

CHECKLIST OF TEREBRANTIA (THYSANOPTERA: INSECTA) OF DELHI

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ABSTRACT

Eighty-six named species of the suborder Terebrantia (Thysanoptera), in 51 genera and three families are listed along with their synonymies found in Delhi with many species still waiting description. The family-wise breakup being Aeolothripidae with three species in two genera, Stenurothripidae with a single species and Thripidae with 82 species in 48 genera. Eight species are being reported as new to Delhi.

KEYWORDS

Checklist, Delhi, host plant, new record, Terebrantia, Thysanoptera

Ramakrishna Ayyar (1940) was, probably, the first to start taxonomy of these little insects in India. He along with V. Margabandhu recorded 232 species of Thysanoptera from India in their catalogue which was published in 1940. Professor T.N. Ananthakrishnan is the most important worker who actually gave speed to the taxonomy of Indian Thysanoptera. Ananthakrishnan and Sen (1980) provided keys to the 647 (260 in Terebrantia and 387 in Tubulifera) species from India. Bhatti (1990) in his catalogue of insects of Terebrantia from the Indian subcontinent recorded 290 species in 124 genera in five families.

The first record of Thysanoptera from Delhi was by Singh (1942) who reported *Aeolothrips fasciatus*, a Terebrantian, from Delhi. His specimens probably represent *Coleothrips collaris*, a species that was subsequently definitively identified from Delhi (Bhatti, 1964).

A list of the Thysanoptera of Delhi was first provided by Bhatti (1997), which include 90 species of Thysanoptera (70 species in 49 genera of Terebrantia and 20 species in 18 genera of Tubulifera).

Bhatti (1997) overlooked two species, which were reported from Delhi before 1997. These species are *Dichromothrips corbettii* (Priesner, 1936) reported by Mound (1976) on orchid imported from Thailand and *Thrips speratus* Strassen, 1978 reported by Bhatti (1990).

Bhatti *et al.* (1999) reported *Neohydatothrips gracilipes* (Hood, 1924) from Delhi and described a new species *Thrips chandni* from Delhi (Bhatti, 1999). *Neohydatothrips samayunkur* (Kudô, 1995) is recently reported as new to India from six states including Delhi by Bhatti *et al.* (2003). Kumar *et al.* (2005) reported three species of Terebrantia as new to India, all the three species were collected from Delhi.

The present study comprises 86 species of Terebrantia in 51 genera belonging to three families: Aeolothripidae, two genera (with 3 species), Stenurothripidae with a single species and Thripidae (48 genera with 82 species).

Eight species are newly recorded from Delhi. These are: *Bathrips melanicornis*, *Brevithrips tumiceps*, *Holarthothrips indicus*, *Sorghothrips fuscus*, *Thrips carthami*, *Thrips coloratus*, *Thrips florum*, and *Thrips garuda*.

Host plant relationship

The pattern of host utilization amongst the species of a particular group of phytophagous insects most probably reflects, in some way, the ecological and evolutionary strategies adopted by that lineage. Some groups have been, more or less, constrained during their evolutionary history and are associated only with particular group of plants, whereas other groups are coupled with a varied array of plants. Thus, it is imperative to know the host plant of a species in order to study its biology and to carry out any other biological experiments. Little is known about host plant relationship of Delhi Terebrantia, many species being known from too few specimens for any serious information to be available on their host plants and seasonality.

Most of the biologists describe a species as it has been found on such-and-such plant or plants without any indication of true host plant. This information is important from the point of where a species lives, but does not provide insight into its breeding preferences. Further, it has been noticed in most of the publications that such-and-such species is polyphagous without any information regarding the host plant in different seasons and different geographical areas.

Members of genus *Scolothrips* and *Coleothrips* are known as obligate predators and facultative predators, respectively. All the three species of *Scolothrips* from India are found in Delhi, but nothing is known about their host plants except that they are collected in very few numbers from members of family Poaceae. Whether these species of *Scolothrips* breed in grasses or they have been transported readily by winds is not clear. *Coleothrips* is represented by two species in Delhi (*Coleothrips collaris* & *C. mongolicus*) out of six in India. *Coleothrips mongolicus* (Pelikán, 1985) has been found breeding in the flowers of *Matthiola incana* (Cruciferae) as we have collected adults and immatures for two years but host plant of *Coleothrips collaris* is still not clear.

