of this species "Readily distinguished by the presence of pile on the disc of the squamae and pilose eyes . . . The above species constitute an unusually interesting group in thegenus *Syrphus* and so far as I am aware there are no other European or North American species which have the disc of the thoracal squamae hairy." Fluke (1954: 1) separated this species in the first couplet of his key to North American *Syrphus* with the diagnostoic character "eyes distinctly pilose." Coe (1964: 259) gave specimens taken in eastern Nepal and mentioned that these differed in both sexes having 'dust on frons golden instead of grey.' And concluded that 'it is possible that there are two species confused here.' Lambeck & Kiauta (1973: 72) listed one male from Tengpoche Gonda, 3850m in Nepal and mentioned that facial hairs were black and dust on frons golden as the above authors stated. Knutson *et al.* (1975: 319) listed it from Himachal Pradesh and Nepal in their Catalog, and Kapoor *et al.* (1979: 60) included it it their checklist. Arif (2001: 103-104, 126) had listed this based on 5♂ taken at Makran and Zhob in cabbage and oats fields in March 1999 and September 1998 from Pakistan. Claussen & Weipert (2003: 363) listed many specimens from the Karnali and Seti Provinces of Nepal (see also Ghorpadé, 2015). Ghorpadé (1994: 13-14) presented a key to species from the Indian subregion. Ghorpadé & Shehzad (2013: 16) gave records of this species from Pakistan. Knutson *et al.* (1975: 319), Peck (1988: 48), Ghorpadé (2014c: 22), Shah *et al.* (2014: 305), and Mitra *et al.* (2105: 69) listed it.]

Syrphus vitripennis Meigen, 1822

Syrphus vitripennis Meigen, 1822, Syst. Beschr. Zweifl. Insekt., 3: 308 (sex ?; 'Europe') [MNHN, Paris]

Afghanistan; Pakistan; India: HP, JK (Curran, 1921, Fluke, 1954, Das & Raychaudhuri, 1983, Agarwala *et al.*, 1984, Peck, 1988; Ghorpadé, 1981a, 1994, 2009, 2014c,d, unpubl., Ghorpade & Shehzad, 2013, Shah *et al.*, 2014, Mitra *et al.*, 2015).

[NOTE: In my doctoral thesis (Ghorpade, 1981a) I had written "This is the first authentic record of this Palaearctic species from India though Joseph & Sharma (1976) had reported it earlier (with a query) from Sikkim. But could that be *fulvifacies* Brunetti ? It occurs only in the Kashmir Valley within Indian limits." See also notes in Ghorpadé (2009: 4) and Das & Raychaudhuri (1983) who

gave prey from Jakhu, c. 2455m, in Himachal Pradesh. Agarwala *et al.* (1984: 19) gave prey for what was an undetermined *Syrphus* sp., but probably this as they noted. Peck (1988: 48) listed it from Afghanistan but I can find no other record, not even by Bańkowska, from this country. It should occur in Pakistan (see Ghorpadé & Shehzad (2013: 21). Curran (1921: 156-157) revised the *ribesii*-group of *Syrphus* and wrote of this species "From *ribesii* it difers in having the antennae red; thorax darker, antennae less pointed; spot below the eyes; femora of female, black at base; the first pair of spots reach the margins in much greater width than in *ribesii*." Fluke (1954: 2) gave key characters for this as "tiny black hairs on ends of hind femora sparse , venter [= sterna] unicolorous, basal half or more of hind femora black." Ghorpadé (1994: 13-14) presented a key to species from the Indian subregion. Ghorpadé (2014d: 13) gave record from Afghanistan. Knutson *et al.* (1975: 319), Peck (1988: 48), Ghorpadé (2014c: 22), Shah *et al.* (2014: 305), and Mitra *et al.* (2105: 69) listed it. See also Sack (1932b: 185) and Thompson & Rotheray (1998: 95) for discussion and key to this genus in the Palaearctic.]

Syrphus Unnamed sp. 1 [undet.]
Pakistan (Aslamkhan *et al.* 1997, Ghorpadé & Shehzad, 2013, Ghorpade, 2014c).

[NOTE: See Ghorpadé & Shehzad (2013: 16) for details. Ghorpadé (2014c: 22) listed it (as 'Unnamed sp, 2').]

[SPECIES INCERTAE SEDIS :

Syrphus agraensis Nayar & Nayar, 1965, **nom. nud.**
Syrphus agraensis Nayar & Nayar, 1965, Indian J. Ent., 27: 241. **nom. nud.**

India : UP (Nayar & Nayar, 1965, Ghorpadé, 2014c, Mitra *et al.*, 2015).

