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The Subgeneric Classification of Species of *Culicoides* - thoughts and a warning

The present classification of species of *Culicoides* is, in my opinion, in terrible condition, such that for many years I simply listed all the species alphabetically in my world catalog (published in 1997 and regularly updated here on line). However, I hope that the following will promote further study, as we start to recognize monophyletic lineages.

The arrangement below of species of the genus *Culicoides* is almost entirely phenetic (based on overall similarity). Amazingly, and in spite of the tremendous medical, veterinary and economic importance of so many species in the genus, there has been very little cladistic interpretation of the genus or of any group within the genus, based on morphology (i.e. interpretations of derived character states based on outgroup comparisons). Repeatedly, authors have classified species according to their similarity to one or another taxon, often noting that the antennal sensilla pattern is the same as one group, the wing another group and the male genitalia to yet another. It is clear that basing a classification on such similarities leads to phylogenetic chaos, and hence to continued instability in all future classifications. As such, there is a tremendous opportunity for future work to consider what might be derived within the genus (such as the spermathecal shape in *Monoculicoides*, the elongate spicules on the operculum of the pupae of species of *Avaritia*, etc.). A good approach by an ambitious researcher would be to take the type species of every described genus, the characteristic species of each species group, and a goodly smattering of other species, compare these carefully in alcohol, cleared in glycerine, and then on slides (without crushing various parts), obtain the larvae and pupae of as many representative taxa as possible, determine derived character states (based on outgroup comparisons) and combine the results to synthesize a phylogeny which would then provide the basis for further interpretation of species. It would be a gift to our science!

At present it is uncertain whether most of the subgenera or species groups are monophyletic, although I believe some of them to be so, based on unpublished synapomorphies. Meiswinkel and Dyce (1989b) provided a rare and welcome overview of some character states of phylogenetic importance. Szadziowski et al. (2016) provided a synapomorphy for *C. (Oecacta)*. Borkent (2014) and Shults et al. (2016) discuss synapomorphies of the genus as a whole.

Aside from the species placed to subgenus, there are numbers placed in separate species groups of uncertain affiliation and a further list of miscellaneous species which no one knows what to do with. Aside from the theoretical problems noted above, this is also a reflection of various scientists working on their local fauna and constructing classifications as best they can on their local and inherently limited knowledge. There is a great need to study *Culicoides* on a worldwide basis, using

exemplars of the various groups from each region.

A number of recent papers have used genomic methods to interpret phylogenetic relationships between select species of *Culicoides* (e.g. Ander et al., 2013; Augot et al., 2013; Bakhoun et al., 2013; Lassen et al., 2012; Linton et al., 2002; Morag et al., 2012; Schwenkenbecher et al., 2008; Tay et al., 2016). Most use COI (or a couple of genes) as a measure but it is highly doubtful as to whether these genes (and especially COI on its own) can be used to interpret phylogenetic relationships. For example, low percentages of chironomid and simuliid genera and subgroups are recovered using COI barcodes (Ekrem et al. 2007, 2010, Rivera and Currie 2009). Further to this, readers are reminded that members of the genus *Culicoides* are known from the mid Cretaceous and there are 17 species known from all of the Cretaceous. The genus is clearly ancient and was certainly diverse even before the Cenozoic (see list of fossil species toward the end of this document).

Further to this, very few barcoding papers indicate where their voucher specimens are housed – indeed, many do not even keep vouchers, preventing future studies from being able to check published identifications. As such many of these will become throw-away studies because of uncertain species identification. This poor practice should be rectified immediately so that future researchers can reexamine those vouchers and interpret discrepancies.

The immatures of the genus are poorly understood, in spite of the pioneering work on the larvae of a number of the Nearctic species by Murphree and Mullen (1991) and a number of smaller papers describing various larvae and pupae of select species. The literature describing the immatures (eggs, larvae, pupae) was listed in a recent publication by Borkent (2014, Table 2). This publication also provides the first generic keys to pupae and the first means of recognizing the pupae of *Culicoides* as such. In addition, pupal morphology provides important information for interpreting phylogenetic relationships. Currently, the larvae of 13% and the pupae of 17% of described species of *Culicoides* are known (but many poorly described). As a consequence, we don't know the habitat (or the features of the immatures) of the vast majority of named *Culicoides*.

The following arrangement of species does NOT follow the most recent literature (which a good catalog should otherwise do), reflecting the chaos in our present classification. In instances of recent differences in opinion I have generally followed the opinions of Wirth who studied the genus worldwide. For example, the placement by Yu et al. (2006) of *C. dendrophilus* (type species of *C. (Amossovia)*), *C. segnis* (type species of *C. (Wirthomyia)*) and *C. fascipennis* (type species of *C. (Silvaticulicoides)*) in the subgenus *C. (Oecacta)* actually results in all the aforementioned subgenera becoming junior synonyms of the subgenus *C. (Oecacta)*; these subgeneric placements (without action on the subgeneric synonymy by Yu et al., 2006) have not been followed. In relation to this, Szadziwski et al. (2016) have recently redefined *C. (Oecacta)* with a synapomorphy and relegated a number of species previously placed in this subgenus or considered as miscellaneous to *C. (Sensiculicoides)*. Nandi and Mazumdar (2014) suggested that the *clavipalpis* species group be placed within *C. (Diphaomyia)* but the

reasons for doing so are based on phenetic similarities that continue to plague a logical, cladistic basis for the classification of this genus.

Some workers have placed single species as the sole representative of a species group (e.g. Khamala and Kettle, 1971) and I have simply included these in the list of miscellaneous species.

As it stands now, species of *Culicoides* are placed in 32 subgenera and 38 species groups (unplaced to subgenus). Readers will see that there is a particularly long list of miscellaneous species, not placed in any group, representing 13% of the world fauna. A number of these, especially those in old publications, are likely *nomina dubia*. Unless types can be found, they need to be relegated to the dust bin by taxonomists - we already know that most of Kieffer's types are destroyed and most of his remaining names are therefore likely *nomina dubia*.

The classification of African species is particularly messy and one need only compare the the following to see major discrepancies in the placement of many species: Khamala and Kettle (1971), Boorman and Dipeolu (1979), Itoua et al. (1987) and Glick (1990).

At present there are no good keys to all the adults of species of any Region, although there are some local keys and/or guides that are very useful (these often only to females). A particularly innovative and excellent key for females of western Palaearctic species by Bruno Mathieu et al. is available online <http://www.iikculicoides.net/>.

There are numerous further unnamed species from nearly every area on the planet. Large swaths, especially in tropical areas, have never been collected in any organized manner (e.g. most of the Andes and upper Amazon basin, Borneo). As we continue to explore the Earth's fauna, please, please, check types of previously described species from your own area as well as that of surrounding regions - we don't need more confusion in this arena either.

There is a further important gap in our knowledge and application of some names of species of *Culicoides* because types of numbers of species need to be reexamined and studied carefully. A case in point is the current acceptance of *Culicoides lupicaris* as a synonym of *C. delta* in the catalog (which should only reflect the the present literature). Although evidence indicates that the two are actually valid and distinct species (Lassen et al., 2012; Meiswinkel et al., 2004; Ramilo et al., 2012, 2013), no one has formally made the change in a publication. The types should be reexamined to confirm the differences and ensure the names are properly applied.

As such, there is a tremendous amount of systematic work that needs to be done. As the saying goes, "Use the following classification at your own risk!" If you have suggestions for improvements to the catalog below, please write to me at artborkent@telus.net

Full references for the taxonomic citations below are listed with the complete world catalog and are not repeated here. Some references above are not in the world catalog (no new names) and are given as follows:

- Ander, M., K. Troell, and J. Chirico. 2013. Barcoding of biting midges in the genus *Culicoides*: a tool for species determination. *Medical and Veterinary Entomology* 27:323-331.
- Augot, D., F.J. Randrianambinintsoa, A. Gasser and J. Depaquit. 2013. Record of two species of *Culicoides* (Diptera, Ceratopogonidae) new for Madagascar and molecular study showing the paraphyly of the subgenus *Oecacta* and the *Schultzei* group. *Bulletin de la Societe de Pathologie Exotique* 106:201-205.
- Bakhoun, M.T., M. Fall, A.G. Fall, G.A. Bellis, Y. Gottlieb, K. Labuschagne, G.J. Venter, M. Diop, I. Mall, M.T. Seck, X. Allene, M. Diarra, L. Gardes, J. Bouyer, J.-C. Delécolle, T. Balenghien, and C. Garros. 2013. First record of *Culicoides oxystoma* Kieffer and diversity of species within the Schultzei Group of *Culicoides* Latreille (Diptera: Ceratopogonidae) Biting Midges in Senegal. *PLOS ONE*, 8 (12):10.1371/journal.pone.0084316
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- Ekrem T, Willassen E, Stur E (2010) Phylogenetic utility of five genes for dipteran phylogeny: A test case in the Chironomidae leads to generic synonymies. *Molecular Phylogenetics and Evolution* 57: 561–571. doi:10.1016/j.ympev.2010.06.006 56
- Itoua, A., M. Cornet, G. Vattier-Bernard, and J. Trouillet. 1986. Les *Culicoides* (Diptera, Ceratopogonidae) de Afrique Centrale. *Cahiers ORSTOM, Série Entomologie Médicale et Parasitologie*, numéro spécial 1987:127-134.
- Lassen, S.B., S.A. Nielsen, H. Skovgard, and M. Kristensen. 2012. Molecular differentiation of *Culicoides* biting midges (Diptera: Ceratopogonidae) from the subgenus *Culicoides* Latreille in Denmark. *Parasitology Research* 110:1765-1771.
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- Meiswinkel, R., L.M. Gomulski, J.-C. Delécolle, M. Goffredo, and G. Gasperi. 2004a. The taxonomy of *Culicoides* vector complexes - unfinished business. *Vet. Ital.* 40:151-159.
- Morag, N., Y. Saroya, Y. Braverman, E. Klement, and Y. Gottlieb, Y. 2012. Molecular Identification, phylogenetic status, and geographic distribution of *Culicoides*

- oxystoma* (Diptera: Ceratopogonidae) in Israel. PLOS ONE, 7 (3):10.1371/journal.pone.0033610
- Ramilo, D.W., S. Diaz, I. Pereira da Fonseca, J.-C. Delécolle, A. Wilson, J. Meireles, J. Lucientes, R. Ribeiro, and F. Boinas. 2012. First report of 13 species of *Culicoides* (Diptera: Ceratopogonidae) in mainland Portugal and Azores by morphological and molecular characterization. *PLoS One* 7(4):e34896.
- Ramilo, D., C. Garros, B. Mathieu, C. Benedet, X. Allène, E. Silva, G. Alexandre-Pires, I.P. Da Fonseca, S. Carpenter, J. Rádrová and J.-C. Delécolle. 2013. Description of *Culicoides paradoxalis* sp. nov. from France and Portugal (Diptera: Ceratopogonidae). *Zootaxa* 3745:243-256.
- Rivera J, Currie D (2009) Identification of Nearctic black flies using DNA barcodes (Diptera: Simuliidae). *Molecular Ecology Resources* 9: 224–236. doi: 10.1111/j.1755-0998.2009.02648.x
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- Szadziewski, R., S. Filatov and P. Dominiak. 2016. A redescription of *Culicoides griseidorsum* Kieffer, 1918, with comments on subgeneric position of some European taxa (Diptera: Ceratopogonidae). *Zootaxa* 4107:413-422.
- Tay, W.T., P.J. Kerr and L.S. Jermin. 2016. Population genetic structure and potential incursion pathways of the Bluetongue Virus vector *Culicoides brevitarsis* (Diptera: Ceratopogonidae) in Australia. PLOS ONE, 11 (1):10.1371/journal.pone.0146699

Genus **CULICOIDES** Latreille

CULICOIDES Latreille, 1809: 251. Type species: *Culicoides punctatus* Latreille (= *Ceratopogon punctatus* Meigen), by monotypy.

PADROSIA Rafinesque, 1815: 130 (unnecessary new name for *Culicoides* Latreille). Type species: *Culicoides*

punctatus Latreille (= *Ceratopogon punctatus* Meigen), automatic.

OXYHELEA Kieffer, 1921b: 14 (as subgenus of *Culicoides*). Type species: *Culicoides dentatus* Kieffer, by monotypy.

PROSAPELMA Kieffer, 1925a: 417. Type species: *Prosapelma cinerea* Kieffer, by original designation.

NEOCULICOIDES Boorman and Lane, 1979: 327 (preoccupied by *Neoculicoides* Pierce, 1966). Type species:

Neoculicoides taylori Boorman and Lane, by original designation.

DEVALQUIA Choufani and Nel, 2013: 75. Type species: *Devalquia brisaci* Choufani & Nel, 2013, by original designation.

