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An Updated checklist of mosquito fauna of Andaman and Nicobar groups of islands with note on endemic mosquito Fauna

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Abstract

A revised and updated checklist of mosquito fauna of Andaman & Nicobar Islands is prepared in view to present an elaborative taxonomic status of Culicidae fauna in these islands in accordance with recent taxonomic changes. In present study, in light of recent taxonomical changes, mosquito fauna in these islands are now represented by 109 species in 25 genera and 24 subgenera under two subfamily. The Subfamily Anophelinae is represented by 23 species in one genus and two subgenera and second Subfamily Culicinae comprises of 86 species in 09 Tribes and 24 genera. This checklist can be treated as revised updated list of mosquito fauna in these islands, but it should not be treated as complete because a much more comprehensive study of mosquito fauna in some remote islands of Andaman and Nicobar group is still needed to complete the list.

Keywords: Updated Checklist, Mosquito, Diptera, Culicidae, Andaman and Nicobar

1. Introduction

Mosquitoes are long legged slender insects with a long proboscis and clothing of scales on most of their body parts. Adult mosquitoes generally feed on plant sap; their larval and pupal stages are totally dependent on aquatic habitat for their development as they feed on suspended particulate matter and microorganism that they get from water. The adult female mosquitoes are sap feeders yet regularly feed on blood meal from warm blooded animals including humans. Female mosquitoes, in order to meet their additional Protein demand during breeding periods for their egg development becomes sanguivorous and due to their blood sucking behavior they become carriers of many tropical diseases. Mosquitoes are medically important insects group for mankind due to their ability to transmit pathogens causing human malaria, dengue, filariasis, viral encephalitis, and other deadly diseases. They are also known for being irritating biting insects. Mosquitoes, Family Culicidae comprises a monophyletic taxon [21, 25, 30] belongs to Order Diptera. Culicidae is a large and abundant insect family distributed throughout tropical and temperate regions and well beyond arctic circle [22]. There are 3543 species of mosquitoes under two Subfamily and 112 genera are reported worldwide [23]. Mosquito fauna in India is represented by 404 Species under two Subfamilies, 50 genera and 41 subgenera [28].

2. Materials and Methods

Andaman and Nicobar islands are long chain of submarine mountain range between 6°45' N and 13°41' N latitudes and 92°10'E and 93°57' E longitudes in Bay of Bengal. In these islands study on mosquito fauna was initiated by Christophers (1912) [4] in his legendary work Fauna of India: Diptera in which eight anopheline mosquito species is reported by him in these islands, some more work on culicid fauna is done by Covell (1927) [5], Barraud (1934) [1], Basu (1958) [2], Krishnan(1967) [12]. Later on, Nagpal and Sharma (1982) [10] have reported 24 species under five genera from these islands. In year 1996 Kumar and Kumar [13, 14] Reported 57 mosquito Species in 10 genera. Rajavel and Natrajan [17] in year 2006 updated the mosquito fauna of Andaman and Nicobar Island to 107 Species in 24 genera and 23 Subgenera. Out of 107 Species 23 species was reported first time from these islands by him. An updated check list of mosquito fauna of Andaman and Nicobar islands is need of time especially in light of recent advances in molecular biology, taxonomy and changes in classification of Tribe Adeni [18-20]. The reclassification in tribe Adeni resulted in major changes in generic placement of species with addition of some new genera and elevation of few subgenera to genus level in

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classification.

Different published data on mosquito fauna of Andaman and Nicobar Islands and various online resources on mosquito fauna were reviewed in light of recent taxonomical changes in culicid taxonomy along with some field collection and observation of mosquito's fauna in Andaman; information was collected and updated checklist of mosquito fauna of Andaman and Nicobar Island is prepared.

3. Results and Reviews

On the review of various earlier published materials and online resources in light of recent taxonomical changes in culicidae, mosquito fauna of Andaman and Nicobar Islands now is represented by 109 species in 09 tribes, 25 Genus and 24 subgenera. which represents 26.98 % of Indian Mosquito Fauna. Among these 109 species, 108 species are reported from Andaman group of island, 55 species reported only from Nicobar group of islands and 54 Species were reported from both areas out of which two Species are found to be endemic to these Islands

