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A CHECK LIST OF BLOW FLIES (DIPTERA : CALLIPHORIDAE) FROM NORTH-WEST OF INDIA

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A check list of blow flies from north-west of India is provided. The study area comprises the states of Punjab, Haryana, Chandigarh, Himachal Pradesh, Uttaranchal, Jammu & Kashmir, Delhi and Rajasthan. Forty-nine species referable to 22 genera under the subfamilies Calliphorinae, Ameniinae, Rhininae, Helicoboscinae and Chrysomyinae are included in this list.

INTRODUCTION

The family Calliophoridae is represented by 364 species from the Oriental region including 101 from India. After publication of Fauna of British India by Senior-White *et al.* ((1940), several scattered papers have been published by various workers. Inspite of considerable medical, veterinary and forensic importance of blow flies, no up-to-date information is available about occurrence of these species in north-west India. Surveys have been undertaken during the last four years to collect blow flies from this region of India. Several species have been collected from this part of the country for the first time.

Subfamily Rhiniinae

Cosmina bicolor (Walker, 1856)

- *Distribution* : India (Assam, Chandigarh, Haryana, Punjab, Tamil Nadu, Uttaranchal, Uttar Pradesh), Bangladesh, Borneo, China, Indonesia, Malaysia, Myanmar, Sri Lanka, Thailand and Vietnam.
- *Remarks* :The species is widely distributed in the Oriental region. According to Kurahashi & Banu (1989) adults are found on grasses whereas they were collected from flowers during the present investigation.

Cosmina limbipennis (Macquart, 1848)

- *Distribution* : India (Chandigarh, Punjab), Indonesia, Malaysia and China.
- *Remarks* : This species is well distributed in the Oriental region and was reported from north-west India by Pajni & Gera (1983).

Cosmina prasina (Bauer et Bergenstamm, 1889)

- *Distribution* : India (Bihar, Chandigarh, Haryana, Himachal Pradesh, Punjab, Uttaranchal), Borneo, Indonesion, Nepal, Egypt, Italy, Nigeria and somalia.
- *Remarks* : Distributed in the Afrotropical, Palaearctic and Oriental regions, this species is available all over India.

Thoracites abdominalis (Fabricius, 1805)

- *Distribution* : India (Orissa, Uttaranchal) and Sri Lanka.
- *Remarks* : So far this species was known in India only from the eastern part and represents the first record from North-western region. It is the only species belonging to this genus known from the Oriental region.

Isomyia pseudoviridana (Peris, 1952)

- *Distribution* : India (Himachal Pradesh, Meghalaya), Myanmar, Nepal, Sri Lanka and China.
- *Remarks* : Senior-White *et al.* (1940) included this species in the Fauna of British India under the name *Strongyloneura tibialis* (Villeneuve). However, Peris (1952) gave it a new name *Thelychaeta pseudoviridana* that was changed to *I. psseusoviridana* by James (1977). It differs from all other Indian species belonging to this genus because of 3 postsutural acrostichals (2 or 4 in other species).

Isomyia versicolor (Bigot, 1877)

- *Distribution* : India (Assam, Bihar, Chandigarh, Haryana, Meghalaya, West Bengal), Myanmar, Nepal, Philippines and Sri Lanka.
- *Remarks* : The adults of this species were collected from flowers. It was reported from North-west India by Pajni & Gera (1983) under the name *S: pseudocoerulana* Senior-White.

Isomyia fulvicornis (Bigot, 1887)

- *Distribution* : India (Assam, Bihar, Himachal Pradesh, Maharastra, West Bengal), Borneo, Indonesia and Sri Lanka.
- *Remarks* : This species has been collected from North-west part of India for the first time.

Isomyia delectans Walker, 1860

- *Distribution* : India, (Assam, Himachal Pradesh, Uttaranchal), Celebes, Laos, Myanmar and Philippines.
- *Remarks* : The specimens belonging to this species have been collected from flowers of ornamental plants. It is closely similar to *I. fulvicornis* and differs from it in chaetotaxy, colour of antennae, postalar declivity bare, brownish wing base and basicosta

Stronyloneura nudus Ghezta & Kumar, 1991

- *Distribution* : India (Chandigarh, Himachal Pradesh).
- *Remarks* : This is the only species of genus *Strongyloneura* available in North-western India.