Subgenus **AMOSSOVIA** Glukhova

AMOSSOVIA Glukhova, 1989: 226 (as subgenus of *Culicoides*). Type species: *Culicoides dendrophilus* Amosova, by original designation.

arboricola Root and Hoffman, 1937: 166. USA (Maryland).

beckae Wirth and Blanton, 1967: 213. USA (Florida).

californiensis Wirth and Blanton, 1967: 215. USA (California).

cochisensis Wirth and Blanton, 1967: 216. USA (Arizona).

dendrophilus Amosova, 1957: 240. Russia.

reesi Bullock and Akiyama, 1959: 24. Japan.

elemae Pappas and Pappas, 1989: 228. USA (Nebraska).

flukei Jones, 1956: 30. USA (Wisconsin).

guttipennis (Coquillett), 1901: 603 (*Ceratopogon*). USA (Ohio).

oklahomensis Khalaf, 1952b: 355 (as *villosipennis* spp.). USA (Oklahoma).

ousairani Khalaf, 1952b: 354. USA (Oklahoma).

pecosensis Wirth, 1955: 358. USA (Texas).

villosipennis Root and Hoffman, 1937: 165. USA (Maryland).

Subgenus **ANILOMYIA** Vargas

ANILOMYIA Vargas, 1960: 37 (as subgenus of *Culicoides*). Type species: *Culicoides covagarciai* Ortiz, by original designation.

ameliae Browne, 1980: 543. Colombia.

chaverrii Spinelli and Borkent, 2004a: 373. Costa Rica.

chrysonotus Wirth and Blanton, 1956b: 226. Panama.

covagarciai Ortiz, 1950b: 457. Venezuela.

beebei Fox, 1952: 366. Venezuela.

decor (Williston), 1896: 281 (*Ceratopogon*). St. Vincent.

dominicanus Wirth and Blanton, 1970d: 146. Dominica.

efferus Fox, 1952: 365. Peru.

farri Wirth and Blanton, 1970d: 148. Jamaica.

hayesi Matta, 1967: 75. Honduras.

inermis Spinelli, Santamaría, Cabrera, Ronderos and Suárez, 2009: 84. Colombia.

lutealaris Wirth and Blanton, 1956b: 225. Panama.

marshi Wirth and Blanton, 1956b: 220. Panama.

metagonatus Wirth and Blanton, 1956b: 221. Panama.

monicae Spinelli and Borkent, 2004a: 372. Costa Rica.
nigrifemur Spinelli, Santamaría, Cabrera, Ronderos and Suárez, 2009: 85. Colombia.
nigrigenus Wirth and Blanton, 1956b: 222. Panama.
popayanensis Wirth and Lee, 1967: 10. Colombia.
pseudodecor Spinelli and Huerta, 2015: 818. Mexico.
rostratus Wirth and Blanton, 1956b: 218. Panama.
trapidoi Wirth and Barreto, 1978: 554. Colombia.

Subgenus AVARITIA Fox

AVARITIA Fox, 1955: 218 (as subgenus of *Culicoides*). Type species: *Ceratopogon obsoletus* Meigen, by original designation.

abchazicus Dzhafarov, 1964: 263. Georgia.
actoni Smith, 1929: 255 (1932: 180). India.
 okumensis Arnaud, 1956a: 119. Japan.
 imperceptus Das Gupta, 1962a: 538. India.
alachua Jamnback and Wirth, 1963: 187. USA (Florida).
albifascia Tokunaga, 1937a: 319. Taiwan.
alticola Kieffer, 1913e: 11. Tanzania.
andicola Wirth and Lee, 1967: 5. Colombia.
annandalei Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 125. India.
asiana Bellis, *in* Bellis et al. 2015: 29. New name for *asiatica*.
 asiatica Bellis, *in* Bellis et al. 2013: 407 (preoccupied by *Culicoides asiaticus* Gutsevich and Smatov, 1966). Japan.
autumnalis Sen and Das Gupta, 1959a: 628. India.
bolitinos Meiswinkel, 1989: 30. South Africa.
boophagus Macfie, 1937c: 116. Malaysia.
boydi Wirth and Mullens, 1992: 1006. USA (California).
brevipalpis Delfinado, 1961: 654. Philippines.
brevitarsis Kieffer, 1917a: 187. Australia.
 robertsi Lee and Reye, 1953: 386. Australia (Queensland).
 radicitus Delfinado, 1961: 657. Philippines.
 superfulvus Das Gupta, 1962b: 253. India.
brosseti Vattier and Adam, 1966a: 297. Gabon.
bubalus Delfinado, 1961: 658. Philippines.
candolfii Delécolle, Paupy, Rahola, and Mathieu, 2013: 514. Gabon.
certus Das Gupta, 1962a: 537. India.
chiopterus (Meigen), 1830: 263 (*Ceratopogon*). Europe.
 amoenus (Winnertz), 1852: 35 (*Ceratopogon*). Germany.
 similis (Goetghebuer), 1927a: 203 (*Monohelea*, preoccupied by *Culicoides similis* Carter, Ingram and Macfie, 1920).
 Belgium.
 dobyi Callot and Kremer, 1969a: 610. France.
comparis Liu and Yu, *in* Yu et al., 2006: 917. China.
conaensis Liu and Yu, 1990: 19. China.
dasyops Clastrier, 1958b: 217. Senegal.
definitus Sen and Das Gupta, 1959a: 622. India.
dentiformis McDonald and Lu, 1972: 403. Taiwan.
dewulfi Goetghebuer, 1936: 320. Belgium.
 pseudochiopterus Downes and Kettle, 1952: 67. Great Britain.
dikhros Tokunaga, 1962b: 507. Papua New Guinea.
dubitatus Kremer, Rebholtz-Hirtzel and Delécolle, 1976: 233. Angola.
dumdumi Sen and Das Gupta, 1959a: 628. India.
elongatus Chu and Liu, 1978: 83. China.

filicinus Gornostaeva and Gachegova, 1972: 522. Russia.
flavipunctatus Kitaoka, 1975: 199. Japan.
fragmentum Tokunaga, 1962b: 507. Papua New Guinea.
fulvus Sen and Das Gupta, 1959a: 628. India.
gaponus Yu, 1982: 202. China.
glabripennis Goetghebuer, 1935d: 171 (1948b: 12). New name for *nudipennis*.
nudipennis Goetghebuer, 1933e: 146 (preoccupied by *Culicoides nudipennis* Kieffer, 1922g).
Democratic Republic
of Congo.
septemmaculatus Goetghebuer, 1935d: 175. Democratic Republic of the Congo.
spinifer Khamala and Kettle, 1971: 51. Kenya.
glushchenkoae Glukhova, 1989: 200. Russia
gornostaevae Mirzaeva, 1984a: 371. Russia.
grahamii Austen, 1909: 280. Ghana.
habereri Becker, 1909: 289. Cameroon.
hostilissimus (Pittaluga), 1911a: 29 (1911b: 69; 1912: 597) (*Oecacta*). Guinea.
kivuensis Goetghebuer, 1935d: 173. Democratic Republic of the Congo.
trichopis de Meillon, 1937b: 328. Democratic Republic of the Congo.
gulbenkiani Caeiro, 1959: 155. South Africa.
hasegawai Kanasugi and Kitaoka, 2001:228. Japan.
hayakawai Kitaoka, 1984: 301. Japan.
hermani Spinelli and Borkent, 2004a: 363. Panama.
himalayae Kieffer, 1911b: 326. India.
hirtulus (Coquillett), 1900: 396 (*Ceratopogon*). USA (Alaska).
holcus Lee, 1980: 85. China.
huambensis Caeiro, 1961: 179 (also as *huambensis*). Angola.
hui Wirth and Hubert, 1961: 16. Taiwan.
imicola Kieffer, 1913e: 11. Kenya.
pallidipennis Carter, Ingram and Macfie, 1920: 265. Ghana.
iraqensis Khalaf, 1957b: 343. Iraq.
minutus Sen and Das Gupta, 1959a: 622. India.
pseudoturgidus Das Gupta, 1962a: 537. India.
impusilloides Spinelli and Wirth, 1984a: 178. Brazil.
incertus Yu and Zhang, *in* Yu, 1988: 136. China.
inexploratus Sen and Das Gupta, 1959a: 628. India.
insignipennis Macfie, 1937d: 469. Malaysia.
iphthimus Zhou and Lee, 1984b: 295. China.
jacobsoni Macfie, 1934d: 215. Indonesia.
buckleyi Macfie, 1937c: 117. Malaysia.
kitaokai Tokunaga, 1955: 6. Japan.
unisetiferus Tokunaga, 1959: 236. Papua New Guinea.
juddi Cochrane, 1973: 316. USA (New York).
kanagai Khamala and Kettle, 1971: 49. Kenya.
kibatiensis Goetghebuer, 1935d: 172. Democratic Republic of the Congo.
volatilis Goetghebuer, 1935d: 176. Democratic Republic of the Congo.
lengi Yu and Liu, 1990: 10. China.
liweiae Liang, Fu and Liu, 2012: 234. China.
longirostris Qu and Wang, 1994: 486. China.
loxodontis Meiswinkel, 1992: 147. South Africa.
mamaensis Lee, 1979a: 101. China.
minimus Wirth and Hubert, 1989: 251. Malaysia.
miombo Meiswinkel, 1991: 161. Malawi.
molestior Kieffer, 1911e: 514. New name for *molestus*.
molestus Kieffer, 1910: 192 (preoccupied by *Culicoides molestus* (Skuse), 1889). India.
iniquus Sen and Das Gupta, 1958b: 163 (1959a: 620; 1959b: 65). New name for *molestus*.
montanus Shakirzjanova, 1962: 258. Kazakhstan.

motoensis Lee, 1978: 75 (1979a: 102). China.
nielamensis Liu and Deng, 2000: 246. China.
nigritus Fei and Lee, 1984b: 345. China.
nudipalpis Delfinado, 1961: 655. Philippines.
nujiangensis Liu, 1990: 59. China.
nupurius Kanasugi and Kitaoka, 2001:227. Japan.
obscurus Tokunaga and Murachi, 1959: 347. Belau (USA).
 pungens de Meijere, 1909: 200 (preoccupied by *Culicoides pungens* (Kieffer), 1901a). Indonesia.
obsoletus (Meigen), 1818: 76 (*Ceratopogon*). Europe.
 varius (Winnertz), 1852: 35 (*Ceratopogon*). Germany.
 yezoensis (Matsumura), 1911: 60 (*Ceratopogon*). Russia.
 obscuripes Santos Abreu, 1918: 297 (as variety of *varius*). Canary Islands (Spain).
 lacteinervis Kieffer, 1919a: 47. Slovak Republic, Ukraine.
 rivicola Kieffer, 1921a: 56. Germany.
 clavatus Kieffer, 1921a: 56. Germany.
 heterocerus Kieffer, 1921a: 57. Germany.
 pegobius Kieffer, 1922c: 235. Germany.
 kabyliensis Kieffer, 1922g: 505. Algeria.
 concitus Kieffer, 1922e: 71. Germany.
 intermedius Okada, 1941: 22 (as variety of *obsoletus*, preoccupied by *Dasyhelea intermedia* (Santos Abreu), 1918).
 Japan.
 sintrensis Cambournac, 1956: 591. Portugal.
 seimi Shevchenko, 1967: 173. Ukraine.
odiosus Kieffer, 1910: 192. India.
orientalis Macfie, 1932b: 490. Malaysia.
 nayabazari Das Gupta, 1963: 35. India.
orjuelai Wirth and Lee, 1967: 6. Colombia.
palauensis Tokunaga, *in* Tokunaga and Murachi, 1959: 348. Belau (USA).
pastus Kitaoka, 1980: 11. Japan.
pechumani Cochrane, 1974: 133. USA (New York).
pelius Liu and Yu, 1990: 23. China.
pseudopallidipennis Clastrier, 1958b: 197. Senegal.
puracensis Wirth and Lee, 1967: 7. Colombia.
pusilloides Wirth and Blanton, 1955a: 104. Panama.
pusillus Lutz, 1913: 52. Brazil.
qionghaiensis Yu and Liu, 1990: 4. China.
ruiliensis Lee, 1980: 86. China.
sanguisuga (Coquillett), 1901a: 604 (*Ceratopogon*). USA (Maryland).
scoticus Downes and Kettle, 1952: 65. Great Britain.
sikkimensis Das Gupta, 1963: 35. India.
sinanoensis Tokunaga, 1937a: 331. Japan.
 obsoletiformis Amosova, 1957: 233. Russia.
sousadiasi Caeiro, 1961: 309. Angola.
suarezi Rodriguez and Wirth, 1986: 313. Colombia.
suiyangensis Hou, Han, Lv and Jiang, 2014. China.
suzukii Kitaoka, 1973: 212. Japan.
tainanus Kieffer, 1916b: 114. Taiwan.
 maculatus (Shiraki), 1913: 294 (*Ceratopogon*, preoccupied by *Atrichopogon maculatus* (Lundström), 1910). Taiwan.
 kii Tokunaga, 1937a: 284. Japan.
 sigiensis Tokunaga, 1937a: 322. Japan.
 kyotoensis Tokunaga, 1937a: 329. Japan.
 suborientalis Tokunaga, 1951: 106. Indonesia.
tibetensis Chu, 1977: 102. China.
tororoensis Khamala and Kettle, 1971: 48. Uganda.

trifasciellus Goetghebuer, 1935d: 175. Democratic Republic of the Congo.
trimaculatus McDonald and Lu, 1972: 415. Taiwan.
tutti-frutti Meiswinkel, Cornet and Dyce, *in* Meiswinkel and Linton, 2003: 42. South Africa.
wadai Kitaoka, 1980: 14. Japan.
wandashanensis Wang and Liu, 1999: 328. China.
yamii Lien, Lin and Weng, 1998b:57. Taiwan.
yuchihensis Lien, Lin and Weng, 1998b:58. Taiwan.