3.1 Mosquito's genera reported in Andaman and Nicobar islands

- 1) **Anopheles:** In Andaman and Nicobar Islands Subfamily: Anophelinae has one Genus, Anopheles which is represented by 23 species in two subgenera i.e. Anopheles and cilia, having 08 and 15 species respectively
- 2) **Aedeomyia:** In Tribe Aedomyiini only one species in one Genus is reported from India. Tyson 1970 [29] has reported the presence of *Aedeomyia (Aedeomyia) catastica* Knab, 1909 from Andaman Islands, which is not mentioned in earlier culicid checklist of this region
- 3) **Aedimorphus:** Earlier Subgenus of Genus Aedes is now elevated to generic rank, in these islands it is represented by 04 species which were earlier placed in genus Aedes. Now representation of genus Aedes is lost in these islands after update in classification
- 4) **Armigers:** The genus Armigers is represented by 04 species in one subgenus only from these islands.
- 5) **Brucheharrisonius:** Genus Brucheharrisonius is elevated from subgenus of genus Ochlerotatus (Reinert, 2003). It is represented by only one Species in Andaman and Nicobar Islands this genus was earlier placed as subgenus of genus Ochlerotatus. Hence representation of genus Ochlerotatus is lost in these islands after update
- 6) **Canraedes:** Genus Canraedes is elevated to generic level from former subgenus of genus Aedes, represented by only one species *Canraedes cancricomus* (Edwards, 1922) in these islands.
- 7) **Downsiomyia:** Downsiomyia as a genus was resurrected from synonymy with Finlaya (Reinert et al. 2006; Reinert and Harbach 2006). This genus is represented by two species only
- 8) **Finlaya:** In earlier classification Finlaya was largest subgenus of Aedes. In India only two species are reported so far. In these islands only one Species *Finlaya flavipennis* Giles, 1904 was first time reported by Rajvel and Natrajan in 2006
- 9) **Fredwardsius:** Only species *Fredwardsius vittatus* (Bigot, 1861) was reported in these islands.
- 10) **Heizamania:** This genus is represented by 02 species in one subgenera.
- 11) **Kenknightia:** Only species *Kenknightia dissimilis*

(Leicester, 1908) was reported in these islands.

- 12) **Lorrainea:** This genus is represented by 02 species only.
- 13) **Neomelaniconion:** Only species *Neomelaniconion lineatopenne* (Ludlow, 1905) reported in these islands
- 14) **Rhinoskusea:** Earlier genus Rhinoskusea was subgenus of genus Ochlerotatus which is now elevated to generic rank. This genus is represented only by 02 species in these islands. In which one species *Rhinoskusea wardi* (Reinert, 1976) was reported as new country record by Rajvel and Natrajan in 2006 from these islands.
- 15) **Stegomyia:** This genus is of high medical importance as most of the member of this genus are vectors of many deadly diseases. In these islands 10 species of genus stegomyia are reported in three subgenera and six species are without any subgeneric Classification. Among these *Stegomyia (Actinothrix) seampi* (Huang, 1974) is endemic to these islands.
- 16) **Verralina:** The genus Verralina is represented by 07 species in three subgenera from these islands.
- 17) **Culex:** The genus Culex is represented by 23 species in five subgenera some species in this genus are vectors of diseases and are medically important. The Species in this genus also forms various species complex which are sometimes morphologically indistinguishable from each other.
- 18) **Lutzia:** This genus is represented by 02 species in one subgenera among 04 species reported from India.
- 19) **Mimomyia:** This genus is represented by only 01 species *Mimomyia (Ingramia) fusca* (Leicester, 1908) in one subgenera.
- 20) **Mansonia:** This genus is represented by 03 species in one subgenera out of 04 species reported from India.
- 21) **Orthopodomyia:** This genus is represented by 03 species without any subgeneric placement.
- 22) **Malaya:** This genus is represented by only 01 species *Malaya genurostris* Leicester, 1908 out of 02 species reported from India.
- 23) **Toxorhynchites:** The species of genus Toxorhynchites are large sized mosquitoes these are also known as Elephant Mosquito due to their large sized body in comparison with other mosquitoes this genus is represented by 02 species in one Subgenera.
- 24) **Tripteroides:** This genus is represented by 03 species in two subgenera.
- 25) **Uranotaenia:** This genus is represented by 07 species in two subgenera of two series out of which *Uranotaenia christopheri* Barraud, 1926 is Endemic to these islands.

3.2 Notes on Endemic Mosquito in Andaman and Nicobar Islands

Earlier authors designated 04 species of mosquitoes i.e *Aedes (Canraedes) cancricomus* (Edwards, 1922); *Culex (Mochthogenes) shrivastavii* Wattal, Kalra and Krishna ; *Uranotaenia christopheri* Barraud, 1926 and *Stegomyia (Actinothrix) seampi* (Huang, 1974) as endemic to these island (Mitra et.al 2010) [16].

Canraedes cancricomus Edwards, 1922

Type locality: Andaman Islands; 1911, breeding in crab holes

Type: Male and Female in British Museum

Distribution: Andaman Islands, Andhra Pradesh, Orissa; India; Indonesia

Taxonomic comments: the species *cancricomus* was originally described by Edwards in the year 1922 in genus

Aedes. Currently *cancricomes* is placed in genus *Canraedes*. Reinert *et al.* 2009 upgraded subgenus *cancraedes* to genus level. The genus *cancraedes* includes 10 species distributed in many countries throughout oriental region. Inclusion of *cancricomes* in subgenus *cancraedes* and upgradation of subgenus to genus level results in revision of the name and the species is Not Endemic to Andaman and Nicobar group of Islands [1, 15, 18, 24].