Frankliniella schultzei, which is one of the species that are vectors of Tospoviruses in India and worldwide, and has also been reported to be pollinator of chillies and pigeon pea, has been collected from 23 different plants in Delhi. Unfortunately, the actual host where it breeds it still not known from Delhi as well as from India.

Manuscript 1536; © ZOO; Date of publication 21 May 2007
Received 10 March 2006; Revised received 25 November 2006;
Finally accepted 20 April 2007

CHECKLIST

This checklist is the result of investigations on material collected in field studies over the past six years as well as study of material already available from collections made in Delhi during the past four decades. Specimens of all of these species have been studied, and many of the species have been freshly collected during the present investigation.

I. Family: Aeolothripidae Uzel, 1895

- I.a. Genus *Coleothrips* Haliday, 1836
 1. *Coleothrips collaris* (Priesner, 1919)
 2. *Coleothrips mongolicus* (Pelikán, 1985)
 I. b. Genus *Indothrips* Bhatti, 1967
 1. *Indothrips bhushani* Bhatti, 1967

II. Family: Stenurothripidae Bagnall, 1923

- II. a. Genus *Holarthrotrips* Bagnall, 1927
 1. *Holarthrotrips indicus* Bhatti & Anan, 1978

III. Family: Thripidae Stephens, 1829**III. A. Subfamily: Dendrothripinae Priesner, 1925**

- III.A.a. Genus *Dendrothrips* Uzel, 1895
 1. *Dendrothrips cameroni* Priesner, 1965
 2. *Dendrothrips punctatus* zur Strassen, 1968
 III.A.b. Genus *Pseudodendrothrips* Schmutz, 1913
 1. *Pseudodendrothrips albana* Bhatti, 1997
 2. *Pseudodendrothrips suvarna* Bhatti, 1997

III.B. Subfamily: Panchaethripinae Bagnall, 1912

- III.B.a. Genus *Astrothrips* Karny, 1921
 1. *Astrothrips stannardi* Bhatti, 1967
 III.B.b. Genus *Brevithrips* Bhatti, 1967
 1. *Brevithrips tumiceps* (Karny, 1923)
 III.B.c. Genus *Caliothrips* Daniel, 1904
 1. *Caliothrips graminicola* (Bag. & Cam., 1932)
 2. *Caliothrips indicus* (Bagnall, 1913)
 3. *Caliothrips luckmanni* Wilson, 1975

- III.B.d. Genus *Phibalothrips* Hood, 1918
 1. *Phibalothrips peringueyi* (Faure, 1925)

- III.B.e. Genus *Rhipiphorothrips* Mor., 1913
 1. *Rhipiphorothrips cruentatus* Hood, 1919

III.C. Subfamily: Sericothripinae Karny, 1921

- III.C.a. Genus *Hydatothrips* Karny, 1913
 1. *Hydatothrips atactus* Bhatti, 1973
 2. *Hydatothrips ramaswamiahii* Priesner, 1926
 III.C.b. Genus *Neohydatothrips* John, 1929
 1. *Neohydatothrips gracilipes* (Hood, 1924)
 2. *Neohydatothrips raniae* (Bhatti, 1967)
 3. *Neohydatothrips samayunkur* (Kudó, 1995)
 III.C.c. Genus *Pyrothrips* Bhatti, 1973
 1. *Pyrothrips boerhaaviae* (Sesh. & Anan., 1954)

III.D. Subfamily: Thripinae Karny, 1921

- III.D.a. Genus *Agrostothrips* Hood, 1954
 1. *Agrostothrips meridionalis* (Bagnall, 1927)
 III.D.b. Genus *Ajothrips* Bhatti, 1977
 1. *Ajothrips medius* Bhatti 1997
 III.D.c. Genus *Alathrips* Bhatti, 1970
 1. *Alathrips roonwali* (Bhatti, 1963)
 III.D.d. Genus *Anaphothrips* Uzel, 1895
 1. *Anaphothrips sudanensis* Trybom, 1911
 III.D.e. Genus *Anascirtothrips* Bhatti, 1961