Metalliopis setosa Townsend, 1917

- *Distribution* : India (Chandigarh, Uttaranchal, West Bengal), Malaysia, Myanmar, Nepal, Taiwan and China.
- *Remarks* : This is the only species belonging to genus *Metalliopis* available in India. Originally reported from West Bengal, Pajni & Gera (1983) collected it from Chandiarh as well. This species has often been shifted between the genera *Metalliopis* and *Metallea* Wulp. The interpretation given by Fang & Fan (1986) and followed in all the recent works has been adopted for the present work as well.

Rhyncomya pollinosa (Townsend, 1917)

- *Distribution* : India (Chandigarh, Haryana, Himachal Pradesh, Maharashtra, Tamil Nadu, Uttar Pradesh), Sri Lanka and China.
- *Remarks* : Members of this species are unique due to very strong dusting all over the body. It also differs from other species because of the presence of bare arista, which is pubescent in most of other cases.

Rhyncomya divisa (Walker, 1856)

- *Distribution* : India (Bihar, Madhya Pradesh, Punjab, Uttar Pradesh, West Bengal), Celebes, Indonesia, Sri Lanka and Australia.
- *Remarks* : This species is well distributed all over India and is very similar to *R. flavibasis* (Senior-White).

Rhyncomya flavibasis (Senior-White, 1922)

- *Distribution* : India (Chandigarh, Uttar Pradesh), Sri Lanka and China.
- *Remarks* : *R.. flavibasis* (Senior-White) has been collected from North-west India for the first time.

Stomorhina xanthogaster (Wiedemann, 1820)

- *Distribution* : India (Assam, Bihar, Madhya Pradesh, Sikkim, Uttaranchal), Celebes, Indonesia, Malaysia, Nepal, Sri Lanka, Taiwan, Saudi Arabia, China, Australia and New Guinea.
- *Remarks* : This species is different from the other species of the genus *Stomorhina* because of having first posterior cell (R_5) petiolate and Sternopleura densely yellow dusted. It has been reported from many Indian states and is widely distributed in the Oriental region.

Stomorhina discolor (Fabricius, 1794)

- *Distribution* : India (Chandigarh, Haryana, Himachal Pradesh), Australia, Bangladesh, China, Fiji, Hon Kong, Indonesia, Japan, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Taiwan.
- *Remarks* : This speciess is widely distributed in the Oriental, Palaearctic and Australian regions. Senior-White *et al.* (1940) reared it from the nest of ant *Camponotus angusticollis.* Males often hover around under shady trees. According to Kurahashi & Fauran (1980), the larvae are predaceous upon immature stages of other insects.

Stomorhina melastoma (Wiedemann, 1830)

- *Distribution* : India (Himachal Pradesh, Tamil Nadu, West Bengal), Indonesia, Nepal, Sri Lanka, China, Australia and New Guinea.
- *Remarks* : This species is distributed in the Oriental and Australian Regions. There has been lot of shifts in the generic and specific combination. Adults have been collected from flowers and nothing is known about the bionomics of this species.

Idiella mangarina (Wiedmann, 1830)

- *Distribution* : India (Assam, Bihar, ujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Uttar Pradesh, West Bengal), Borneo, Myanmar, Sri Lanka, Indonesia, Taiwan, Thailand, Hong Kong and China.
- *Remarks* : This is the only species of genus *Idiella* reported from North-west India and is available throughout the Oriental region. The specimens were collected from bushes and flowers during the present studies.

Rhinia apicalis (Wiedemann, 1830)

- *Distribution* : India (Assam, Andaman & Nicobar Islands, Chandigarh, Gujarat, Maharashtra, Punjab, West Bengal), Indonesia, Philippines, Hong Kong, Malaysia, Sri Lanka, Iran, UAE, Israel, China, North Africa, Pacific Islands, Australia, Madagascar, Mauritius and Seychelles.
- *Remarks* : This is the only species of genus *Rhinia* available in North-west India. Pajni & Gera (1983) reported it from Chandigarh under the name *Rhinia testacea* Robineau-Desvoidy.

Otherwise, it is widely distributed in the Afrotropical, Palaearctic and Indo-Australian regions.

Subfamily Chrysomyinae

Ceylonomyia nigripes (Aubertin, 1932)

- *Distribution* : India (Chandigarh, Himachal Pradesh, Uttaranchal), Sri Lanka, Malaysia, Nepal and China.
- *Remarks* : This is the type species of genus *Ceylonomyia* and was recorded from India for the first time by Pajni & Gera (1981). Now it has also been collected from Himachal Pradesh and Uttaranchal as new collection localities.