***Culex foliatus* Burg, 1932**

Synonyms: *Culex chiyutoi* Baisas, 1935

Culex shrivastavii Wattal, Karla & Krishnan 1966

Type locality: Bandoeng, Java

Type: Female in British Museum

Distribution: India (Andaman Isl.), Indonesia, Phillipines, Thiland, South Vietnam, Hong Kong, Makalu.

Taxonomic comments: Originally this species was firstly described in India as *Culex shrivastavii* by Wattal, Karla and Krishnan 1966 as a new species within subgenus *Mochthogenes* from Andaman Islands, however Sirivanakarn, 1972 redescribed this species as synonym to *Culex foliatus* which was originally described by Burg, 1932 in subgenus *Eumelanomyia*. Also distribution of this species is revised as it is recorded from many other countries of South East Asia [26, 31].

Hence the species is Not Endemic to Andaman and Nicobar group of Islands.

***Uranotaenia christopheri* Barraud, 1926**

Type locality: Andaman Islands, 1911(Christophers)

Type: Male and Female in British Museum

Distribution: India (Andaman Islands.)

Taxonomic comments: the genus *Uranotaenia* is only genus of tribe *Uranotaeniini*. It includes 263 species grouped in two subgenera, *Pseudoficalbia* with 142 species and *Uranotaenia* with 121 species. In Andamans 07 species are reported in which *Uranotaenia christopheri* Barraud, 1926 is Endemic in these islands [1, 32]

***Stegomyia (Actinothrix) seampi* (Huang, 1974)**

Type locality: Andaman Islands 1926 (G. Covell)

Type: Female in British Museum

Distribution: India (Andaman Islands.)

Taxonomic comments: The subgenus *Actinothrix* (Reinert *et al.* 2009) includes the species placed in the *Edwadsi* group (3 species) of *Belkin* (1962) and *Edwardsi* subgroup of *Huang* (1777). The species of subgenus *Actinothrix* is known only from Andaman Islands in Bay of Bengal and Santa Cruz Islands in South Pacific?

Comments: From above discussion it is clear that among above four species *Canraedes cancricomes* (Edwards, 1922) and *Culex foliatus*, Burg1932 are reported from other locations also apart from these islands. Now after revision, only two species *Uranotaenia christopheri* Barraud, 1926 and *Stegomyia (Actinothrix) seampi* (Huang, 1974) are only valid endemic mosquito species in these island

3.3 Figure: 1

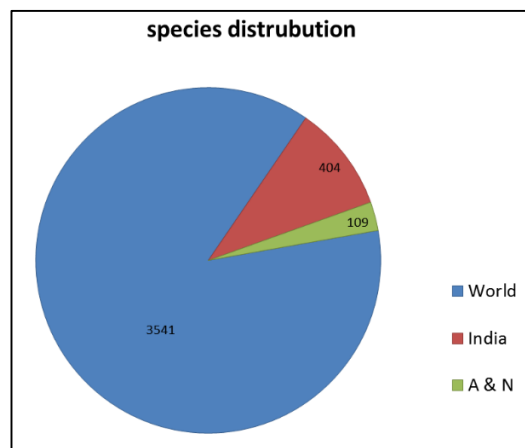


Fig 1: Comparison of mosquito Species in world, India & A & N Islands

3.4 Figure: 2

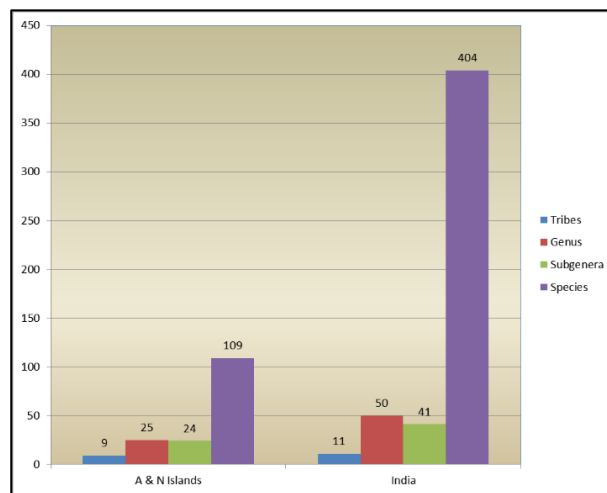


Fig 2: Comparison of India & A & N islands mosquito fauna

Table 1: Comparative account of mosquito Species reported from World, India and Andaman & Nicobar Islands

Subfamily	Tribes	World*		India*		A & N Islands.	
		Genera	Species	Genera	Species	Genera	Species
Anophelinae		3	481	1	63	1	23
Culicinae	Aedeomyiini	1	7	1	2	1	1
	Aedini	81	1253	34	175	14	40
	Culicini	4	796	2	85	2	25
	Culisetini	1	37	1	3	0	0
	Ficalbiini	2	53	2	8	1	1
	Hodgesiini	1	11	1	2	0	0
	Mansoniini	2	82	2	7	1	3
	Orthopodomyiini	1	36	1	5	1	3
	Sebethini	14	429	3	16	2	4
	Toxorhynchitini	1	89	1	9	1	2
	Uranotaeniini	1	267	1	29	1	7
02	11(9 in A&N)	112	3541	50	404	25	109

(*After Tyagi *et al.* 2015) [28]

3.6 Systematic Arrangement

Genera, Sub genera and Species of mosquitoes recorded in A & N Islands

I. Subfamily: **Anophelinae**

(1) **Genus: Anopheles** Meigen, 1818.