1. *Anascirtothrips arorai* Bhatti, 1967
 III.D.f. Genus *Ayyaria* Karny, 1927
 1. *Ayyaria chaetophora* Karny, 1927
 III.D.g. Genus *Bathrips* Bhatti, 1962
 1. *Bathrips melanicornis* (Shumsher, 1946)
 III.D.h. Genus *Bolacothrips* Uzel, 1895
 1. *Bolacothrips striatopennatus* (Schmutz, 1913)
 III.D.i. Genus *Bregmatothrips* Hood, 1912
 1. *Bolacothrips brachycephalus* (Shumsher, 1942)
 III.D.j. Genus *Ceratothripoides* Bagnall, 1918
 1. *Ceratothripoides claratris* (Shumsher, 1946)
 III.D.k. Genus *Chirothrips* Haliday, 1836
 1. *Chirothrips africanus* Priesner, 1932
 III.D.l. Genus *Craspedothrips* zur Strassen, 1966
 1. *Craspedothrips minor* (Bagnall, 1921)
 III.D.m. Genus *Dendrothripoides* Bagnall, 1923
 1. *Dendrothripoides innoxius* (Karny, 1914)
 III.D.n. Genus *Diarthrothrips* Williams, 1915
 1. *Diarthrothrips nimbus* (Anan., 1965)
 III.D.o. Genus *Dichromothrips* Priesner, 1932
 1. *Dichromothrips corbeti* (Priesner, 1936)
 2. *Dichromothrips indicus* Mound, 1976
 III.D.p. Genus *Eremiothrips* Priesner, 1949
 1. *Eremiothrips varius* (Bhatti, 1967)
 III.D.q. Genus *Exothrips* Priesner, 1939
 1. *Exothrips cephalicus* Bhatti, 1975
 2. *Exothrips deemax* Bhatti, 1975
 3. *Exothrips hemavarna* (Ram. & Marg., 1931)
 4. *Exothrips ormus* Bhatti, 1975
 5. *Exothrips poorva* Bhatti, 1975
 6. *Exothrips redox* Bhatti, 1975
 III.D.r. Genus *Florithrips* Bhatti, 1970
 1. *Florithrips traegardhi* (Trybom, 1911)
 III.D.s. Genus *Foliothrips* Bhatti, 1972
 1. *Foliothrips oratus* Bhatti, 1972
 III.D.t. Genus *Frankliniella* Karny, 1910
 1. *Frankliniella schultzei* (Trybom, 1910)
 III.D. u. Genus *Kurtomathrips* Moulton, 1927
 1. *Kurtomathrips morillii* Moulton, 1927
 III.D.v. Genus *Megalurothrips* Bagnall, 1915
 1. *Megalurothrips peculiaris* (Bagnall, 1918)
 2. *Megalurothrips usitatus* (Bagnall, 1913)
 III.D.w. Genus *Microcephalothrips* Bagnall, 1926
 1. *Microcephalothrips abdominalis* (Crawford, 1910)
 III.D.x. Genus *Mycterothrips* Trybom, 1970
 1. *Mycterothrips ricini* (Shumsher, 1946)
 III.D.y. Genus *Organothrips* Hood, 1940
 1. *Organothrips indicus* Bhatti, 1974
 III.D.z. Genus *Parexothrips* Priesner, 1965
 1. *Parexothrips tenellus* (Priesner, 1950)
 III.D.aa. Genus *Plutonothrips* Priesner, 1933
 1. *Plutonothrips cus* (Bhatti, 1967)
 III.D.ab. Genus *Priesneriella* Ananthakrishnan, 1964
 1. *Priesneriella oneillae* Ananthakrishnan, 1964
 III.D.ac. Genus *Psilothrips* Hood, 1927
 1. *Psilothrips indicus* Bhatti, 1967
 III.D.ad. Genus *Rhamphothrips* Karny, 1913
 1. *Rhamphothrips jasmineae* (Bhatti, 1977)
 2. *Rhamphothrips parviceps* (Hood, 1919)
 III.D.ae. Genus *Salpingothrips* Hood, 1935
 1. *Salpingothrips hoodi* Ananthakrishnan, 1969
 III.D.af. Genus *Scirtothrips* Shull, 1909
 1. *Scirtothrips dorsalis* Hood, 1919

2. *Scirtothrips oligochaetus* (Karny, 1927)
 3. *Scirtothrips mangiferae* Priesner, 1932

- III.D.ag. Genus *Scolothrips* Hinds, 1902
 1. *Scolothrips asura* Ram. & Marg., 1931
 2. *Scolothrips rhagebianus* Priesner, 1950
 3. *Scolothrips tenuipennis* zur Strassen, 1965