Achoetandrus rufifacies (Macquart, 1843)

- *Distribution* : India (Chandigarh, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttaranchal), Cosmopolitan.
- *Remarks* : This is the only species of the genus *Achoetandrus* available in North-west India. According to Kano & Shinonaga (1968) this species is often confused with *Achoetandrus albiceps*. Omar & Greenberg (personnel communication) is also of the view that they are actually the same species.

Chrysomya megacephala (Fabricius, 1974)

- *Distribution* : India (Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Punjab, Rajasthan, Uttaranchal), Cosmopolitan.
- *Remarks* : Commonly called the Oriental laterine blow fly, this species is widely distributed in the Oriental, Australian, Palaearctic, Nearctic, Neotropical and Afrotropical regions. It is one of most dangerous dipteran carriers of bacteria, protozoan and helminthes (Greenberg, 1973). Adults are stongly attracted to carrion, human excretment and food including sweets. The fly is present throughout the year in this part of the country and is of forensic importance (Singh & Bharti, 2000). It has also been used by Goff (1992) and Goff *et al.* (1988) for solving several forensic cases.

Chrysomya bezziana Villeneuve, 1914

- *Distribution* : India (Chandigarh, Delhi, Himachal Pradesh, Punjab, Malaysia, Philippines, Sri Lanka, some part of Aftrotropical region and China.
- *Remarks* : Commonly called the Old World screw worm fly, *C. bezziana* is an important agent of myiasis in the Oriental region (Senior-White *et al.*, 1940). Though very closely related to *C. megacephala* (Fabricius), the two are easily separated on the basis of eye facets in the males.

Chrysomya phaonis Seguy, 1928

- *Distribution* : India (Chandigarh, Himachal Pradesh, Rajasthan, Uttaranchal, Uttar Pradesh), Nepal, Tibet, Afghanistan and China.
- *Remarks* : *C. phaonis* is abundantly available in North-west India. It is closely related to *C. pinguis* (Walker) and is separated by the number of postsutural dorsocentrals, dichoptic eyes and external genitalia.

Chrysomya pinguis (Walker, 1858)

- *Distribution* : India (Assam, Chandigarh, Himachal Pradesh, Kerala, Punjab, Uttaranchal, West Bengal), wide spread in Oriental region, China, Japan and Korea.

- *Remarks* : Just like the closely related species *C. phaonis* Seguy, this species is also collected in good numbers from North-west India. Large number of specimens have been collected from flowering plants.

Subfamily Helicoboscinae

Gulmergia angustisquama Rogues, 1993

- *Distribution* : India (Jammu & Kashmir, Uttaranchal)
- *Remarks* : This species is the only one known from the Oriental region under the genus *Gulmergia* and subfamily Helicoboscinae.

Subfamily Ameniinae

Catapicephala pattoni Senior-White *et al.* 1940

- *Distribution* : India (Uttaranchal, West Bengal), Nepal
- *Remarks* : This species is closely related to *C. ingens* (Walker) and *C. splendens* Macquart from which it is differentiated on the basis of structure of external genitalia. Adults have been collected from bushes along mountain streams.

Catapicephala splendens Macquart, 1851

- *Distribution* : India (Himachal Pradesh), Borneo, Indonesia, Malaysia, Myanmar, Singapore and China.
- *Remarks* : This species was reported from India for the first time by Sidhu & Singh (2002). Mainly chaetotaxy of the thorax is useful for separating it from the very closely related *C. ingens* (Walker)..

Subfamily Calliphorinae

Hemipyrellia pulchra (Wiedemann, 1830)

- *Distribution* : India (Bihar, Chandigarh, Himachal Pradesh, Pondicherry, Punjab, Tamil Nadu, Uttaranchal, Uttar Pradesh, West Bengal), North Africa, Egypt, Indonesia and Afrotropical reion.
- *Remarks* : This species is available in the Oriental and Afrotropical regions. According to Senior-White *et al.* (1940) it is ovoviviparous and breeds in decomposing animal remains and excretment. The adults are usually collected from flowers where they feed upon plant juices.

Hemipyrellia ligurriens (Wiedemann, 1830)

- *Distribution* : India (Himachal Pradesh,, Uttaranchal and West Bengal), Celebes, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, China, Japan, Korea and Australia.
- *Remarks* : Distributed in the Oriental and Australian regions, this species has been collected for the first time from North-west India.