(a) Subgenus: **Anopheles** Meigen, 1818

Angusticorn Section

Anopheles Series

Aitkinii group

i) *Anopheles (Anopheles) aitkenii* James, 1903.

ii) *Anopheles (Anopheles) insuleflorum* Swell & Swell de Graaf, 1920.

Lophoscelomyia Series

Asiaticus group

iii) *Anopheles (Anopheles) annandalei* Prashad, 1918.

Laticorn Section

Myzorhynchus Series

Barbirostris group

Barbirostris subgroup

iv) *Anopheles (Anopheles) barbirostris* Van Der Wulp, 1884
Vanus subgroup

v) *Anopheles (Anopheles) barbumbrosus* Strickland & Choudhury, 1927 Hyrcanus group Nigerrimus subgroup

vi) *Anopheles (Anopheles) nigerrimus* Giles, 1900 Umbrosus group Letifer subgroup

vii) *Anopheles (Anopheles) roperi* Reid, 1950 Umbrosus subgroup

viii) *Anopheles (Anopheles) umbrosus* (Theoblad, 1903)

(b) Subgenus: *Cellia* Theoblad 1902

Mezomyia Series

Funestus group

Aconitus subgroup

i) *Anopheles (Cellia) aconitus* Donitz, 1902

ii) *Anopheles (Cellia) varuna* Iyengar, 1924

Neocellia Series

iii) *Anopheles (Cellia) karwari* (James, 1903)

iv) *Anopheles (Cellia) stephensi* Liston, 1901

Annularis group

v) *Anopheles (Cellia) annularis* Van Der Wulp, 1884

vi) *Anopheles (Cellia) philippinensis* Ludlow, 1902

Nivipes Complex

vii) *Anopheles (Cellia) nivipes* (Theoblad, 1903)

Maculatus group

Maculatus subgroup

vii) *Anopheles (Cellia) maculatus* Theoblad, 1901

Neomyzomyia Series

Kochi group

ix) *Anopheles (Cellia) kochi* Donitz, 1901

Leucosphyrus Complex

x) *Anopheles (Cellia) balabacensis* Baisas 1936

Dirus Complex

xi) *Anopheles (Cellia) elegans* (James, 1903)

Tessellatus group

xii) *Anopheles (Cellia) tessellatus* Theoblad, 1901

Pyretophorus Series

xiii) *Anopheles (Cellia) vagus* Donitz, 1902

Subpictus Complex

xiv) *Anopheles (Cellia) subpictus* Grassi, 1899

Sundaicus Complex

xv) *Anopheles (Cellia) sundaicus* (Rodenwaldt, 1925)

II Subfamily: **Culicinae**

TRIBE- Aedeomyiini

A new genus *Aedeomyia* is introduced in this tribe represented by a single genus and only one species from this island which was not included earlier in previous publications

(1) Genus: **Aedeomyia** Theoblad, 1901

(a) Subgenus: **Aedeomyia** Theoblad, 1901

i) *Aedeomyia (Aedeomyia) catastica* Knab, 1909

TRIBE- Aedini

(2) Genus: **Aedimorphus** Theoblad, 1903

i) *Aedimorphus caecus* (Theoblad, 1901)

ii) *Aedimorphus jamesi* (Edward, 1914)

iii) *Aedimorphus lowisii* (Theoblad, 1910)

iv) *Aedimorphus vexans* (Meigan, 1830)

(3) Genus: **Armigeres** Theoblad, 1901

(a) Subgenus: **Armigeres**

i) *Armigeres (Armigeres) durhami* (Edwards, 1917)

ii) *Armigeres (Armigeres) kesseli* Ramalingam, 1987

iii) *Armigeres (Armigeres) kuchingensis* Edwards, 1915

iv) *Armigeres (Armigeres) subalbatus* (Coquillett, 1898)

(4) Genus: **Bruceharrisonius** Reinert, 2003

i) *Bruceharrisonius greenii* (Theoblad, 1901)

(5) Genus: **Canraedes** Edwards, 1929

i) *Canraedes cancricomis* (Edwards, 1922)

ii) *Canraedes simplex* (Theoblad, 1901)

(6) Genus: **Downsiomyia** Vargas, 1950

i) *Downsiomyia albolateralis* (Edwards, 1934)

ii) *Downsiomyia nivea* (Ludlow, 1903)