Subgenus BELTRANMYIA Vargas

BELTRANMYIA Vargas, 1953: 34 (as subgenus of *Culicoides*). Type species: *Culicoides crepuscularis* Malloch, by original designation.

alaskensis Wirth, 1951a: 84. USA (Alaska).
bermudensis Williams, 1956: 298. Bermuda (Great Britain).
chagyabensis Lee, 1982: 169. China.
charadraeus Arnaud, 1956a: 97. Japan.
chengduensis Zhou and Lee, 1984a: 222. China.
circumscriptus Kieffer, 1918a: 49. Tunisia.
 nadayanus Kieffer, 1918a: 95. Turkey.
 edwardsi Goetghebuer, 1921: 177. Belgium.
 algarum Kieffer, 1924a: 18. Germany.
 salicola Kieffer, 1924b: 405. Norway.
 pictidorsum Kieffer, 1924b: 406 (as variety of *salicola*). Norway.
 albonotatus Vimmer, 1932: 133 (preoccupied by *Culicoides albonotatus* Kieffer, 1918a). Israel.
 albosignatus Vimmer, 1932: 135. Israel.
 polymaculatus Vimmer, 1932: 135. Israel.
 pulcher Zilahi-Sebess, 1934: 155 (misspelled as *pulscher*). Bulgaria.
 kirovabadicus Dzhabarov 1964: 228. Azerbaijan.
 matsuensis Lien, Weng and Lin, 1996: 20 (valid subspecies of *circumscriptus*). Taiwan.
 meridionalis Xue, Liu and Yu, 2003: 112 (valid subspecies of *circumscriptus*). China.
corniculus Liu and Qu, 1981: 419. China.
 apiculatus Yu and Zhang, *in* Yu, 1988: 134. China.
crepuscularis Malloch, 1915a: 303. USA (Illinois).
desertorum Gutsevich, 1959: 675. Turkmenistan and Uzbekistan.
 pictus Khalaf, 1961: 455. Iraq.
 brevifrontis Smatov and Isimbekov, 1971: 62. Kazakhstan.
 oxianus Smatov, *in* Smatov and Kravets, 1976: 282. Kazakhstan.
duodenarius Kieffer, 1922b: 157. Taiwan.
gluchovae Mirzaeva, 1974: 27. Russia.
 wushenensis Lee (as Li), 1974: 353. China.
halonostictus Wirth and Hubert, 1989: 431. Thailand.
hollensis (Melander and Brues), 1903: 13 (*Ceratopogon*). USA (Massachusetts).
 canithorax Hoffman, 1925: 284. USA (Georgia).
homochrous Remm, *in* Remm and Zhogolev, 1968: 835. Ukraine.
huayingensis Zhou and Lee, 1984b: 293. China.
japonicus Arnaud, 1956a: 106. Japan.
 litoreus Amosova, 1957: 241. Russia.
knowltoni Beck, 1956: 136. USA (Florida).
koreensis Arnaud, 1956a: 109. South Korea.
 palustris Amosova, 1957: 243. Russia.
liubaensis Liu and Wu, 2005:448. China.
manchuriensis Tokunaga, 1941b: 98. China.
 setiger Goetghebuer, 1938: 379 (preoccupied by *Dasyhelea setigera* (Kieffer), 1910). Belgium.
 goetghebueri Arnaud, 1956b: 94. Belgium. New name for *setiger*.
 machardy Campbell and Pelham-Clinton, 1960: 235. Great Britain.

ochraceimaculatus Shevchenko, 1970b: 8. Ukraine.
ochraceipennis Shevchenko, 1970b: 9. Ukraine.
mesostigma Remm, 1971: 201. Russia.
vistulensis Skierska, 1973: 289. Poland.
mississippiensis Hoffman, 1926a: 158. USA (Mississippi).
multifidous Liu and Yu, *in* Yu et al., 2006: 1241. China.
musajevi Dzhafarov, 1961c: 75. Azerbaijan.
navaiae Lane, 1983: 534. Saudi Arabia.
nivosus de Meillon, 1937b: 341. South Africa.
pallidulus Yu, 1991: 52. New name for *obscuratus*.
obscuratus Ding and Yu, 1990: 54 (preoccupied by *Culicoides obscuratus* Statz, 1944). China.
pseudosalinarius Chu, 1981: 309. China.
pulchellus Liu and Zhao, 1998: 12. China.
qabdoensis Lee, 1979a: 103. China.
salinarius Kieffer, 1914a: 236. Germany.
halobius Kieffer, 1914a: 237. Germany.
meinerti Kieffer, 1915c: 284. Denmark.
punctatidorsum Kieffer, 1924a: 17. Germany.
shanghaiensis Qu, Cao and Liu, 2010: 322. China.
sibiricus Mirzaeva, 1964: 218. Russia.
sphagnumensis Williams, 1955: 269. USA (Michigan).
lacicola Arnaud, 1956a: 110 (as *laciocola*). Japan.
carjalaensis Glukhova, 1957: 249. Russia.
stellaris Yu and Liu, 1990: 6. China.
subarakawae Yu and Zou, *in* Hao et al., 1990: 41. China.
subcircumscriptus Yu, 1982: 202. China.
superflutheca Yu and Li, *in* Yu et al., 1986: 210. China.
suspectus Zhou and Lee, 1984b: 294. China.
tessellatus Yu, 1982: 202. China.
toyamaruae Arnaud, 1956a: 133. Japan.
wisconsinensis Jones, 1956: 32. USA (Wisconsin).
xenkeensis Yang, Li and Liu, 2011: 154. China.
yigongensis Liu and Deng, 2010: 578. China.

Subgenus COTOCRIPUS Brèthes

COTOCRIPUS Brèthes, 1912: 451. Type species: *Cotocripus caridei* Brèthes, by monotypy.

bambusicola Lutz, 1913: 62. Brazil.
bahiensis Barbosa, 1947: 11. Brazil.
caridei (Brèthes), 1912: 451 (*Cotocripus*). Argentina.
setifer (Lutz), 1913: 64 (*Centrorhynchus*). Brazil.
gabrieli Spinelli, Santamaria, Cabrera, Ronderos and Suárez, 2009: 82. Colombia.
irwini Spinelli and Wirth, 1984a: 180. Chile.
patagoniensis Ronderos and Spinelli, 1997: 34. Argentina.
raposoensis Wirth and Barreto, 1978: 561. Colombia.

Subgenus CULICOIDES Latreille

SILVICOLA Mirzaeva and Isaev, 1990: 98 (as subgenus of *Culicoides*). Type species: *Culicoides grisescens* Edwards, by original designation.

almeidae Cambournac, 1970b: 251. Portugal.
angkaensis Kitaoka, Takaoka and Choochote, 2005: 285. Thailand.
aomoriensis Kitaoka, 1991: 289. Japan.

aterinervis Tokunaga, 1937a: 312. Japan.
boyi Nielsen, Kristensen and Pape, 2015: 3. Denmark.
brucei Austen, 1909: 282. Uganda.
pseudopulicaris Goetghebuer, 1935d: 173. Democratic Republic of the Congo.
hirtius de Meillon and Lavoipierre, 1944: 58. South Africa.
choochotei Kitaoka and Takaoka, *in* Kitaoka et al, 2005: 287. Thailand.
cockerellii (Coquillett), 1901: 603 (*Ceratopogon*). USA (Colorado).
delta Edwards, *in* Edwards et al., 1939: 48. Great Britain.
lupicaris Downes and Kettle, 1952: 76. Great Britain.
dubius Arnaud, 1956a: 100. Japan.
elutus Macfie, 1948: 75. Mexico.
fagineus Edwards, *in* Edwards et al., 1939: 147. Great Britain.
flavipulicaris Dzhafarov, 1964: 238. Azerbaijan.
flavus Gornostaeva, 1980: 81 (as subspecies of *griseus*). Russia.
flavisomum Mirzaeva, 1984b: 67. Russia.
anadyriensis Mirzaeva, 1984b: 70. Russia.
fortinensis Spinelli and Huerta, 2015: 812. Mexico.
freeborni Wirth and Blanton, 1969b: 217. USA (California).
frohnei Wirth and Blanton, 1969b: 219. USA (Alaska).
gregsoni Wirth and Blanton, 1969b: 222. Canada (British Columbia).
griseus Edwards, *in* Edwards et al., 1939: 146. Great Britain.
remmi Damian-Georgescu, 1972: 16. Romania.
arschanicus Mirzaeva, 1984b: 69. Russia.
hondurensis Spinelli and Borkent, 2004a: 369. Honduras.
hulinensis Liu and Yu, 1996: 135 (Liu et al., 1999: 341). China.
impunctatus Goetghebuer, 1920: 55. Belgium.
minor Tokunaga, 1941b: 97 (as variety of *impunctatus*). China.
kalix Nielsen, Kristensen and Pape, 2015: 9. Sweden.
kelinensis Lee, 1978: 58 (1979a: 99). China.
kirinensis Lee, 1976: 47. China.
lahontan Wirth and Blanton, 1969b: 223. USA (California).
lanyuensis Kitaoka and Tanaka, 1985: 39. Taiwan.
lungchiensis Chen and Tsai, 1962: 397 (as subspecies of *peregrinus*). China.
megaforticeps Kitaoka, 1973: 212. Japan.
luteovenus Root and Hoffman, 1937: 156. Mexico.
magnus Colaco, 1946: 219, 237 (as variety of *hirtius*). South Africa.
mathisi Giles and Wirth, 1983: 36. Sri Lanka.
mcdonaldi Wirth and Hubert, 1989: 224. New name for *monticola*.
monticola McDonald and Lu, 1972: 413 (as subspecies of *pulicaris*). Taiwan.
neofagineus Wirth and Blanton, 1969b: 227. USA (Arizona).
neomontanus Wirth, 1976b: 15 (new name for *montanus* Wirth and Blanton). USA (Utah).
montanus Wirth and Blanton, 1969b: 225 (preoccupied by Shakirzjanova, 1962). USA (Utah).
neopulicaris Wirth, 1955: 355. USA (Texas).
newsteadi Austen, 1921: 113. Israel.
biclavatus Kieffer, 1924a: 14. Germany.
halophilus Kieffer, 1924b: 404. Norway.
edwardsi Goetghebuer, 1933f: 46 (as variety of *pulicaris*, preoccupied by *Culicoides edwardsi* Goetghebuer, 1921).
Europe.
edwardsianus Goetghebuer, 1933d: 367 (as variety of *pulicaris*). Great Britain.
nipponensis Tokunaga, 1955: 4. Japan.
padusae Mirzaeva, 1989: 87 (1990: 90). Russia.
papilliger Borkent, *in* Borkent and Wirth, 1997:78. New name for *papillatus*.
papillatus Kitaoka and Shinonaga, 1989: 26 (preoccupied by *Culicoides papillatus* Khamala and Kettle, 1971).
Pakistan.

paradoxalis Ramilo and Delécolle, *in* Ramilo et al., 2013: 244. France.

paraimpunctatus Borkent, 1995: 60. USA (Minnesota).
canadensis Wirth and Blanton, 1969b: 211 (preoccupied by Boesel, 1937). USA (Minnesota).

pulicaris (Linnaeus), 1758: 603 (*Culex*). Europe.
setosinervis Kieffer, 1913a: 8. Germany.
pullatus Kieffer, 1915a: 474. Germany.
stephensi Carter, 1916: 135. Egypt.
cinerellus Kieffer, 1919a: 40. Ukraine.
quinquepunctatus Goetghebuer, 1921: 177. Belgium.
flaviplumus Kieffer, 1924a: 19. Germany.
sawamotoi Kono and Takahasi, 1940: 75. Russia.

punctatus (Meigen), 1804: 29 (*Ceratopogon*). Europe.
punctatus Latreille, 1809: 252 (preoccupied by *Culicoides punctatus* (Meigen), 1804). France.
ocellaris Kieffer, 1921d: 276 (as variety of *pulicaris*). Latvia.
kasachstanicus Shakirzjanova, 1963: 63 (as subspecies of *pulicaris*). Kazakhstan.

putianensis Lee, 1988: 96. China.

qufuensis Xue and Yu, *in* Xue et al., 1992: 52. China.

quqiaoensis Chen, *in* Lee, 1988: 99. China.

rulfoi Spinelli and Huerta, 2015: 816. Mexico.

saltonensis Wirth, 1952a: 173 (as *cockerellii* ssp.). USA (California).

selandicus Nielsen, Kristensen and Pape, 2015: 6. Denmark.

sellersi Boorman and Dipeolu, 1979: 55. Nigeria.

sierrensis Wirth and Blanton, 1969b: 232. USA (California).

sommermanae Wirth and Blanton, 1969b: 234. USA (Alaska).

sordidellus (Zetterstedt), 1838: 820 (*Ceratopogon*). Greenland (Denmark).

subfagineus Delécolle and Ortega, 1998: 285. Spain.

subpunctatus Liu and Yu, 1996: 137 (Liu et al., 1999: 341). China.

tahemanensis Liu and Ma, 2001: 199. China.

tayulingensis Chen, 1983: 77 (1988: 153). China.

tienhsianguensis Chen, 1983: 78 (1988: 153). China.

tristriatulus Hoffman, 1925: 294 (as *cockerelli* var.). USA (California).

yukonensis Hoffman, 1925: 291. Canada (Yukon Territory).

yunanensis Chu and Liu, 1978: 81. China.