Lucilia (Luciliella) papuensis Macquart, 1842

- *Distribution* : India(Chandigarh, Himachal Pradesh and Uttaranchal), Borneo, Celebes, China, Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam, Japan, Korea, Pacific Islands and Australia.
- *Remarks* : Distributed in the mountaneous areas in North-west India (Himachal Pradesh and Uttaranchal) this species is very closely related to *Lucilia* (*Luciliella*) *bazini* Seguy.

Lucilia (s. str.) illustris (Meigen, 1826)

- *Distribution* : India (Haryana, Himachal Pradesh, Punjab, Uttaranchal), Myanmar, China, North America, Australia and Palaearctic region.
- *Remarks* : Abundantly distributed in the Oriental, Palaearctic and Nearctic regions, *Lucilia illustris* is more commonly available in urban/suburban areas (Anderson, 1995). According to Dasgupta and Roy (1969), the females of this species do not oviposit on living animals and the fly prefers to breed on carcasses. Nuorteva *et al.* (1967) and Nuorteva (1977) used this species as a forensic indicator. This is the only Indian species belonging to the subgenus *Lucilia* (s. str.).

Lucilia* (*Caesariceps*) *porphyrina (Walker, 1856)

- *Distribution* : India (Assam, Chandigarh, Himachal Pradesh, Jammu and Kashmir, Punjab and Uttaranchal), Indonesia, Malaysia, Nepal, Philippines, Sri Lanka, Taiwan, Thailand, China, Japan, Papua New Guines and Australia.
- *Remarks* : This species is closely allied to other Indian species belonging to the subgenus *Caesariceps i.e. Lucilia* (*Caesasriceps*) *ampullacea ampullacea* Villeneuve. Large number of specimens can be collected easily from decaying carrion.

Lucilia* (*Caesariceps*) *ampullacea ampullacea Villeneuve, 1922

- *Distribution* : India (Chandigarh, Uttaranchal and West Bengal), Algeria, China, Europe, Japan, Korea and Australia.
- *Remarks* : This subspecies is distributed in the Oriental, Palaearctic and Australian regions. The other subspecies of *ampullacea* is known only from the Palaearctic part of China.

Lucilia* (*Phaenicia*) *sericata (Meigen, 1826)

- *Distribution* : India (Chandigarh, Haryana, Punjab, Uttaranchal), Cosmopolitan.
- *Remarks* : Commonly called the Australian sheep blow fly, *L. sericata* has a worldwide distribution. It is a major myiasis producing fly and has considerable economic importance. According to Denno & Canthran (1975), it is attracted towards dead bodies during earlier stages of decomposition. Nuorteva *et al.* (1967) and Nuorteva (1977) used it as forensic indicator in several cases.

Lucilia* (*Phaenicia*) *cuprina (Wiedemann,, 1830)

- *Distribution* : India (Chandigarh, Haryana, Rajasthan, Uttaranchal, thoughtout India), Indonesia, Malayasia, Nepal, Pakistan, Thailand, Laos, China, Japan, Korea, Australia, Pacific Islands, Madagascar, Mauritius and many parts of Nearctic and Neotropical regions.
- *Remarks* : *L.* (*Phaenicia*) *cuprina* is closely related *L.* (*Phaenicia*) *sericata* (Meigen) in general morphology and chaetotaxy. This species also has world wise distribution and is responsible for causing myiasis in domestic animals.

Polleniopsis taxopei (Senior-White, 1926)

- *Distribution* : India (Chandigarh), Dutch East Indies, Indonesia and Philippines.
- *Remarks* : This is the only species belonging to the genus *Polleniopis* collected during the present studies known from several countries of the Orient. It was first of all recorded from India by Panjni & Gera (1983).

Paradichosia pusilla indica (Kurahashi, 1970)

- *Distribution* : India (Uttaranchal).

- *Remarks* : This subspecies was reported by Kurahashi (1970) and he separated it from other 2 subspecies of *P. pusilla*. However, the present authors believe that *P. pusilla indica* should be given the status of an independent species because of hairy eyes which are bare in other subspecies. Because the holotypes could not be studied, it is being considered as subspecies in the present investigation.

Paradichosia abdominalis Malloch, 1931

- *Distribution* : India (Himachal Pradesh, Uttaranchal) and Malaysia.
- *Remarks* : In India, this species is known only from Mussoorie in Uttaranchal and Dalhousie in Himachal Pradesh.