(7) Genus: **Finlaya** Theoblad, 1903

i) *Finlaya flavipennis* Giles, 1904

(8) Genus: **Fredwardsius** Reinert, 2000

i) *Fredwardsius vittatus* (Bigot, 1861)

(9) Genus: **Heizmannia** Ludlow, 1905

(a) Subgenus: **Heizmannia** Ludlow, 1905

i) *Heizmannia (Heizmannia) covelli* Barraud, 1929

ii) *Heizmannia (Heizmannia) indica* (Theoblad 1905)

(10) Genus: **Kenknightia** Reinert, 1990

i) *Kenknightia dissimilis* (Leicester, 1908)

(11) Genus: **Lorrainea** Belkin, 1962

i) *Lorrainea amesii* Ludlow, 1905

ii) *Lorrainea fumida* (Edwards, 1928)

(12) Genus: **Neomelaniconion** Newstead, 1907

i) *Neomelaniconion lineatopenne* (Ludlow, 1905)

(13) Genus: **Rhinoskusea** Edwards, 1929

- i) *Rhinoskusea longirostris* (Leicester, 1908)
- ii) *Rhinoskusea wardi* (Reinert, 1976)

(14) Genus: **Stegomyia** Theoblad, 1901

(a) Subgenus: **Actinothrix** Reinert, Harbatach and Kitching, 2009

- i) *Stegomyia (Actinothrix) edwardsi* Barraud, 1923
- ii) *Stegomyia (Actinothrix) seampi* (Huang, 1974)

(b) Subgenus: **Heteraspidion** Reinert, Harbatach and Kitching, 2009

- i) *Stegomyia (Heteraspidion) annandalei* Theoblad, 1910
- (c) Subgenus: **Stegomyia** Theoblad, 1901
- i) *Stegomyia (Stegomyia) aegypti* (Linnaeus, 1762)

* Following six Species having **no subgeneric** placement

- i) *Stegomyia gardnerii* Ludlow, 1905
- ii) *Stegomyia albopicta* (Skuse, 1895)
- iii) *Stegomyia pseudoalbopicta* Borel, 1928
- iv) *Stegomyia subalbopicta* (Barraud, 1931)
- v) *Stegomyia krombeini* (Huang, 1975)
- vi) *Stegomyia malayensis* (Colles, 1962)

(15) Genus: **Verrallina** Theoblad, 1903

(a) Subgenus: **Harbachius** Reinert, 1999

- i) *Verrallina (Harbachius) consonensis* (Reinert, 1973)
- ii) *Verrallina (Harbachius) yusafi* (Barraud, 1931)

(b) Subgenus: **Neomacleaya** Theoblad, 1901

- i) *Verrallina (Neomacleaya) andamanensis* (Edwards, 1922)
- ii) *Verrallina (Neomacleaya) unca* (Theoblad, 1901)

(c) Subgenus: **Verrallina** Theoblad, 1903

- i) *Verrallina (Verrallina) butleri* (Theoblad, 1901)
- ii) *Verrallina (Verrallina) dux* (Dyar and Shannon, 1925)
- iii) *Verrallina (Verrallina) lugubris* (Barraud, 1928)

TRIBE- **Culicini**

(16) Genus: **Culex** Linnaeus, 1758

(a) Subgenus: **Culex** Linnaeus, 1758

Pipiens Group

Pipiens Subgroup

i) *Culex (Culex) quinquefasciatus* Say, 1823, Univittatus Subgroup

ii) *Culex (Culex) fuscocephala* Theoblad, 1907, Sitiens Group, Gelidus Subgroup

iii) *Culex (Culex) gelidus* Theoblad, 1907, Sitiens Subgroup

iv) *Culex (Culex) sitiens* Wiedemann, 1828, Vishnui Subgroup

v) *Culex (Culex) pseudovishnui* Colles, 1957

ii) *Culex (Culex) tritaeniorhynchus* Giles, 1901

iii) *Culex (Culex) vishnui* Theoblad, 1901

(b) Subgenus: **Culiciomyia** Theoblad, 1907, Fragilis Group

i) *Culex (Culiciomyia) fragilis* Ludlow, 1903

ii) *Culex (Culiciomyia) nigropunctatus* Edwards, 1926

iii) *Culex (Culiciomyia) palliothorax* Theoblad, 1905

iv) *Culex (Culiciomyia) saphthifurca* (Edwards, 1915)

Shebberei Group

v) *Culex (Culiciomyia) bailyi* Barraud, 1934

(c) Subgenus: **Eumelanomyia** Theoblad, 1909

Mochthogenes Group

Foliatus Subgroup

i) *Culex (Eumelanomyia) foliatus* Burg, 1932

Malayi Subgroup

ii) *Culex (Eumelanomyia) malayi* (Leicester, 1908)

Protomelanoconion Group

iii) *Culex (Eumelanomyia) brevipalpis* (Giles, 1902)

(d) Subgenus: **Lophoceraomyia** Theoblad, 1905

Fraudatrix Group

Variatus complex

i) *Culex (Lophoceraomyia) variatus* (Leicester, 1908)