Subgenus DIPHAOMYIA Vargas

DIPHAOMYIA Vargas, 1960: 40 (as subgenus of *Culicoides*). Type species: *Culicoides baueri* Hoffman, by original designation.

baueri Hoffman, 1925: 297. USA (Maryland).

bergi Cochrane, 1973: 311. USA (New York).

blantoni Vargas and Wirth, 1955: 33. Mexico.

defoliarti Atchley and Wirth, 1979: 527. USA (Arizona).

edeni Wirth and Blanton, 1974b: 23. USA (Florida).

erikae Atchley and Wirth, 1979: 532. USA (New Mexico).

evansi Wirth and Blanton, 1959: 342. Panama.

footei Wirth and Jones, 1956: 162. USA (Virginia).

freitasi Wirth and Blanton, 1973: 434. Brazil (Para).

haematopotus Malloch, 1915a: 302. USA (Illinois).

inyoensis Wirth and Blanton, 1969a: 565. USA (California).

iriartei Fox, 1952: 368. Venezuela.
vargasi Wirth and Blanton, 1953a: 74. Panama.

jurbergi Felipe-Bauer, *in* Felipe-Bauer, et al., 2005: 51. Peru.

liscarruni Moncada, Carrasquilla and Spinelli, 2010: 978. Colombia.

marinkellei Wirth and Lee, 1967: 13. Colombia.

mckeeveri Brickle and Hagan, 1999: 39. Belize.

minasensis Felipe-Bauer, 1987: 147. Brazil.
mirsae Ortiz, 1953a: 801. Venezuela.
mukerjii Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 125. India.
peculiaris Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 127. India.
ronderosae Spinelli and Borkent, 2004a: 377. Costa Rica.
soleamaculatus Nandi and Mazumdar, 2014: 468. India.
tarapaca Spinelli and Wirth, 1984a: 184. Chile.

Subgenus DRYMODESMYIA Vargas

DRYMODESMYIA Vargas, 1960: 40 (as subgenus of *Culicoides*). Type species: *Culicoides copiosus* Root and Hoffman, by original designation.

arizonensis Wirth and Hubert, 1960: 655. USA (Arizona).
bakeri Vargas, 1954: 27. Mexico.
borinqueni Fox and Hoffman, 1944: 110. Puerto Rico (USA).
bredini Wirth and Blanton, 1970b: 41. Dominica.
butleri Wirth and Hubert, 1960: 650. USA (Arizona).
byersi Atchley, 1967: 983. USA (New Mexico).
cacticola Wirth and Hubert, 1960: 653. USA (California).
chacoensis Spinelli and Wirth, 1984a: 174. Argentina.
copiosus Root and Hoffman, 1937: 171. Mexico.
haitiensis Delécolle, Raccurt and Rebholtz, 1986: 108. Haiti.
hinmani Khalaf, 1952b: 353. USA (Oklahoma).
hitchcocki Spinelli and Wirth, 1984a: 176. Peru.
insolatus Wirth and Hubert, 1960: 654. Mexico.
jamaicensis Edwards, 1922: 165 (as *loughnani* var.). Jamaica.
jonesi Wirth and Hubert, 1960: 650. USA (Texas).
loughnani Edwards, 1922: 165. Jamaica.
panamensis Barbosa, 1947: 22. Panama.
 alambicorum Macfie, 1948: 81. Mexico.
pilosus Wirth and Blanton, 1959: 332. Panama.
poikilonotus Macfie, 1948: 82. Mexico.
 cacozelus Macfie, 1948: 85. Mexico.
 hertigi Wirth and Blanton, 1953b: 229. Panama.
ryckmani Wirth and Hubert, 1960: 656. USA (California).
saltaensis Spinelli and Wirth, 1984a: 183. Argentina.
sitiens Wirth and Hubert, 1960: 652. USA (California).
torridus Wirth and Hubert, 1960: 654. Mexico.
uruguayensis Ronderos, 1990a: 117. Uruguay.
wirthomyia Vargas, 1953b: 227. Mexico.

Subgenus FASTUS Liu

FASTUS Liu, *in* Yu et al., 2006: 1196 (as subgenus of *Culicoides*). Type species: *Culicoides alpigenus* Yu and Liu, by original designation.

alpigenus Yu and Liu, *in* Yu et al., 2006: 1197. China.
changbaiensis Qu and Ye, 1995:95. China.
dispersus Gutsevich and Smatov, 1966: 76. Kazakhstan.
erairai Kono and Takahasi, 1940: 70. Japan.
haerbalingensis Liu and Wang, *in* Liu et al., 2010: 63. China.
huochengensis Ma and Yu, *in* Ma et al., 1990: 47. China.
kangdingensis Yu and Liu, *in* Yu et al., 2006: 1204. China.
pingtanensis Yu, 1982: 202. China.

subchangbaiensis Liu and Ren, *in* Liu et al., 2010: 64. China.
taipingshanensis Liu and Guo, 2009:50. China.
zyzzamaculatus Yu, 1982: 202. China.

Subgenus GLAPHIROMYIA Vargas

GLAPHIROMYIA Vargas, 1960: 41 (as subgenus of *Culicoides*). Type species: *Culicoides scopus* Root and Hoffman, by original designation.

dampfi Root and Hoffman, 1937: 169. Mexico.
parascopus Wirth and Blanton, 1978: 238. Mexico.
scopus Root and Hoffman, 1937: 170. Mexico.

Subgenus HAEMOPHORUCTUS Macfie

HAEMOPHORUCTUS Macfie, 1925: 349. Type species: *Haemophoructus maculipennis* Macfie, by monotypy.

boormani Giles and Wirth, 1985: 365. Malaysia.
calcaratus Wirth and Hubert, 1989: 157. Malaysia.
gemellus Macfie, 1934c: 192. Malaysia.
gentilis Macfie, 1934c: 191. Malaysia.
gentiloides Kitaoka and Tanaka, 1985: 41. Taiwan.
gymnopterus Edwards, 1926b: 247. Malaysia.
hoffmanioides Wirth and Hubert, 1989: 173. Malaysia.
kinari Howarth, 1985: 44. Laos.
kisangkini Howarth, 1985: 47. Laos.
maculipennis (Macfie), 1925: 349 (*Haemophoructus*). Singapore.
mellipes Wirth and Hubert, 1989: 179. Malaysia.
nitens Edwards, 1933c: 252. Malaysia.
nyakini Howarth, 1985: 49. Laos.
rariradialis Das Gupta, 1963: 34. India.
tawauensis Wirth and Hubert, 1989: 161. Malaysia.
unicus Delfinado, 1961: 665. Philippines.

Subgenus HAEMATOMYIDIUM Goeldi

HAEMATOMYIDIUM Goeldi, 1905: 137. Type species: *Haematomyidium paraensis* Goeldi, by original designation.

annuliductus Wirth, *in* Vitale et al., 1981: 150. Panama.
aragaoi Tavares and Luna Dias, 1980: 393. Brazil.
austroparaensis Spinelli, *in* Spinelli et al., 2005: 141. Argentina.
bayano Wirth, *in* Vitale et al., 1981: 152. Panama.
crucifer Clastrier, 1968: 85. French Guiana.
darlingtonae Wirth and Blanton, 1971a: 39. Trinidad and Tobago.
debilipalpis Lutz, 1913: 60. Brazil.
 khalafi Beck, 1957: 104. USA (Florida).
 ichesi Ronderos and Spinelli, 1995b: 77. Argentina.
denisae Clastrier, 1971: 290. French Guiana.
diversus Felipe-Bauer, *in* Felipe-Bauer, et al., 2003: 1052. Peru.
dureti Ronderos and Spinelli, 1995a: 59. Paraguay.
eadsii Wirth and Blanton, 1971a: 37. USA (Texas).
eldridgei Wirth and Barreto, 1978: 561. Colombia.
equatoriensis Barbosa, 1952: 13 (1953: 14) (as variety of *debilipalpis*). Ecuador.
espinolai Felipe-Bauer and Lourenco-de-Oliveira, 1987: 149. Brazil.

filiductus Wirth, *in* Vitale et al., 1981: 155. Panama.
flinti Wirth, 1982b: 251. Argentina.
germanus Macfie, 1940d: 27. Guyana.
ginesi Ortiz, 1951c: 586. Venezuela.
glabrior Macfie, 1940d: 27 (as variety of *debilipalpis*). Guyana.
grahambelli Forattini, 1956b: 35. Panama.
hoffmani Fox, 1946a: 251. Trinidad and Tobago.
horticola Lutz, 1913: 61. Brazil.
bachmanni Spinelli, *in* Spinelli et al., 2005: 146. Argentina.
imitator Ortiz, 1953b: 808. Venezuela.
insinuatus Ortiz and León, 1955: 577. Ecuador.
jurutiensis Trindade and Felipe-Bauer, 2011a:61. Brazil.
kampa Felipe-Bauer, Veras, Castellon and Moreira, 2000: 35. Brazil.
kettlei Breidenbaugh and Mullens, 1999: 150. USA (California).
lahillei (Iches), 1906: 264 (*Ceratopogon*). Argentina.
limonensis Ortiz and León, 1955: 576. Ecuador.
martyrius Trindade and Felipe-Bauer, 2011a:62. Brazil.
neoparaensis Tavares and Souza, 1978: 621. Brazil.
pampaensis Spinelli and Wirth, 1984a: 182. Argentina.
paraensis (Goeldi), 1905: 137 (*Haematomyidium*). Brazil.
undecimpunctatus Kieffer, 1917b: 307. Argentina.
peruvianus Felipe-Bauer, *in* Felipe-Bauer, et al., 2003: 1054. Peru.
quasiparaensis Clastrier, 1971: 286. French Guiana.
rachoui Tavares and Souza, 1978: 622. Brazil.
spurius Wirth and Blanton, 1959: 433. Panama.
totatangae Wirth and Blanton, 1973: 447. Brazil.
torreyae Wirth and Blanton, 1971c: 73. USA (Florida).
youngi Wirth and Barreto, 1978: 562. Colombia.

Subgenus **HOFFMANIA** Fox

HOFFMANIA Fox, 1948: 21 (as subgenus of *Culicoides*). Type species: *Culicoides inamollae* Fox and Hoffman (= *Culicoides insignis* Lutz), by original designation.

aitkeni Wirth and Blanton, 1968a: 214. Trinidad and Tobago.
andrewsi Causey, 1938: 410. Thailand.
annettae Spinelli and Borkent, 2004a: 365. Costa Rica.
antioquiensis Spinelli, Santamaría, Cabrera, Ronderos and Suárez, 2009: 82. Colombia.
baniwa Felipe-Bauer, *in* Felipe-Bauer, et al., 2009: 852. Brazil.
batesi Wirth and Blanton, 1973: 426. Brazil.
sanmartini Wirth and Barreto, 1978: 553. Colombia.
bawanglingensis Yu, Wang and Chen, *in* Wang, et al., 2012: 283. China.
biestroi Spinelli and Ronderos, 1991: 86. Argentina.
bimaculatus Floch and Abonnenc, 1942b: 3. French Guiana.
brasilianum Forattini, 1956a: 81. Brazil.
brinchangensis Wirth and Hubert, 1989: 190. Malaysia.
brownei Spinelli, *in* Spinelli et al., 1993: 24. Colombia.
calchaqui Spinelli and Veggiani Aybar, *in* Spinelli, et al., 2013: 586. Argentina.
cameronensis Kitaoka, 1983: 94. Malaysia.
carpophilus Wirth and Hubert, 1989: 196. Malaysia.
charruus Spinelli and Martinez, 1992: 176. Uruguay.
cheahi Kitaoka, 1983: 92. Malaysia.
contubernalis Ortiz and León, 1955: 574 (as variety of *rozeboomi*). Ecuador.
coutinhoi Barretto, 1944: 96. Brazil.
dauidi Spinelli, *in* Spinelli et al., 1993: 30. Colombia.
diabolicus Hoffman, 1925: 294. Panama.