- III.D.ah. Genus *Sorghothrips* Priesner, 1936
 1. *Sorghothrips fuscus* Ananthakrishnan, 1965
 2. *Sorghothrips jonnaphilus* (Ramakrishna, 1928)

- III.D.ai. Genus *Stenchaetothrips* Bagnall, 1926
 1. *Stenchaetothrips biformis* (Bagnall, 1913)
 2. *Stenchaetothrips faurei* (Bhatti, 1962)
 3. *Stenchaetothrips indicus* (Ram. & Marg., 1931)

- III.D.aj. Genus *Tenothrips* Bhatti, 1967
 1. *Tenothrips frici* (Uzel, 1895)

- III.D.ak. Genus *Thrips* Linnaeus, 1758
 1. *Thrips apicatus* Priesner, 1934
 2. *Thrips carthami* Shumsher, 1946
 3. *Thrips chandni* Bhatti, 1999
 4. *Thrips coloratus* Schmutz, 1913
 5. *Thrips flavus* Schrank, 1776
 6. *Thrips florum* Schmutz, 1913
 7. *Thrips garuda* Bhatti, 1980
 8. *Thrips hawaiiensis* (Morgan, 1913)
 9. *Thrips orientalis* (Bagnall, 1915)
 10. *Thrips palmi* Karny, 1925
 11. *Thrips speratus* zur Strassen, 1978
 12. *Thrips subnudula* (Karny, 1927)
 13. *Thrips tabaci* Lindeman, 1889

- III.D.al. Genus *Tusothrips* Bhatti, 1967
 1. *Tusothrips sumatrensis* (Karny, 1925)

Synonymy and Comments**I. Family: Aeolothripidae Uzel, 1895**

1895. Aeolothripidae Uzel, Monogr. Ord. Thysanopt., pp. 27, 42, 62.

In India there are 15 species in 9 genera (Bhatti, 1990: 207). *Aduncothrips* Ananthakrishnan, 1966 (1 species), *Allelothrips* Bagnall, 1932 (1 species), *Coleothrips* Haliday, 1836 (6 species), *Franklinothrips* Back, 1912 (1 species), *Gelothrips* Bhatti, 1967 (1 species), *Indothrips* Bhatti, 1967 (1 species), *Mymarothrips* Bagnall, 1928 (2 species), *Orothrips* Moulton, 1907 (1 species), *Streothrips* Bhatti, 1971 (1 species). 3 species in 2 genera are found in Delhi, *Coleothrips collaris* (Priesner, 1919), *Coleothrips mongolicus* (Pelikán, 1985), and *Indothrips bhushani* Bhatti, 1967.

I. a. Genus *Coleothrips* Haliday
 1836. *Aeolothrips* subgenus *Coleothrips* Haliday, Ent. Mag., 3 (5): 451.
 1988. *Coleothrips* Bhatti, Zoology, 1(2): 115–116.

1. *Coleothrips collaris* (Priesner)
 1919. *Aeolothrips fasciatus* var. *collaris* Priesner, Sitz.-ber. Akad. Wiss. Wien, (1), 128(2–3): 119–120.
 1988. *Coleothrips collaris* Bhatti, Zoology, 1(2): 115.
 2. *Coleothrips mongolicus* (Pelikán)
 1985. *Aeolothrips mongolicus* Pelikán, Ann. Hist.-Nat. Mus. Natn. Hungarici, 77: 128–129.
 1988. *Coleothrips mongolicus* Bhatti, Zoology, 1(2): 116.

I. b. Genus *Indothrips* Bhatti
 1967. *Indothrips* Bhatti, Thysanoptera Nova Indica, p. 2.

1. *Indothrips bhushani* Bhatti
 1967. *Indothrips bhushani* Bhatti, Thysanoptera Nova Indica, p. 2–3.

II Family: Stenurothripidae Bagnall

1923. Stenurothripidae Bagnall, Ent. Mon. Mag., (3)

9: 37.

The family Stenothripidae includes 2 species in 1 genus from India. (Bhatti 1990: 207): *Holarthrotrips indicus* Bhatti & Ananthkrishnan 1978, *H. jambudvipae* (Ramakrishna 1928). Only *Holarthrotrips indicus* is found in Delhi.