Minutissimus Subgroup

ii) *Culex (Lophoceraomyia) minutissimus* Theoblad, 1907

Mammilifer Group

Mammilifer Complex

iii) *Culex (Lophoceraomyia) mammilifer* (Leicester, 1908)

Minor Complex

iv) *Culex (Lophoceraomyia) bangalensis* Barraud, 1934

v) *Culex (Lophoceraomyia) minor* (Leicester, 1908)

Peytoni Complex

vi) *Culex (Lophoceraomyia) peytoni* Bram and Rattanarithikul, 1967

Wilfredi Group

vi) *Culex (Lophoceraomyia) wilfredi* Colles, 1965

(f) Subgenus: **Oculeomyia** Theoblad, 1907

Biteniorhynchus Complex

i) *Culex (Oculeomyia) biteniorhynchus* Giles, 1901

(17) Genus: **Lutzia** Theoblad, 1903

(a) Subgenus: **Metalutzia** Tanaka, 2000

i) *Lutzia (Metalutzia) fuscana* Wiedemann, 1820

ii) *Lutzia (Metalutzia) halifaxii* Theoblad, 1903

TRIBE- **Ficalbiini**

(18) Genus: **Mimomyia** Theoblad, 1903

(a) Subgenus: **Ingramia** Edwards, 1912

i) *Mimomyia (Ingramia) fusca* (Leicester, 1908)

TRIBE- **Mansoniini**

(19) Genus: **Mansonia** Blanchard, 1901

(a) Subgenus: **Mansonioides** Theoblad, 1907

i) *Mansonia (Mansonioides) annulifera* (Theoblad, 1901)

ii) *Mansonia (Mansonioides) indiana* Edwards, 1930

iii) *Mansonia (Mansonioides) uniformis* (Theoblad, 1901)

TRIBE- **Orthopodomyiini**

(20) Genus: **Orthopodomyia** Belkin, Heinemann & Page, 1970

Subgenus: None

i) *Orthopodomyia anopheloides* (Giles, 1903)

ii) *Orthopodomyia andamanensis* Barraud, 1934

iii) *Orthopodomyia flavithorax* Barraud, 1934,

TRIBE- **Sabthini**

(21) Genus: **Malaya** Leicester, 1908

Subgenus: None

i) *Malaya genurostris* Leicester, 1908

(22) Genus: **TRIPTEROIDES** Giles, 1904

(a) Subgenus: **Rachionotomyia** Theoblad, 1905

i) *Tripetroides (Rachionotomyia) affinis* (Edwards, 1913)

ii) *Tripetroides (Rachionotomyia) aranoioides* (Theoblad, 1901)

(b) Subgenus: **Tripetroides**

i) *Tripetroides (Tripetroides) indicus* (Barraud, 1929)

TRIBE- Toxorhynchitini(23) Genus: **Toxorhynchites** Theoblad, 1901(a) Subgenus: **Toxorhynchites** Theoblad, 1901(i) *Toxorhynchites (Toxorhynchite) edwardsi* (Barraud, 1924)(ii) *Toxorhynchites (Toxorhynchite) splendens* (Wiedemann, 1819)**TRIBE- Uranotaeniini**(24) Genus: **Uranotaenia** Lynch Arribalzaga, 1891(a) Subgenus: **Pseudoficulbia** Theoblad, 1912

Bicolour series

(i) *Uranotaenia (Pseudoficulbia) atra* Theoblad, 1905(ii) *Uranotaenia (Pseudoficulbia) lutescens* Leicester, 1908(iii) *Uranotaenia (Pseudoficulbia) obscura* Edwards, 1915

Recondita series

(iv) *Uranotaenia (Pseudoficulbia) luteola* Edwards, 1934(b) Subgenus: **Uranotaenia** Lynch Arribalzaga, 1891(i) *Uranotaenia (Uranotaenia) christophersi* Barraud, 1926(ii) *Uranotaenia (Uranotaenia) lateralis* Ludlow, 1905(iii) *Uranotaenia (Uranotaenia) longirostris* Leicester, 1908**Appendix-1: Distributions of Mosquito Fauna in Andaman and Nicobar Group of Islands**