[NOTE: This is probably misidentified and specimens need to be examined for correct identity. In my doctoral thesis (Ghorpadé, 1981a) I had written "Nayar & Nayar (1965) mentioned a "*Syrphus agraensis* n. sp." with no furtherdetails or a description. They had however stated "The description of the three new species and minor variations in others will appear in a separate paper." Nayar (1968b) did describe *Eristalis (Lathyrophthalmus) haileyburyi* and *E. (L.) lalitai*, after he went on to the U.S.A., but not *Syrphus agraensis* in that or any later paper, so it is here designated a *nomen nudum*. and unavailable. Ghorpadé & Shehzad (2013: 3). Ghorpadé (2014c: 7), Mitra *et al.* (2105: 69) listed it.] **]**

Vockerothiella laticornis (Curran, 1928)
Asarkina laticornis Curran, 1928, J. Fed. Malay St. Mus., 14(2): 235 (♂; 'Khao Luang, 5800 ft., Nakon Sri Tamarat, Peninsular Siam') [BMNH, London]; Ghorpadé, 1994, Colemania, 3: 4-5) (as *n. comb.*)

Nepal (Curran, 1928, 1931, 1942, Knutson *et al.* 1975, Ghorpadé, 1994, 2014c)

[NOTE: Curran had described this species as an *Asarkina*, and Knutson *et al.* (1975: 310) had listed it under that genus, but Ghorpadé (1994: 5) transferred it to his new genus *Vockerothiella* and separated it in his key, this being recorded by him from Malaysia, Thailand and Nepal. See also Ghorpadé (2014c: 22). I found a single female labeled "NEPAL, Ktmd., Godavari 5000', R. Bot. Gdn., July 23, Can Nepal Exp. '67' " in the CNC, Ottawa which I determined as the first of this sex recorded for this species. The holotype male is labeled "Type [red bordered small circular label] / TYPE, Asarkina laticornis Curran [red rectangular label] / Pennsular Siam: Nakon Sri Tamarat, Khao Luang, 5800 ft., 30.iii.1922, H.M. Pendlebury / 57 [small green label] / Vockerothiella laticornis (Curan) ♂, K.D. Ghorpade det. 1983." [BMNH, London]. Chris Thompson (*in litt.*) prefers to treat *Vockerothiella* Ghorpadé as a 'subgenus' of *Asarkina* Macquart.]

Xanthogramma Unnamed spp. [undet.]
Pakistan; India: HP (Vockeroth, 1969, Knutson *et al.*, 1975, Das & Raychaudhuri, 1983, Aslamkhan *et al.* 1997, Ghorpadé & Shehzad, 2-13, Ghorpadé, unpubl.).

[NOTE: Das & Raychaudhuri(1983) and Aslamkhan *et al.* (1997) each listed a "*Xanthogramma* sp.," unidentified to species. These are probably misidentified, as this genus is not tropical but almost wholly Holarctic (see Vockeroth, 1969: 90-92, Knutson *et al.*, 1975: 320-321). However, I have been sent photographs by Pakistani colleagues of what are certainly good *Xanthogramma* species from northern Pakistan, and species determination is now in progress. Misplacements of other species in this genus have been resolved of species listed as *Xanthogramma* by Knutson *et al.* (1975: 320-321): *indica* Nayar and *pruthii* Deoras were found to be *Scaeva latimaculata* (Brunetti) (*q.v., op. cit.*), and *arisanica* Shiraki, *fasciata* Shiraki, and *fumipennis* Matusmura, all from 'Formosa' [= Taiwan] were transferred to *Citrogramma* by Mengual (2012). Arif (2001: 90-91, 125) had listed a '*Xanthogramma citrinum* Schiner,' 9♂ 6♀ from Quetta, Ziarat, Makran, Panjgur

and Lasbela taken in March and September 1996 from sorghum and mustard fields in Pakistan. Peck (1988: 50-53) catalogue has no Xanthogramma of this species name ! Perhaps Arif was confused and the material may actually be *Citrogramma citrinum* Bunetti, but his author as 'Schiner' is still beguiling ! Violovitsh (1975) treated Palaearctic species of this genus. See also Sack (1932b: 206) and Thompson & Rotheray (1998: 99) for discussion and key to this genus in the Palaearctic.]

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