diffusus Spinelli, *in* Spinelli et al., 1993: 34. Brazil.
divisus Wirth and Hubert, 1989: 198. Malaysia.
effusus Delfinado, 1961: 658. Philippines.
fernandoi Tavares and Sousa, 1979: 611. Brazil.
ferreyrai Ronderos and Spinelli, 1995a: 61. Argentina.
filariferus Hoffman, 1939: 172. Mexico.
flavivenulus Costa Lima, 1937a: 418. Brazil.
foxi Ortiz, 1950c: 461. Puerto Rico (USA).
franklini Spinelli, *in* Spinelli et al., 1993: 45. Panama.
fusipalpis Wirth and Blanton, 1973: 435. Brazil.
guttatus (Coquillett), 1904c: 35 (*Ceratopogon*). Brazil.
heliconiae Fox and Hoffman, 1944: 108. Venezuela.
rozeboomi Barbosa, 1947: 26. Trinidad and Tobago.
hirtipennis Delfinado, 1961: 662. Philippines.
hylas Macfie, 1940d: 26. Guyana.
ignacioi Forattini, 1957: 215. Brazil.
saintjusti Tavares and Ruiz, 1980: 27. Brazil.
indianus Macfie, 1932b: 488. India.
cylindratus Kitaoka, 1980: 16. Japan.
innoxius Sen and Das Gupta, 1959a: 626. India.
insignis Lutz, 1913: 51. Brazil.
inamollae Fox and Hoffman, 1944: 110. Puerto Rico (USA).
painteri Fox, 1946a: 257. Honduras.
isoregalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 28. India.
jimmiensis Tokunaga, 1959: 229. Papua New Guinea.
kinabaluensis Wirth and Hubert, 1989: 211. Indonesia.
klossi Edwards, 1933c: 252. Malaysia.
lansangensis Howarth, 1985: 58. Laos.
liui Wirth and Hubert, 1961: 20. Taiwan.
lutzi Costa Lima, 1937a: 419. Brazil.
malayae Macfie, 1937d: 471. Malaysia.
maruim Lutz, 1913: 48. Brazil.
recifei Barbosa, 1947: 25. Brazil.
neoregalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 29. India.
novaguineanus Tokunaga, 1959: 223. Indonesia.
ocumarensis Ortiz, 1950b: 455. Venezuela.
orestes Wirth and Hubert, 1989: 222. Malaysia.
palpalis Macfie, 1948: 78. Mexico.
parabubalus Wirth and Hubert, 1989: 224. Malaysia.
paraignacioi Spinelli, *in* Spinelli et al., 1993: 66. Colombia.
paraliui Das Gupta, 1962a: 538. India.
paramalayae Wirth and Hubert, 1989: 226. Malaysia.
paramaruim Wirth and Blanton, 1973: 443. Brazil.
pararegalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 28. India.
parauapebensis Trindade and Felipe-Bauer, 2011b: 42. Brazil.
peregrinus Kieffer, 1910: 191. India.
judicandus Bezzi, 1916: 8 (1917: 108). Philippines.
esmoneti Salm, 1917b: 136. Indonesia.
philippinensis Kieffer, 1921g: 564. Philippines.
assamensis Smith and Swaminath, 1932: 183 (as variety of *peregrinus*). India.
quadratus Tokunaga, 1951: 108. Indonesia.
pikongkoi Howarth, 1985: 51. Laos.
plaumanni Spinelli, *in* Spinelli et al., 1993: 69. Argentina.
polypori Wirth and Blanton, 1968a: 212. Panama.
pseudodiabolicus Fox, 1946a: 256. Trinidad and Tobago.
pseudoheliconiae Felipe-Bauer, *in* Felipe-Bauer et al., 2008a: 260. Peru.

pseudoregalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 30. India.
quasiregalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 30. India.
recurvus Delfinado, 1961: 663. Philippines.
regalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 31. India.
ruizi Forattini, 1954a: 189. Brazil.
spiculae Howarth, 1985: 53. Laos.
subregalis Majumdar and Das Gupta, *in* Majumdar et al., 1997: 31. India.
sumatrae Macfie, 1934c: 190 (1934d: 215). Malaysia.
 amamiensis Tokunaga, 1937a: 325. Japan.
 kagiensis Tokunaga, 1937a: 327. Taiwan.
 ohmorii Takahashi, 1958: 113 (as subspecies of *amamiensis*). Japan.
 assimilis Delfinado, 1961: 660. Philippines.
tenuifasciatus Wirth and Hubert, 1989: 243. Malaysia.
tidwelli Spinelli, *in* Spinelli et al., 1993: 74. Colombia.
travassosi Forattini, 1957: 198. Brazil.
trimaculipennis Wirth and Hubert, 1989: 245. Malaysia.
trinidadensis Hoffman, 1925: 286. Trinidad and Tobago.
 oliveri Fox and Hoffman, 1944: 108. Haiti.
 wokei Barbosa, 1947: 28 (preoccupied by *Culicoides wokei* Fox, 1947). Panama.
 diminutus Barbosa, 1951: 163. New name for *wokei*.
venustus Hoffman, 1925: 290. USA (Maryland).
verecundus Macfie, 1948: 76. Mexico.
xanifer Wirth and Blanton, 1968a: 210. Panama.

Subgenus JILINOCOIDES Chu

JILINOCOIDES Chu, 1983: 28 (as subgenus of *Culicoides*). Type species: *Culicoides dunhuaensis* Chu, by original designation.

dunhuaensis Chu, 1983: 28. China.
guangxiensis Liu and Hao, 2003: 139. China.
mihunensis Chu, 1983: 29. China.
minimaporus Liu and Yu, *in* Yu et al., 2006: 890. China.

Subgenus MACFIELLA Fox

MACFIELLA Fox, 1955: 217 (as subgenus of *Culicoides*). Type species: *Ceratopogon phlebotomus* Williston, by original designation.

phlebotomus (Williston), 1896: 281 (*Ceratopogon*). St. Vincent.
 amazonius Macfie, 1935a: 52. Brazil.
willistoni Wirth and Blanton, 1953c: 116. Panama.

Subgenus MARKSOMYIA Bellis and Dyce

MARKSOMYIA Bellis and Dyce, 2011: 36 (as subgenus of *Culicoides*). Type species: *Culicoides marksi* Lee and Reye, by original designation.

dycei Lee and Reye, 1953: 390. Australia (New South Wales).
kayi Bellis and Dyce, 2011: 46. Australia (Western Australia).
marksi Lee and Reye, 1953: 392. Australia (New South Wales).
parvimaculatus Lee and Reye, 1953: 391. Australia (New South Wales).
pseudostigmatus Tokunaga, 1959: 234. Indonesia.
zentae Bellis and Dyce, 2011: 44. Australia (Queensland).

Subgenus MATAEMYIA Vargas

MATAEMYIA Vargas, 1960: 43 (as subgenus of *Culicoides*). Type species: *Culicoides mojingaensis* Wirth and Blanton, by original designation.

albuquerquei Wirth and Blanton, 1973: 424. Brazil.
aldomari Felipe-Bauer and Trindade, *in* Felipe-Bauer et al., 2013:56. Brazil.
avilaensis Ortiz and Mirsa, 1951: 593. Venezuela.
azureus Wirth and Blanton, 1959: 377. Panama.
barthi Tavares and Souza, 1978: 619. Brazil.
bricenoi Ortiz, 1951a: 445. Venezuela.
cuiabai Wirth, 1982b: 250. Brazil.
dalessandroi Wirth and Barreto, 1978: 556. Colombia.
daviesi Wirth and Blanton, 1968b: 251. Guyana.
dicrourus Wirth and Blanton, 1955b: 123. Panama.
discrepans Ortiz and Mirsa, 1951: 595. Venezuela.
felippebauerae Spinelli, *in* Spinelli et al., 2007: 660. Brazil.
huaynacapaci Felipe-Bauer, *in* Felipe-Bauer et al., 2008b: 308. Peru.
lenti Tavares and Luna Dias, 1980: 396. Brazil.
macieli Tavares and Ruiz, 1980: 29. Brazil.
mojingaensis Wirth and Blanton, 1953b: 232. Panama.
sherlocki Felipe-Bauer and Trindade, *in* Felipe-Bauer et al., 2013:56. Brazil.
volcanensis Wirth and Blanton, 1959: 389. Panama.
wallacei Wirth and Blanton, 1973: 449. Brazil.

Subgenus MEIJEREHELEA Wirth and Hubert

MEIJEREHELEA Wirth and Hubert, 1961: 23 (as subgenus of *Culicoides*). Type species: *Ceratopogon guttifer* de Meijere, by original designation.

arakawai (Arakawa), 1910: 411 (*Ceratopogon*, as *arakanae*). Japan.
sugimotonis Shiraki, 1913: 286. Taiwan.
alboguttatus Kieffer, 1921g: 563. Taiwan.
shimai (Sasaki), 1928: 687 (*Ceratopogon*). Japan.
daleki Smith and Swaminath, 1932: 185. India.
micropunctatus Tokunaga, 1951: 105. Indonesia.
niigataensis Takahashi, 1958: 115 (as variety of *arakawae*). Japan.
distinctipennis Austen, 1912: 101. Nigeria.
multiguttatus (Goetghebuer), 1935d: 156 (*Forcipomyia*). Democratic Republic of the Congo.
guttifer (de Meijere), 1907: 209 (*Ceratopogon*). Indonesia.
hegneri Causey, 1938: 402. Thailand.
hildae Cornet and Nevill, 1979: 179. South Africa.
histrion Johannsen, 1946: 190 (as variety of *guttifer*). Guam (USA).
mackayensis Lee and Reye, 1953: 383. Australia (Queensland).
isechnoensis Glick, 1990: 108. Kenya.
leucostictus Kieffer, 1911c: 340. Seychelles.
praetermissus Carter, Ingram and Macfie, 1920: 240. Ghana.
egypti Macfie, 1924: 66 (as variety of *distinctipennis*). Egypt.
pharao Kieffer, 1925e: 259. Egypt.
magnithecalis Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 124. India.
prolixipalpis Wirth and Hubert, 1989: 426. Malaysia.
pycnostictus Ingram and Macfie, 1925: 284. Malawi.
alexis de Meillon, 1936: 147. South Africa.

meeserellus de Meillon, 1936: 151. South Africa.
hysipyles de Meillon, 1936: 156. South Africa.

Subgenus MONOCULICOIDES Khalaf

MONOCULICOIDES Khalaf, 1954: 39 (as subgenus of *Culicoides*). Type species: *Ceratopogon nubeculosus* Meigen, by original designation.
STIGMOCULICOIDES Isaev, 1988: 15 (as subgenus of *Culicoides*). Type species: *Culicoides stigma* (Meigen), by original designation.

combinotheca Yu and Liu, *in* Yu et al., 1986: 211. China.

cornutus de Meillon, 1937b: 332. South Africa.

digitalis Remm, 1973: 178. Mongolia.

expallens Remm, 1973: 176. Mongolia.

grandensis Grogan & Phillips, 2008: 197. USA (Utah).

heiheensis Li, Zhang and Liu, 2011: 363. China.

helveticus Callot, Kremer and Deduit, 1962: 164. Switzerland.

homotomus Kieffer, 1922b: 158. Taiwan.

osakensis Iwata, 1935: 7. Japan.

denmeadi Causey, 1938: 403. Thailand.

longicollis Glukhova, 1971: 507. Ukraine.

longlinensis Yu, 1982: 202. China.

paradoxus Yu and Liu, 1990: 2. China.

nanpingensis Yu and Song, *in* Yu et al., 1986: 209. China.

nubeculosus (Meigen), 1830: 263 (*Ceratopogon*). Europe.

puncticollis Goetghebuer, 1912: 205 (preoccupied by *Culicoides puncticollis* (Becker), 1903). Belgium.

punctaticollis Goetghebuer, 1920: 56. New name for *puncticollis*.

occidentalis Wirth and Jones, 1957: 21 (as subspecies of *variipennis*). USA (California).

parroti Kieffer, 1922g: 502. Algeria.

puncticollis (Becker), 1903: 75 (*Ceratopogon*). Egypt.

algecirensis (Strobl), 1900: 170 (*Ceratopogon*, as form of *pulicaris*). Spain. Name suppressed by ICZN Opinion 1643.

impressus Kieffer, 1918a: 47. Tunisia.

distigma Kieffer, 1922g: 502. Algeria.

donatieni Kieffer, 1922g: 504. Algeria.

sciniphes Kieffer, 1925e: 261. Egypt.

bipunctatus Vimmer, 1932: 133. Israel.

tripunctatus Vimmer, 1932: 137. Israel.

wenigi Vimmer, 1932: 138. Israel.

flavitarsis Vimmer, 1932: 137. Israel.

griseovittatus Vimmer, 1932: 133. Israel.

luteosignatus Vimmer, 1932: 140. Israel.

vavrai Vimmer, 1932: 140. Israel.

rarus Das Gupta, 1963: 40. India.

riethi Kieffer, 1914a: 237. Germany.

cordatus Kieffer, 1921h: 114 (1921d: 275). Latvia.

crassiforceps Kieffer, 1924a: 15. Germany.

gigas Root and Hoffman, 1937: 172. Canada (Saskatchewan).

shemanchuki Grogan and Lysyk, 2015: 3. Canada (Alberta).

sonorensis Wirth and Jones, 1957: 18 (as subspecies of *variipennis*). USA (Arizona).

albertensis Wirth and Jones, 1957: 17 (as subspecies of *variipennis*). Canada (Alberta).

australis Wirth and Jones, 1957: 15 (as subspecies of *variipennis*). USA (Louisiana).

stigma (Meigen), 1818: 73 (*Ceratopogon*). Europe.
kiefferi Goetghebuer, 1910: 96. Belgium.
cordiformitarsis Carter, 1916: 134. Egypt.
unimaculatus Goetghebuer, 1920: 57. New name for *kiefferi*.
stigmoides Callot, Kremer and Dedit, 1962: 166. France.
taonanensis Ren, Wang and Liu, 2006: 388. China.
variipennis (Coquillett), 1901: 602 (*Ceratopogon*). USA (Virginia).
xinghaiensis Yu, 1982: 202. China.