Sl. No.	Species	Andaman	Nicobar
1	<i>Anopheles (Anopheles) aitkenii</i> Jemes, 1900	P	P
2	<i>Anopheles (Anopheles) insuleflorum</i> Swell and Swell de Graff, 1920	P	P
3	<i>Anopheles (Anopheles) annandalei</i> Prashad, 1918	P	P
4	<i>Anopheles (Anopheles) barbirostris</i> Van Der Wulp, 1884	P	NR
5	<i>Anopheles (Anopheles) barbumbrosus</i> Strickland and Choudhury, 1927	P	P
6	<i>Anopheles (Anopheles) nigerrimus</i> Giles, 1900	P	P
7	<i>Anopheles (Anopheles) roperi</i> Reid, 1950	P	P
8	<i>Anopheles (Anopheles) umbrosus</i> (Theoblad, 1903)	P	NR
9	<i>Anopheles (Cellia) aconitus</i> Donitz, 1902	P	P
10	<i>Anopheles (Cellia) varuna</i> Iyengar, 1924	P	P
11	<i>Anopheles (Cellia) karwari</i> (James, 1903)	P	NR
12	<i>Anopheles (Cellia) stephensi</i> Liston, 1901	P	NR
13	<i>Anopheles (Cellia) annularis</i> Van Der Wulp, 1884	P	P
14	<i>Anopheles (Cellia) philippinensis</i> Ludlow, 1902	P	P
15	<i>Anopheles (Cellia) nivipes</i> (Theoblad, 1903)	P	NR
16	<i>Anopheles (Cellia) maculatus</i> Theoblad, 1901	P	P
17	<i>Anopheles (Cellia) kochi</i> Donitz, 1901	P	P
18	<i>Anopheles (Cellia) balabacensis</i> Baisas 1936	P	P
19	<i>Anopheles (Cellia) elegans</i> (James, 1903)	P	P
20	<i>Anopheles (Cellia) tessellatus</i> Theoblad, 1901	P	P
21	<i>Anopheles (Cellia) vagus</i> Donitz, 1902	P	NR
22	<i>Anopheles (Cellia) subpictus</i> Grassi, 1899	P	NR
23	<i>Anopheles (Cellia) sundaicus</i> (Rodewaldt, 1925)	P	P
24	<i>Aedeomyia (Aedeomyia) catastica</i> Knab, 1909	P	NR
25	<i>Aedimorphus caecus</i> (Theoblad, 1901)	P	P
26	<i>Aedimorphus jamesi</i> (Edward, 1914)	P	P
27	<i>Aedimorphus lowisii</i> (Theoblad, 1910)	P	NR
28	<i>Aedimorphus vexans</i> (Meigan, 1830)	P	NR
29	<i>Armigeres (Armigeres) durhami</i> (Edwards, 1917)	P	NR
30	<i>Armigeres (Armigeres) kesseli</i> Ramalingam, 1987	P	NR
31	<i>Armigeres (Armigeres) kuchingensis</i> Edwards, 1915	P	NR
32	<i>Armigeres (Armigeres) subalbatus</i> (Coquillett, 1898)	P	P
33	<i>Bruceharrisonius greenii</i> (Theoblad, 1901)	P	NR
34	<i>Canraedes cancricomus</i> (Edwards, 1922)	P	P
35	<i>Canraedes simplex</i> (Theoblad, 1901)	P	NR
36	<i>Downsiomyia albolateralis</i> (Edwards, 1934)	P	P
37	<i>Downsiomyia nivea</i> (Ludlow, 1903)	P	NR
38	<i>Finlaya flavipennis</i> Giles, 1904	P	NR
39	<i>Fredwardsius vittatus</i> (Bigot, 1861)	P	P
40	<i>Heizmannia (Heizmannia) covelli</i> Barraud, 1929	P	NR
41	<i>Heizmannia (Heizmannia) indica</i> (Theoblad, 1905)	P	P
42	<i>Kenknightia dissimilis</i> (Leicester, 1908)	P	P
43	<i>Lorrainea amesii</i> Ludlow, 1905	P	P
44	<i>Lorrainea fumida</i> (Edwards, 1928)	P	P
45	<i>Neomelaniconion lineatopenne</i> (Ludlow, 1905)	P	P
46	<i>Rhinoskusea longirostris</i> (Leicester, 1908)	P	NR
47	<i>Rhinoskusea wardi</i> (Reinert, 1976)	P	P
48	<i>Stegomyia (Actinothrix) edwardsi</i> Barraud, 1923	P	P
49	<i>Stegomyia (Actinothrix) seampi</i> (Huang, 1974)	P	NR
50	<i>Stegomyia (Heteraspidion) annandalei</i> Theoblad, 1910	P	NR
51	<i>Stegomyia (Stegomyia) aegypti</i> (Linnaeus, 1762)	P	P
52	<i>Stegomyia gardnerii</i> Ludlow, 1905	P	NR
53	<i>Stegomyia albopicta</i> (Skuse, 1895)	P	NR