II.a. Genus *Holarthrotrips* Bagnall1927. *Holarthrotrips* Bagnall, Ann. Mag. Nat. Hist., (9)20: 562–563.1. *Holarthrotrips indicus* Bhatti & Anan.1978. *Holarthrotrips indicus* Bhatti & Ananthkrishnan, Entomon, 3(2): 229–230.**III. Family: Thripidae Stephens 1829**

1829. Thripidae Stephens, Syst. Cat. Brit. Ins., p. 363.

Family Thripidae includes 267 species in 111 genera from India (Bhatti 1990: 208). Eighty-two species in 48 genera are found in Delhi within 4 subfamilies (Bhatti 1990: 208): Dendrothripinae, Sericothripinae, Panchaethripinae, and Thripinae.

III.A. Subfamily: Dendrothripinae Priesner 1925

1925. Dendrothripini Priesner, Konowia, 4(3–4): 144. 1948.

Dendrothripinae Morison, London Natur. Suppl., 59(2): 41, 50.

In India, 5 genera with 19 species are found (Bhatti 1990: 208). In Delhi, 2 genera with 4 species are found: *Dendrotrips* (2 species), *Pseudodendrotrips* (2 species).

III.A.a. Genus *Dendrotrips* Uzel1895. *Dendrotrips* Uzel, Monogr. Ord. Thysanopt., p. 159.1. *Dendrotrips cameroni* Priesner1965. *Dendrotrips cameroni* Priesner, Publ. Inst. Desert Egypte (1960), 13: 282. Sudan.2. *Dendrotrips punctatus* zur Strassen1968. *Dendrotrips punctatus* zur Strassen, Senckenbergiana biol., 49(1): 28.III.A.b. Genus *Pseudodendrotrips* Schmutz 19131913. *Pseudodendrotrips* Schmutz, Sitz.-ber. Akad. Wiss. Wein. math.-naturw. Kl., Abt. I, 122(7): 998–999.1. *Pseudodendrotrips albana* Bhatti1997. *Pseudodendrotrips albana* Bhatti, Zool. Surv. India State Fauna Series 6, Fauna of Delhi, pp. 296–297.2. *Pseudodendrotrips suvarna* Bhatti 19971997. *Pseudodendrotrips suvarna* Bhatti, Zool. Surv. India State Fauna Series 6, Fauna of Delhi, pp. 297–299.**III.B. Subfamily: Panchaethripinae Bagnall 1912**

1912. Panchaethripinae Bagnall, Rec. Indian Mus., 7(3): 258.

In India 18 genera with 31 species are found (Bhatti 1990: 208). In Delhi this subfamily comprises 5 genera with 7 species: *Astrotrips* (1 species), *Brevithrips* (1 species), *Caliothrips* (3 species), *Phibalothrips* (1 species), and *Rhipiphorotherips* (1 species).

III.B.a. Genus *Astrotrips* Karny1921. *Astrotrips* Karny, Treubia, 1(4): 215, 239.1. *Astrotrips stannardi* Bhatti1967. *Astrotrips stannardi* Bhatti, Thysanoptera Nova Indica, pp. 7–8.III.B.b. Genus *Brevithrips* Bhatti1967. *Brevithrips* Bhatti, Thysanoptera Nova Indica, p. 8.1. *Brevithrips tumiceps* (Karny)1923. *Astrotrips tumiceps* Karny, Treubia, 3(3–4): 331–334.1967. *Brevithrips tumiceps* Bhatti, Thysanoptera Nova Indica, p. 8.III.B.c. Genus *Caliothrips* Daniel1904. *Caliothrips* Daniel, Ent. News, 15(9): 296.1. *Caliothrips graminicola* (Bag. & Cam.)1932. *Hercothrips graminicola* Bagnall and Cameron, Ann. Mag. Nat. Hist., 10(10): 417–419.1957. *Caliothrips graminicola* Faure, Jour. Entomol. Soc. S. Africa, 20(1): 79–88.2. *Caliothrips indicus* (Bagnall)1913. *Heliothrips indicus* Bagnall, Ann. Mag. Nat. Hist., (8)12: 291.1956. *Caliothrips indicus* Ananthkrishnan, A survey of our present knowledge of Indian Thysanoptera, p. 3. Amar Press: Madras.3. *Caliothrips luckmanni* Wilson1975. *Caliothrips luckmanni* Wilson, Mem. Amer. Ent. Inst., 23: 72 (in key to species), 86–88.III.B.d. Genus *Phibalothrips* Hood1918. *Phibalothrips* Hood, Mem. Queensland Mus., 6: 125.1. *Phibalothrips peringueyi* (Faure)1925. *Reticulothrips peringueyi* Faure, S. Afr. J. Nat. Hist., 5: 145–150.1937. *Phibalothrips peringueyi* Jacot-Guillarmodi, Publ. Univ. Pretoria, (II) 3: 10.III.B.e. Genus *Rhipiphorotherips* Morgan1913. *Rhipiphorotherips* Morgan, Proc. U. S. Nat. Mus., 46(2008): 17.1. *Rhipiphorotherips cruentatus* Hood1919. *Rhipiphorotherips cruentatus* Hood, Insec. Inscit. Menstr., 7(4–6): 94–96.**III.C. Subfamily: Sericothripinae Karny 1921**