Subgenus NULLICELLA Lee

NULLICELLA Lee, 1982: 165 (as subgenus of *Culicoides*). Type species: *Culicoides lasaensis* Lee, (by original designation).

lasaensis Lee, 1978: 63 (1979a: 100). China.

Subgenus OECACTA Poey

OECACTA Poey, 1853: 238. Type species: *Oecacta furens* Poey, by monotypy.
DIPLOSELLA Kieffer, 1921h: 113 (as subgenus of *Culicoides*). Type species: *Culicoides sergenti* Kieffer, by monotypy.

absitus Liu and Yu, 1990: 20. China.

alahialinus Barbosa, 1952: 11 (1953: 12). Ecuador.

alatavicus Gutsevich and Smatov, *in* Smatov and Isimbekov, 1971: 61. New name for *fuscus*.
fuscus Gutsevich and Smatov, 1966: 71 (preoccupied by *Culicoides fuscus* Goetghebuer, 1952).
Kazakhstan.

albicans (Winnertz), 1852: 41 (*Ceratopogon*). Germany.

alexandrae Dzhafarov, 1962a: 211. Azerbaijan.

alishanensis Chen, 1983: 80 (1988: 151). China.

altaicus Remm, 1972: 80. Russia.

amossovae Remm, 1971: 205. Russia.

arboreus Gutsevich, 1952: 90. Russia.

arnaudi Hubert and Wirth, 1961: 238. Japan.

asiaticus Gutsevich and Smatov, 1966: 75. Kazakhstan.

azerbajdzhanicus Dzhafarov, 1962a: 211. Azerbaijan.

balikunensis Liu and Ma, 2011: 888. China.

barbosai Wirth and Blanton, 1956: 161. Panama.

besscus Liu and Yu, 1990: 15. China.

beybienkoi Dzhafarov, 1962b: 183. Azerbaijan.

bipalus Yu, 1991: 52. New name for *biclavatus*.
biclavatus Deng and Yu, *in* Zhang et al., 1990: 27 (preoccupied by *Culicoides biclavatus* Kieffer, 1924a). China.

brunnicans Edwards, *in* Edwards et al., 1939: 43. Great Britain.

caliginosus Goetghebuer, 1952: 2. Belgium.

cameroni Campbell and Pelham-Clinton, 1960: 222. Great Britain.

cancer Hogue and Wirth, 1968: 2. Costa Rica.

capillosus Borkent, *in* Borkent and Wirth, 1997:64. New name for *hirtus*.

hirtus Xue and Yu, *in* Zhang et al., 1990: 30 (preoccupied by *Culicoides hirtus* de Meillon and Lavoipierre, 1944).
China.

cassideus Zhang and Yu, *in* Zhang et al., 1990: 27. China.

causeyi Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 127. India.

cheni Kitaoka and Tanaka, 1985: 43. Taiwan.

chitinosus Gutsevich and Smatov, 1966: 67. Kazakhstan.

claggi Tokunaga, *in* Tokunaga and Murachi, 1959: 338. Bonin Islands.
clintoni Boorman, 1984: 164. Great Britain.
continualis Qu and Liu, 1982: 102. China.
corsicus Kremer, Leberre and Beaucournu-Saguez, 1971: 655. France.
crassipilosus Tokunaga, 1937a: 276. Japan.
 balius Arnaud, 1956a: 96. Japan.
derisor Callot and Kremer, 1965: 330. France.
desytoculus Liu and Zhao, 1998: 10. China.
dingriensis Yu and Liu, *in* Yu et al., 2006: 1056. China.
distinctipalpis Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 128. India.
dukinensis Mirzaeva, 1985: 98. Russia.
dzhafarovi Remm, 1967: 25. Azerbaijan.
 dzhafarovi Callot, Kremer, Molet and Bach, 1968: 95. France.
firuzae Dzhafarov, 1958: 245. Azerbaijan.
fluvaitilis Xiang and Yu, *in* Ma et al., 1990: 47. China.
fukienensis Chen and Tsai, 1962: 395. China.
fukudai Wada, 1990: 56. Japan.
furcillatus Callot, Kremer and Paradis, 1962: 771. France.
furens (Poey), 1853: 238 (*Oecacta*). Cuba.
 maculithorax (Williston), 1896: 277 (*Ceratopogon*). St. Vincent.
 dovei Hall, 1932: 88. USA (Georgia).
 birabeni Cavalieri, 1966: 59. Venezuela.
furensoides Williams, 1955: 271. USA (Michigan).
 dickei Jones, 1956: 28. USA (Wisconsin).
gorgasi Wirth and Blanton, 1953b: 232. Panama.
gracilipes Vaillant, 1954: 227. France.
gutsevichi Sen and Das Gupta, 1958b: 163 (1959b: 65). New name for *orientalis*.
 orientalis Gutsevich, 1952: 92 (preoccupied by *Culicoides orientalis* Macfie, 1932b). Russia.
 bisulcatus Gutsevich, 1959: 681. New name for *orientalis*.
hainanensis Lee, 1975: 433. China.
hanae Braverman, Delécolle and Kremer, 1983: 678. Egypt.
heilongjiangensis Liu and Ren, *in* Liu, et al., 2011: 574. China.
hengduanshanensis Lee, 1984: 88. China.
hokkaidoensis Kitaoka, 1984: 303. Japan.
horridus Yu and Deng, *in* Yu, 1988: 135. China.
iliensis Gutsevich and Smatov, 1966: 68. Kazakhstan.
insularis Kitaoka, 1980: 18. Japan.
inthanonensis Kitaoka, Takaoka and Choochote, 2005: 288. Thailand.
jiulongensis Liu and Wang, *in* Liu, et al., 2011: 170. China.
kaifongensis Yu, 1982: 202. China.
karagiensis Smatov and Aldabergenov, 1973: 24. Kazakhstan.
karakumensis Gutsevich and Molotova, *in* Gutsevich, 1973: 180. Turkmenistan.
kirgizicus Glukhova, 1973: 111. Kyrgyzstan.
kohistanensis Kitaoka and Shinonaga, 1989: 29. Pakistan.
komarovi Mirzaeva, 1985: 99. Russia.
komiensis McDonald, Bolinguit and Lu, 1973: 641. Japan.
konglinensis Yu and Kong, *in* Xue et al., 1992: 52. China.
kugitangi Ataev, 1976: 79. Turkmenistan.
kyushuensis Wada, 1986: 146. Japan.
laimargus Zhou and Lee, 1984a: 221. China.
lenae Glushchenko and Mirzaeva, 1970: 37. Russia.
lieni Chen, 1979: 99. Taiwan.
lingshuiensis Lee, 1975: 434. China.
lini Kitaoka and Tanaka, 1985: 46. Taiwan.
liukueiensis Kitaoka and Tanaka, 1985: 47. Taiwan.
longipennis Khalaf, 1957b: 348. Iraq.

flavisimilis Dzhafarov, 1964: 291. Azerbaijan.
lulianchengi Chen, 1983: 93 (1988: 152). China.
marclei Callot, Kremer and Basset, 1968: 271. Algeria.
marginus Chu, 1984: 24. New name for *marginalis*.
marginalis Chu and Liu, 1978: 84 (preoccupied by *Culicoides marginalis* Lee and Reye, 1963).
China.
margipictus Qu and Wang, 1994: 487. China.
menghaiensis Lee, 1980: 87. China.
miharai Kinoshita, 1918: 156. Korea.
molotovae Glukhova and Braverman, 1999: 309. Turkmenistan.
mongolensis Yao, 1964: 287. China.
transcaspius Molotova, 1966: 654. Turkmenistan.
morisitai Tokunaga, 1940d: 149. China.
mihensis Arnaud, 1956a: 115. Japan.
nagahanai Tokunaga, 1956: 119. Japan.
nagarzensis Lee, 1978: 77 (1979a: 98). China.
nankanensis Lien, Weng and Lin, 1996: 21. Taiwan.
nasuensis Kitaoka, 1984: 303. Japan.
nibleyi Hubert and Wirth, 1961: 237. Japan.
nukabirensis Wada, 1979: 204. Japan.
nunomemoguri Kitaoka, 1980: 18. Japan.
okazawai Wada, 1990: 60. Japan.
omogensis Arnaud, 1956a: 119. Japan.
orescius Yu and Liu, *in* Yu et al., 2006: 1170. China.
pakistanensis Kitaoka and Shinonaga, 1989: 30. Pakistan.
pallidus Khalaf, 1957b: 338. Iraq.
stackelbergi Dzhafarov, 1962a: 210. Azerbaijan.
pamiricus Zhogolev, 1973: 185. Tajikistan.
pentamaculatus Smatov, *in* Smatov and Kravets, 1976: 283. Kazakhstan.
petronius Liu and Yu, *in* Yu et al., 2006: 1091. China.
pictimargo Tokunaga and Shogaki, 1953: 286. Japan.
picturatus Kremer and Deduit, 1961: 701. France.
paradisionensis Boorman, 1988: 156. Greece.
qianshanensis Fei, 1982: 105. China.
qinghaiensis Fei and Lee, 1984a: 182. China.
ritzei Dzhafarov, 1964: 346. Georgia.
sacrilegus Xue and Yu, 1991: 53. China.
saevanicus Dzhafarov, 1960b: 94. Armenia.
sahariensis Kieffer, 1923a: 678. Algeria.
baghdadensis Khalaf, 1957b: 341 (as subspecies of *similis*). Iraq.
coluzzii Callot, Kremer and Bailly-Choumara, 1970: 710. Tunisia.
sajanicus Mirzaeva, 1971: 35. Russia.
saninensis Tokunaga, 1956: 116. Japan.
epactius Arnaud, 1956a: 102. Japan.
litus Arnaud, 1956a: 111. Japan.
santonicus Callot, Kremer, Rault and Bach, 1966: 514. France.
semimaculatus Clastrier, 1958a: 55. Algeria.
karajevi Dzhafarov, 1961c: 77. Azerbaijan.
sensillatus Mirzaeva, 1971: 33. Russia.
kuraiensis Remm, 1972: 82. Russia.
sergenti Kieffer, 1921h: 113. Algeria.
citrinellus Kieffer, 1923a: 674. Algeria.
mosulensis Khalaf, 1957b: 339. Iraq.
turkmenicus Gutsevich, 1959: 678. Turkmenistan.
shandongensis Zhao and Liu, 2012: 324. China.
sogdianus Gutsevich, 1966: 673. Uzbekistan.

spinoverbosus Qu and Wang, 1994: 488. China.
stellifer (Coquillett), 1901a: 604 (*Ceratopogon*). USA (District of Columbia).
stupulosus Yu and Zhang, *in* Deng et al., 1990: 35. China.
subgrisescens Dzhafarov, 1964: 249. Azerbaijan.
sublatifrontis Smatov and Isimbekov, 1971: 61. Kazakhstan.
subsylvarum Remm, 1981: 32. Russia.
tadzhikistanicus Zhogolev, 1969: 114. Tajikistan.
taiwanensis Kitaoka and Tanaka, 1985: 44. Taiwan.
talgariensis Gutsevich and Smatov, 1966: 74. Kazakhstan.
tatebeae Kitaoka, 1991: 291. Japan.
tbilisicus Dzhafarov, 1964: 309. Azerbaijan, Georgia.
dendriticus Boorman, 1976: 102. Great Britain.
tentorius Austen, 1921: 110. Israel.
tianmushaensis Chu, 1981: 310. China.
tiaratus Liu and Zhao, *in* Yu et al., 2006: 1109. China.
tohokuensis Okada, 1941: 16. Japan.
tokunagai Arnaud, 1956a: 132. Japan.
toshiokai Kitaoka, 1975: 194. Japan.
trivittatus Vimmer, 1932: 136. Israel.
subneglectus Vimmer, 1932: 139. Israel.
bulbostylus Khalaf, 1961: 463. Iraq.
truncorum Edwards, *in* Edwards et al., 1939: 41. Great Britain.
sylvarum Callot and Kremer, 1961b: 389. France.
tsutaensis Wada, 1990: 65. Japan.
tuamsombooni Kitaoka, Takaoka and Choochote, 2005: 290. Thailand.
tunkinensis Mirzaeva, 1985: 97. Russia.
turanicus Gutsevich and Smatov, *in* Smatov and Isimbekov, 1971: 61. New name for *kasachstanicus*.
kasachstanicus Gutsevich and Smatov, 1966: 70 (preoccupied by *Culicoides kasachstanicus* Shakirzjanova, 1963).
Kazakhstan.
undentaris Liu, 2002: 191. China.
variifrons Glukhova and Ivanov, *in* Ivanov and Glukhova, 1967: 810. Russia.
verbosus Tokunaga, 1937a: 303. Taiwan.
vefans (Staeger), 1839: 593 (*Ceratopogon*). Denmark.
pungens (Kieffer), 1901a: 163 (*Palpomyia*). France.
perpungens Kieffer, 1919a: 33. New name for *pungens*.
ajbassovi Shakirzjanova, 1962: 254. Kazakhstan.
wuyiensis Chen, 1981: 93 (1982: 129). China.
xinjiangensis Chu, Qian and Ma, 1982: 107. China.
xinpingensis Qu and Liu, 1982: 101. China.
yadongensis Chu, 1984: 24. New name for *spinulosus*.
spinulosus Chu, 1977: 100 (preoccupied by *Culicoides spinulosus* Khamala and Kettle, 1971).
China.
yemenensis Boorman, 1989: 211. Yemen.
yui Liu and Hao, *in* Yu et al., 2006: 1117. China.
zhiyingi Yu and Liu, 1990: 8. China.
zhuhaiensis Yu and Hao, *in* Yu, 1988: 137. China.