Paradichosia scutellata Senior-White, 1923

- *Distribution* : India (Himachal Pradesh, Uttaranchal, West Bengal), Malaysia, Myanmar, Nepal and China.
- *Remarks* : This species has been recorded from the North-West India for the first time. It is very closely related to a Japanese species *P. tsukamotoi* (Kano) & Kurahashi (1965) even considered the latter as a junior synonymn of *P. scutellata*. However, Kano & Shinonaga (1968) considered them as good species because of differences in eyes which have few microscopic hairs in *P. tsukamotoi* whereas they are completely hairy in *P. scutellata*.

Calliphora vicina Robineau-Desvoidy, 1830

- *Distribution* : India (Chandigarh, Haryana, Himachal Pradesh, Punjab, Uttaranchal, Sikkim, West Bengal), Egypt, Europe, China, Japan, Mongolia, Saudi Arabia, South Africa, Australia, New Zealand and Nearctic region.
- *Remarks* : This species is widely distributed in the Oriental, Australian, Palaearctic and Nearctic regions. They are usually found in urban, suburban areas and enter houses during the cooling seasons (Anderson, 1995). Adults breed in dead decaying organic matter including carrion and excreta. It is typically a winter fly not available in the plains during hot summer months. It is a very good forensic indicator and has been put to this use in several cases.

Calliphora vomitoria (Linnaeus, 1758)

- *Distribution* : India (Chandigarh, Himachal Pradesh, Punjab, Sikkim, Uttaranchal, West Bengal), Philippines, Taiwan, Afganistan, China, Europe, Japan and North America.
- *Remarks* : Having similar distribution like *C. vicina* Robineau-Desvoidy, this species is easily differentiated from other species because of the presence of 3 supra-alars and 3 lateroscutellars. This species also favours shaddy areas (Mihalyi, 1965) and according to MacLeod & Dommely (1957) it is more tropical than *C. vicina*. It is typically a saprophagous fly easily collected from decaying carrion.

Calliphora pattoni Aubertin, 1931

- *Distribution* : India (Assam, Chandigarh, Jammu & Kashmir, Himachal Pradesh, West Bengal, Meghalaya), Myanmar, Nepal, Taiwan and China.
- *Remarks* :This species is unique among the Indian species because of presence of completely black prothoracic spiracle. According to Senior-White *et al.* (1940), it is larviparous though not much is known about its life history.

Calliphora loewi Enderlein, 1903

- *Distribution* : India (Uttaranchal), Japan, Mongolia and entire Europe.

- *Remarks* : *C. loewi* was reported from India for the first time by Sidhu & Singh (2002). According to Kano & Shinonaga (1968) this species is available generally in the high mountaneous areas. It is a rare species and only 3 specimens could be collected during the present studies.

Bengalia hastativentris Senior-White, 1923

- *Distribution* : India (Delhi) and Sri Lanka.
- *Remarks* : This species differs from other species being included in this work on the basis of the sub-alar knob. So far this species is known in India only from Delhi.

Bengalia jejuna (Fabricius, 1794)

- *Distribution* : India : (Kerala, Uttarachal), Celebes, Malaysia, Philippines, Sri Lanka.
- *Remarks* : There has been confusion about the identity of this species. The interpretation given by James (1977) is being followed in the present work and accordingly it agreed that Senior-White *et al.* misidentified *B. lateralis* Macquart as *B. jejuna* Fabricius.

Bengalia xanthopyga Senior-White, 1924

- *Distribution* : India (Himachal Pradesh, Uttaranchal), Indonesia, Malaysia, Philipinnes and Singapore.
- *Remarks* : This species is closely related to *B. escheri* Bezzi and *B. lateralis* Macquart.

Morinia argenticincta (Senior-White, 1923)

- *Distribution* : India (Uttaranchal), Nepal and Japan.
- *Remarks* : This is the only species under the genus *Morinia* known from India. It has been listed under the genus *Pollenia* Robineau-Desvoidy by James (1977) and Schumann (1986).

Pollenia rudis (Fabricius, 1974)

- *Distribution* : India (Himachal pradesh, Jammu and Kashmir), Nepal, Pakistan, entire Europe, USA and Canada.
- *Remarks* : This species is widely distributed in the Oriental, Palaearctic and Nearctic regions is characterized by having a strong facial carina.

Polenia townsendi Senior-White *et al.* 1940

- *Distribution* : India (Himachasl Pradesh).
- *Remarks* : This species is known only from North-western India. Originally this species was named *testacea* that was found to be pre-occupied and hence Senior-White *et al.* (1940) named it as *townsendi.*

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