1921. Sericothripinae Karny, Treubia, 1(4): 236, 237. Eleven species in six genera are found in India (Bhatti 1990: 208): *Corcithrips* Bhatti 1973 (1 species), *Elbuthrips* (1 species), *Hydatothrips* Karny 1913 (6 species), *Kazinothrips* Bhatti 1973 (1 species), *Neohydatothrips* John 1929 (1 species), *Pyrothrips* Bhatti 1973 (1 species).

Six species in three genera are found in Delhi: *Hydatothrips* Karny 1913 (2 species), *Neohydatothrips* John 1929 (3 species), *Pyrothrips* Bhatti 1973 (1 species).

III.C.a. Genus *Hydatothrips* Karny1913. *Hydatothrips* Karny, Wiss. Ergeb. Zentral-Africa-Exped., 1907–1908, Zoologie, 4(10): 281.1. *Hydatothrips atactus* Bhatti1973. *Hydatothrips atactus* Bhatti, Oriental Ins., 7(3): 418–432.2. *Hydatothrips ramaswamiahii* Priesner1926. *Sericothrips ramaswamiahii* Priesner, Treubia, 8: 51.1973. *Hydatothrips ramaswamiahii* Bhatti, Oriental Ins. 427–432.III.C.b. Genus *Neohydatothrips* John1929. *Neohydatothrips* John, Bull. et Ann. Soc. Ent. Belgique, 69: 33–34.1. *Neohydatothrips gracilipes* (Hood)1924. *Sericothrips gracilipes* Hood, Canadian Ent., 56(6): 149–150.1987. *Neohydatothrips gracilipes* Sakimura, Plant Disease, 71: 507.2. *Neohydatothrips ranae* (Bhatti)1967. *Sericothrips ranae* Bhatti, Thysanoptera Nova Indica, pp. 9–10.1973. *Neohydatothrips ranae* Bhatti, Oriental Ins., 7(3): 435.3. *Neohydatothrips samayunkur* (Kudô)1995. *Hydatothrips* (*Neohydatothrips*) *samayunkur* Kudô, Appl. Ent. Zool., 30: 169–176.1999. *Neohydatothrips samayunkur* Nakahara, Proc. Ent. Soc. Wash., 101(2): 458–459.III.C.c. Genus *Pyrothrips* Bhatti1973. *Hydatothrips* subgenus *Pyrothrips* Bhatti, Oriental Ins., 7(3): 424.1990. *Pyrothrips* Bhatti, Zoology, 2(4): 247.1. *Pyrothrips boerhaaviae* (Sesh. & Anan.)1954. *Sericothrips* (*Hydatothrips*) *boerhaaviae* Seshadri & Ananthkrishnan, Indian J. Ent., 16(3): 210–212.1990. *Pyrothrips boerhaaviae* Bhatti, Zoology, 2(4): 247.**III.D. Subfamily: Thripinae Karny 1921**

1921. Thripinae Karny, Treubia, 1(4): 215, 236, 239.

This subfamily includes most of the genera of family Thripidae, and is most difficult to define. It can be recognized by the absence of characters, which distinguish the other subfamilies. In India, there are 206 species in 86 genera (Bhatti 1990: 208). In Delhi, 38 genera with 65 species are found.

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ACKNOWLEDGEMENT

We are grateful to Dr. V.V. Ramamurthy, Principal Scientist (Division of Entomology, IARI, New Delhi) for his moral support, suggestions and introducing us to *Zoos' Print Journal*.