Subgenus PONTOCULICOIDES Remm

PONTOCULICOIDES Remm, *in* Remm and Zhogolev, 1968: 840 (as subgenus of *Culicoides*). Type species: *Culicoides*

tauricus Gutsevich, by original designation.

CALLOTIA Vargas and Kremer, 1972: 242 (as subgenus of *Culicoides*). Type species: *Culicoides saevus* Kieffer, by original designation.

catharinae Kremer, Delécolle and Braverman, 1991: 151. Egypt.
denisoni Boorman, 1988: 152. Greece.
engubandei de Meillon, 1937b: 337. South Africa.
ibericus Dzhafarov, 1963: 54 (1964: 355). Azerbaijan.
kamrupi Sen and Das Gupta, 1958b: 163 (1959a: 617; 1959b: 65). New name for *albipennis*.
albipennis Smith and Swaminath, 1932: 184 (preoccupied by *Culicoides albipennis* Kieffer, 1919a).
 India.
mirzaevae Glukhova and Khabirov, 1977: 50 (as *mirzaevi*). Tajikistan.
saevus Kieffer, 1922g: 506. Algeria.
drenskii Zilahi-Sebess, 1934: 154. Bulgaria.
puncticeps Goetghebuer, 1934a: 91. Austria.
micromaculithorax Khalaf, 1957b: 340. Iraq.
salebrosus Liu and Shi *in* Liu, Gong, Zhang, and Shi 2003: 360. China.
sejfadinei Dzhafarov, 1958: 247. Azerbaijan.
flavidus Dzhafarov, 1959: 470. Azerbaijan.
slovacus Orszagh, 1969: 1. Slovak Republic.
subsejfadinei Liu, Wang and Hao, 1999: 201. China.
tauricus Gutsevich, 1959: 677. Ukraine.
vespertinus Yu and Ma, *in* Ma et al., 1990: 48. China.
zhongningensis Yu, 1982: 201 (1981: 31). China.

Subgenus PSYCHOPHAENA Philippi

PSYCHOPHAENA Philippi, 1865: 628. Type species: *Psychophaena pictipennis* Philippi (= *Culicoides venezuelensis* Ortiz and Mirsa), by monotypy.

lacustris Ronderos, 1990a: 116. Argentina.
venezuelensis Ortiz and Mirsa, 1950: 137. Venezuela.
pictipennis (Philippi), 1865: 628 (*Psychophaena*, preoccupied by *Culicoides pictipennis* (Staeger), 1839). Chile.
ortizi Fox, 1952: 366. Venezuela.

Subgenus REMMIA Glukhova

REMMIA Glukhova, 1977: 116 (as subgenus of *Culicoides*). Type species: *Ceratopogon schultzei* Enderlein, by original designation.

enderleini Cornet and Brunhes, 1994: 157. Senegal.
kingi Austen, 1912: 104. Sudan.
nilotes Kieffer, 1925e: 257. Egypt.
neoschultzei Boorman and Meiswinkel, *in* Boorman, 1989: 192. Oman.
nevilli Cornet and Brunhes, 1994: 158. Senegal.
oxystoma Kieffer, 1910: 193. India.
kiefferi Patton, 1913: 336 (preoccupied by *Culicoides kiefferi* Goetghebuer, 1910). India.
mesopotamiensis Patton, 1920: 246. Iraq.
pattoni Kieffer, 1921e: 7. India. New name for *kiefferi*.
housei Causey, 1938: 407. Thailand.
punctigerus Tokunaga, 1951: 101. Indonesia.
alatus Das Gupta and Ghosh, 1956b: 162. India.
rhizophorensis Khamala and Kettle, 1971: 77. Kenya.
schultzei (Enderlein), 1908: 459 (*Ceratopogon*). Namibia.
irroratus Goetghebuer, 1948b: 12. Democratic Republic of the Congo.
subschultzei Cornet and Brunhes, 1994: 158. South Africa.

Subgenus SELFIA Khalaf

SELFIA Khalaf, 1954: 38 (as subgenus of *Culicoides*). Type species: *Culicoides hieroglyphicus* Malloch, by original designation.

brookmani Wirth, 1952a: 179. USA (California).
denningi Foote and Pratt, 1954: 20. Canada (Saskatchewan).
hieroglyphicus Malloch, 1915a: 297. USA (Arizona).
jacksoni Atchley, 1970: 258. USA (New Mexico).
jamesi Fox, 1946: 244. USA (Montana).
moabensis Phillips, 2015: 843. USA (Utah).
multipunctatus Malloch, 1915a: 296. USA (Illinois).
tenuistylus Wirth, 1952a: 178. USA (California).

Subgenus SENSICULICOIDES Shevchenko

SENSICULICOIDES Shevchenko, 1977: 133 (as subgenus of *Culicoides*). Type species: *Ceratopogon pictipennis* Staeger, by original designation.

alazanicus Dzhafarov, 1961b: 75. Azerbaijan.
musilator Kremer and Callot, 1961: 693. France.
atripennis Shevchenko, 1972: 77. Ukraine.
begueti Clastrier, 1957: 432. Algeria.
cataneii Clastrier, 1957: 438. Algeria.
caucoliberensis Callot, Kremer, Rioux and Descous, 1967: 827. France.
clastrieri Callot, Kremer and Dedit, 1962: 156. France.
comosioculatus Tokunaga, 1956: 121. Japan.
chaetophthalmus Amosova, 1957: 237. Russia.
caucasicus Sergejev, 1959: 203 (as subspecies of *chaetophthalmus*). Russia.
setosus Gutsevich, 1960: 106. Ukraine.
duddingstoni Kettle and Lawson, 1955: 42. Great Britain.
festivipennis Kieffer, 1914a: 235. Germany.
odibilis Austen, 1921: 114. Israel.
winnertzi Edwards, 1926a: 406. Germany.
gejgelensis Dzhafarov, 1964: 282. Azerbaijan.
bifasciatus Tokunaga, 1951: 104. Indonesia.
griseidorsum Kieffer, 1918a: 46. Algeria.
haranti Rioux, Descous and Pech, 1959: 432. France.
heliophilus Edwards, 1921: 124. Great Britain.
latifrontis Shakirzjanova, 1962: 256. Kazakhstan.
kobachidzei Dzhafarov, 1964: 348. Georgia.
heteroclitus Kremer and Callot, *in* Callot and Kremer, 1965: 333 (Callot and Kremer, 1966: 941). France.
jumeri Callot and Kremer, 1969b: 1112. Tunisia.
jurensis Callot, Kremer and Dedit, 1962: 160. France.
kibunensis Tokunaga, 1937a: 298. Japan.
cubitalis Edwards, *in* Edwards et al., 1939: 40. Great Britain.
ponkikiri Kono and Takahasi, 1940: 74. Japan.
sitinoensis Okada, 1941: 18. Japan.
kolybiensis Boorman, 1988: 154. Greece.
kurensis Dzhafarov, *in* Gutsevich, 1960: 100. Azerbaijan.
langeroni Kieffer, 1921i: 262. Tunisia.
malevillei Kremer and Coluzzi, 1971: 415. Italy.
maritimus Kieffer, 1924a: 16. Germany.
submaritimus Dzhafarov, 1962a: 206. Azerbaijan.
odiatus Austen, 1921: 112. Israel.

niger Dzhafarov, 1960a: 1183 (as variety of *pallidicornis*, preoccupied by *Culicoides niger* Root and Hoffman, 1937).

Azerbaijan.

indistinctus Khalaf, 1961: 461. Iraq.

lailae Khalaf, 1961: 458. Iraq.

kurektshaicus Dzhafarov, 1962a: 209. Azerbaijan.

conicus Remm, in Remm and Zhogolev, 1968: 839. Ukraine.

pictipennis (Staeger), 1839: 594 (*Ceratopogon*). Denmark.

arcuatus (Winnertz), 1852: 39 (*Ceratopogon*). Germany.

guttularis Kieffer, 1919a: 45. Hungary.

maculatus Zilahi-Sebess, 1936a: 202 (as variety of *pictipennis*, preoccupied by *Culicoides maculatus* (Shiraki),

1913). Hungary.

achkamalicus Dzhafarov, 1964: 251. Azerbaijan.

luganicus Shevchenko, 1972: 75. Ukraine.

poperinghensis Goetghebuer, 1953: 127. Belgium.

pseudoheliophilus Callot and Kremer, 1961a: 682. France.

albihalteratus Goetghebuer, 1935b: 414 (as variety of *neglectus*, preoccupied by *Dasyhelea albohalteratus* (Santos

Abreu), 1918). Belgium.

pseudopallidus Khalaf, 1961: 466. Iraq.

shaklawensis Khalaf, 1957b: 345. Iraq.

caspius Gutsevich, 1959: 676. Russia.

simulator Edwards, in Edwards et al., 1939: 40. Great Britain.

stanicus Shevchenko, 1970a: 84. Ukraine.

stepicola Remm, in Remm and Zhogolev, 1968: 838. Ukraine.

markevitshi Shevchenko, 1969: 47. Ukraine.

aquilinus Smatov and Kravets, 1976: 284. Kazakhstan.

triangulatus Shevchenko, 1970b: 11. Ukraine.

ukrainensis Shevchenko, 1970b: 14. Ukraine.

univittatus Vimmer, 1932: 139. Israel

agathensis Callot, Kremer and Rioux, 1963: 121. France.

ustinovi Shevchenko, 1962: 673. Ukraine.

vidourlensis Callot, Kremer, Molet and Bach, 1968: 99. France.

zhogolevi Remm, in Remm and Zhogolev, 1968: 836. Ukraine.

Subgenus SILVATICULICOIDES Glukhova

SILVATICULICOIDES Glukhova, 1977: 117 (as subgenus of *Culicoides*). Type species: *Ceratopogon fascipennis* Staeger, by original designation.

achrayi Kettle and Lawson, 1955: 37. Great Britain.

biguttatus (Coquillett), 1901: 604 (*Ceratopogon*). USA (Washington D.C.).

burylovae Glukhova and Khabirov, 1977: 52 (as *burylovi*). Tajikistan.

fascipennis (Staeger), 1839: 594 (*Ceratopogon*). Denmark.

distictus Kieffer, in Thienemann and Kieffer, 1916: 492. Sweden.

albonotatus Kieffer, 1918a: 94. Turkey.

turficola Kieffer, 1925b: 155. Estonia.

loisae Jamnback, 1965: 77. USA (New York).

mulrennani Beck, 1957: 103. USA (Florida).

ostroushkoae Glukhova, 1989: 220. Ukraine.

spinusus Root and Hoffman, 1937: 172. USA (Maryland).

subfasciipennis Kieffer, 1919a: 44. Hungary.

analisis Kieffer, 1925d: 81 (as variety of *subfasciipennis*, preoccupied by *Culicoides analis* Santos Abreu, 1918).

Belgium.

sublettei Atchley, 1967: 997. USA (New Mexico).

usingeri Wirth, 1952a: 192. USA (California).

vetustus Breidenbaugh and Mullens, 1999: 156. USA (California).

Subgenus SINOCOIDES Chu

SINOCOIDES Chu, 1983: 26 (as subgenus of *Culicoides*). Type species: *Culicoides hamiensis* Chu, Qian and Ma, by original designation.

anthropophygas Yu and Liu, in Yu et al., 2006: 892. China.

hamiensis Chu, Qian and Ma, 1982: 109. China.

kongmiaoensis Liu and Zhou, 2006: 468. China.

malipoensis Liu and Ren, in Liu et al., 2011: 258. China.

multifarious Liu, Gong and Zhang in Liu, Gong, Zhang, and Shi 2003: 359. China.

nanniwanensis Liu and Wang, in Liu et al., 2011: 258. China.

opertus Liu and Yu, 1990: 15. China.

pungobovis Liu, Yan and Liu, 1996: 35. China.