54	<i>Stegomyia pseudoalbopicta</i> Borel, 1928	P	P
55	<i>Stegomyia subalbopicta</i> (Barraud, 1931)	P	NR
56	<i>Stegomyia krombeini</i> (Huang, 1975)	P	NR
57	<i>Stegomyia malayensis</i> (Colles, 1962)	P	P
58	<i>Verrallina (Harbachiuss) consonensis</i> (Reinert, 1973)	P	NR
59	<i>Verrallina (Harbachiuss) yusafi</i> (Barraud, 1931)	P	NR
60	<i>Verrallina (Neomacleaya) andamanensis</i> (Edwards, 1922)	P	NR
61	<i>Verrallina (Neomacleaya) unca</i> (Theoblad, 1901)	P	NR
62	<i>Verrallina (Verrallina) butleri</i> (Theoblad, 1901)	P	NR
63	<i>Verrallina (Verrallina) dux</i> (Dyar and Shannon, 1925)	P	NR
64	<i>Verrallina (Verrallina) lugubris</i> (Barraud, 1928)	P	NR
65	<i>Culex (Culex) quinquefasciatus</i> Say, 1823	P	P
66	<i>Culex (Culex) fuscocephala</i> Theoblad, 1907	P	NR
67	<i>Culex (Culex) gelidus</i> Theoblad, 1907	P	P
68	<i>Culex (Culex) sitiens</i> Wiedemann, 1828	P	P
69	<i>Culex (Culex) pseudovishnui</i> Colless, 1957	P	P
70	<i>Culex (Culex) tritaeniorhynchus</i> Giles, 1901	P	P
71	<i>Culex (Culex) vishnui</i> Theoblad, 1901	P	P
72	<i>Culex (Culiciomyia) fragilis</i> Ludlow, 1903	P	P
73	<i>Culex (Culiciomyia) nigropunctatus</i> Edwards, 1926	P	P
74	<i>Culex (Culiciomyia) palliothorax</i> Theoblad, 1905	P	NR
75	<i>Culex (Culiciomyia) saphthifurca</i> (Edwards, 1915)	P	NR
76	<i>Culex (Culiciomyia) bailyi</i> Barraud, 1934	P	NR
77	<i>Culex (Eumelanomyia) foliatus</i> Burg, 1932	P	NR
78	<i>Culex (Eumelanomyia) malayi</i> (Leicester, 1908)	P	NR
79	<i>Culex (Eumelanomyia) brevipalpis</i> (Giles, 1902)	P	NR
80	<i>Culex (Lophoceraomyia) variatus</i> (Leicester, 1908)	NR	P
81	<i>Culex (Lophoceraomyia) minutissimus</i> Theoblad, 1907	P	NR
82	<i>Culex (Lophoceraomyia) mammilifer</i> (Leicester, 1908)	P	NR
83	<i>Culex (Lophoceraomyia) bangalensis</i> Barraud, 1934	P	P
84	<i>Culex (Lophoceraomyia) minor</i> (Leicester, 1908)	P	NR
85	<i>Culex (Lophoceraomyia) peytoni</i> Bram and Rattanarithikul, 1967	P	P
86	<i>Culex (Lophoceraomyia) wilfredi</i> Colless, 1965	P	P
87	<i>Culex (Oculeomyia) bitaeniorhynchus</i> Giles, 1901	P	P
88	<i>Lutzia (Meatlutzia) fuscana</i> Wiedemann, 1820	P	NR
89	<i>Lutzia (Meatlutzia) halifaxii</i> Theoblad, 1903	P	NR
90	<i>Mimomyia (Ingramia) fusca</i> (Leicester, 1908)	P	NR
91	<i>Mansonia (Mansonioides) annulifera</i> (Theoblad, 1901)	P	P
92	<i>Mansonia (Mansonioides) indiana</i> Edwards, 1930	P	P
93	<i>Mansonia (Mansonioides) uniformis</i> (Theoblad, 1901)	P	P
94	<i>Orthopodomyia anopheloides</i> (Giles, 1903)	P	P
95	<i>Orthopodomyia andamanensis</i> Barraud, 19	P	P
96	<i>Orthopodomyia flavithorax</i> Barraud, 1934	P	P
97	<i>Malaya genurostris</i> Leicester, 1908	P	P
98	<i>Tripetroides (Rachionotomyia) affinis</i> (Edwards, 1913)	P	NR
99	<i>Tripetroides (Rachionotomyia) aranoides</i> (Theoblad, 1901)	P	NR
100	<i>Tripetroides (Tripetroides) indicus</i> (Barraud, 1929)	P	NR
101	<i>Toxorhynchite (Toxorhynchite) edwardsi</i> (Barraud, 1924)	P	P
102	<i>Toxorhynchite (Toxorhynchite) splendens</i> (Wiedemann, 1819)	P	NR
103	<i>Uranotaenia (Pseudoficulbia) atra</i> Theoblad, 1905	P	P
104	<i>Uranotaenia (Pseudoficulbia) lutescens</i> Leicester, 1908	P	NR
105	<i>Uranotaenia (Pseudoficulbia) obscura</i> Edwards, 1915	P	NR
106	<i>Uranotaenia (Pseudoficulbia) luteola</i> Edwards, 1934	P	NR
107	<i>Uranotaenia (Uranotaenia) christophersi</i> Barraud, 1926	P	NR
108	<i>Uranotaenia (Uranotaenia) lateralis</i> Ludlow, 1905	P	NR
109	<i>Uranotaenia (Uranotaenia) longirostris</i> Leicester, 1908	P	P

P= Present/Reported; NR = Not Reported

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