Subgenus SYNHELEA Kieffer

SYNHELEA Kieffer, 1925a: 423. Type species: *Culicoides tropicalis* Kieffer, designation by Wirth et al., 1980: 160.

accraensis Carter, Ingram and Macfie, 1920: 241. Ghana.

albopunctatus Clastrier, 1960a: 84. Congo.

arabiensis Boorman, 1989: 173. Oman.

bedfordi Ingram and Macfie, 1923: 57. South Africa.

camicasi Cornet and Chateau, 1971: 160. Senegal.

congolensis Clastrier, 1960a: 98. Congo.

corneti Kremer, 1972: 92. Angola.

dispar Clastrier, 1959a: 175. Senegal.

dutoiti de Meillon, 1943: 100. South Africa.

vagus Cornet and Chateau, 1971: 156. Senegal.

expectator Clastrier, 1959a: 177. Senegal.

gambiae Clastrier and Wirth, 1961b: 308. Gambia.

grenieri Vattier and Adam, 1966b: 723. Congo.
karenensis Glick, 1990: 162. Kenya.
kobae Cornet and Chateau, 1971: 148. Senegal.
micheli Cornet and Chateau, 1971: 164. Senegal.
moucheti Cornet and Kremer, 1970: 266. Chad.
olyslageri Kremer and Nevill, 1972: 467. South Africa.
papillatus Khamala and Kettle, 1971: 84. Kenya.
parvulus Khamala and Kettle, 1971: 62. Kenya.
pellucidus Khamala and Kettle, 1971: 62. Tanzania.
perettii Cornet and Chateau, 1971: 145. Senegal.
pretoriensis Kremer and Nevill, 1972: 464. South Africa.
radiomaculatus Khamala and Kettle, 1971: 85. Kenya.
ravus de Meillon, 1936: 151. South Africa.
 tokwensis de Meillon, 1942a: 97. Zimbabwe.
 fuscicaudae Macfie, 1947b: 75. Sudan.
 subravus Cornet and Chateau, 1971: 167. Senegal.
similis Carter, Ingram and Macfie, 1920: 255. Ghana.
spinulosus Khamala and Kettle, 1971: 87. Uganda.
stercorarius Khamala and Kettle, 1971: 60. Uganda.
tauffliebi Clastrier, 1960a: 96. Congo.
translucens Khamala and Kettle, 1971: 83. Tanzania.
tropicalis Kieffer, 1913e: 10. Kenya.
 babrius de Meillon, 1943: 112. Zimbabwe.
vicinus Clastrier, 1960a: 104. New name for *intermedius*.
 intermedius Clastrier, 1959a: 173 (preoccupied by *Dasyhelea intermedia* (Santos Abreu), 1918).
 Senegal.

Subgenus TRITHECOIDES Wirth and Hubert

TRITHECOIDES Wirth and Hubert, 1959: 2 (as subgenus of *Culicoides*). Type species: *Culicoides flaviscutatus* Wirth and Hubert, by original designation.

acanthostomus Wirth and Hubert, 1989: 92. Malaysia.
albibasis Wirth and Hubert, 1959: 31. Malaysia.
allantothecus Wirth and Hubert, 1989: 121. Malaysia.
anophelis Edwards, 1922: 161. Malaysia and India.
baisasi Wirth and Hubert, 1959: 12. Philippines.
barnetti Wirth and Hubert, 1959: 32. Malaysia.
concatervans Liu and Yu, *in* Yu et al., 2006: 826. China.
culiciphagus Wirth and Hubert, 1959: 11. Solomon Islands.
cylindripalpis Wirth and Hubert, 1989: 98. Malaysia.
dungunensis Wirth and Hubert, 1989: 125. Malaysia.
elbeli Wirth and Hubert, 1959: 27. Malaysia.
flavescens Macfie, 1937c: 114 (as variety of *anophelis*). Malaysia.
 subflavescens Wirth and Hubert, 1959: 14. Indonesia.
flavidorsum Shevchenko and Lisetsky, 1969: 1413. Russia.
flaviscutatus Wirth and Hubert, 1959: 34. Indonesia.
flaviscutellaris Wirth and Hubert, 1989: 132. Malaysia.
flavitibialis Kitaoka and Tanaka, 1985: 42. Taiwan.
forcepifinis Nandi, Mazumdar and Chaudhuri, 2015: 65. India.
fordae Lee, 1988: 53 (as *fordae* Wirth and Hubert). China.
 fordae Wirth and Hubert, 1989: 133 (preoccupied by *Culicoides fordae* Lee, 1988). Malaysia.
fulvithorax (Austen), 1912: 105 (*Johannseniella*). Kenya.
 citrinus Kieffer, 1921b: 15. Cameroon.
 ruficollis Goetghebuer, 1935d: 174. Democratic Republic of the Congo.

gewertzi Causey, 1938: 409. Thailand.
gouldi Wirth and Hubert, 1989: 139. Malaysia.
hinnoi Howarth, 1985: 33. Laos.
huberti Howarth, 1985: 35. Laos.
humeralis Okada, 1941: 20. Japan.
inciderus Nandi, Mazumdar and Chaudhuri, 2015: 67. India.
inornatithorax Das Gupta, 1963: 36. India.
insolens Choudhuri and Das Gupta, *in* Choudhuri et al., 1986: 54. India.
jianfenglingensis Liu, 1995: 9. China.
laoensis Howarth, 1985: 37. Laos.
longicercus Kitaoka, 1980: 19. Japan.
longiporus Chu and Liu, 1978: 86. China.
luteolus Wirth and Hubert, 1989: 100. Malaysia.
macfieii Causey, 1938: 411. Thailand.
maculitibialis Lien, Weng and Lin. 1997: 171. Taiwan.
manhauensis Yu, 1982: 202. China.
manikumari Wirth and Hubert, 1989: 103. Malaysia.
matsuzawai Tokunaga, 1950: 64. Japan.
menglaensis Chu and Liu, 1978: 88. China.
monocylichnus Yu and Liu, *in* Yu et al., 2006: 851. China.
nampui Howarth, 1985: 28. Laos.
neopalpifer Chen, 1983: 21. China.
nyungnoi Howarth, 1985: 24. Laos.
ochrothorax Carter, 1919: 298. Ghana.
paksongi Howarth, 1985: 25. Laos.
palpifer Das Gupta and Ghosh, 1956a: 122. India.
parabarnetti Wirth and Hubert, 1989: 146. Malaysia.
paraflavescens Wirth and Hubert, 1959: 15. Sri Lanka.
parahumeralis Wirth and Hubert, 1989: 110. Malaysia.
parararipalpis Das Gupta, 1963: 41. India.
pendleburyi Wirth and Hubert, 1989: 85. Malaysia.
phasmatus Liu and Yu, 1997: 120. China.
qianweiensis Yu, 1982: 202. China.
raripalpis Smith, 1929: 256 (1932: 181). India.
rugulithecus Wirth and Hubert, 1989: 113. Malaysia.
sarawakensis Wirth and Hubert, 1959: 28. Malaysia.
subpalpifer Lee, 1988: 104 (as *subpalpifer* Wirth and Hubert). China.
subpalpifer Wirth and Hubert, 1989: 115 (preoccupied by *Culicoides subpalpifer* Lee, 1988).
 Malaysia.
tamada Howarth, 1985: 39. Laos.
tenuipalpis Wirth and Hubert, 1959: 16. Taiwan.
tonmai Howarth, 1985: 30. Laos.
triallantionis Howarth, 1985: 42. Laos.
tympanus Nandi, Mazumdar and Chaudhuri, 2015: 70. India.
variatus Liu, Yan and Liu, 1996: 36. China.
zhangmensis Deng and Yu, *in* Deng et al., 1990: 35. China.

Subgenus TOKUNAGAHELEA Dyce and Meiswinkel

TOKUNAGAHELEA Dyce and Meiswinkel, 1995: 131 (as subgenus of *Culicoides*). Type species:
Culicoides mikros Dyce
 and Meiswinkel, by original designation.

geocheloneoides Dyce and Meiswinkel, 1995: 140. Indonesia.
mikros Dyce and Meiswinkel, 1995: 136. Papua New Guinea.
pygmaeus Tokunaga, 1963b: 139. Indonesia.

Subgenus WIRTHOMYIA Vargas

WIRTHOMYIA Vargas, 1973: 112 (as subgenus of *Culicoides*). Type-species *Culicoides segnis* Campbell and Pelham-Clinton, by original designation.

bottimeri Wirth, 1955: 356. USA (Texas).
multidentatus Atchley and Wirth, 1975: 1421. USA (California).
faghihi Navai, 1971: 199. Iran.
minutissimus (Zetterstedt), 1855: 4860 (*Ceratopogon*). Sweden.
nanulus Kieffer, 1919a: 38. Hungary.
albihalter Kieffer, 1919a: 37 (1921f: 785). Germany.
bychowskyi Dzhafarov, 1964: 344. Azerbaijan.
tugaicus Dzhafarov, 1960a: 1183. Azerbaijan.
reconditus Campbell and Pelham-Clinton, 1960: 227. Great Britain.
segnis Campbell and Pelham-Clinton, 1960: 232. Great Britain.
shahgudiani Navai, 1973: 201. Iran.
stilobezzioides Foote and Pratt, 1954: 33. USA (New York).

Subgenus unplaced, *acotylus* species group

acotylus Lutz, 1913: 69. Brazil.
panamericanus Fox, 1947: 90. Mexico.
atripalpis Wirth and Blanton, 1973: 325. Brazil.
carsiomelas Wirth and Blanton, 1955a: 100. Panama.
teretipalpis Wirth and Barreto, 1978: 557. Colombia.

Subgenus unplaced, *albovenosus* species group

albovenosus Khamala and Kettle, 1971: 53. Uganda.
neoangolensis Kremer, 1972: 83. Angola.
angolensis Caeiro, 1961: 289. Angola.

Subgenus unplaced, *antennalis* species group

antennalis Lee and Reye, 1953: 386. Australia (New South Wales).
gladysae Kettle, Elson and Dyce, 1976: 173. Australia (Queensland).
mykytowyczi Lee and Reye, 1963: 359. Australia (New South Wales).
tripallidus Tokunaga, 1959: 220. Papua New Guinea.

Subgenus unplaced, *bancrofti* species group

bancrofti Lee and Reye, 1953: 387. Australia (New South Wales).
hornsbyensis Lee and Reye, 1963: 361. Australia (New South Wales).

Subgenus unplaced, *carpenteri* species group

belemensis Wirth and Blanton, 1973: 427. Brazil.
camposi Ortiz and León, 1955: 569. Ecuador.
fairchildi Wirth and Blanton, 1955a: 102. Panama.
carpenteri Wirth and Blanton, 1953a: 72. Panama.

Subgenus unplaced, *chaetophthalmus* species group

atchleyi Wirth and Blanton, 1969a: 559. USA (Alaska).

ateripes Nandi and Mazumdar, 2014b: 162. India.
majorinus Chu, 1977: 99. China.
saundersi Wirth and Blanton, 1969a: 557. USA (Washington).

Subgenus unplaced, *clavipalpis* species group

arenicola Howarth, 1985: 79. Laos.
bunrooensis Lee and Reye, 1955: 238. Australia (Queensland).
clavipalpis Mukerji, 1931: 1052. India.
 candidus Sen and Das Gupta, 1959a: 620. India.
distinctus Sen and Das Gupta, 1959a: 618. India.
esakii Esaki, 1939: 234. Micronesia.
 esakii Tokunaga, 1940a: 217. Micronesia.
flavimaculinotalis Tokunaga, 1940e: 180 (1940d: 142). Micronesia.
huffi Causey, 1938: 406. Thailand.
hyalinus Tokunaga, 1962b: 472. Papua New Guinea.
inflatipalpis Tokunaga, 1963b: 125. Papua New Guinea.
insulanus Macfie, 1933a: 77. French Polynesia (France).
marginalis Lee and Reye, 1963: 354. Australia (New South Wales).
monothecalis Tokunaga, 1962b: 509. Papua New Guinea.
notatus Delfinado, 1961: 648. Philippines.
 papuae Tokunaga, 1962b: 481. Papua New Guinea.
parviscriptus Tokunaga, 1959: 213. Papua New Guinea.
perornatus Delfinado, 1961: 651. Philippines.
 multinotatae Tokunaga, 1962b: 475. Papua New Guinea.
platiradius Tokunaga, 1963b: 128. Papua New Guinea.
schramae Giles, Wirth and Messersmith, 1981: 539. Sri Lanka.
 roswelli Giles and Wirth, 1983: 38. Sri Lanka.
yoshimurai Tokunaga, 1941a: 114. Micronesia.

Subgenus unplaced, *coronalis* species group

coronalis Lee and Reye, 1955: 234. Australia (Queensland).

Subgenus unplaced, *costalis* species group

bodemensis Clastrier and Delécolle, 1996: 302. Indonesia.
chazeau Clastrier and Delécolle, 1996: 300. Wallis and Futuna Islands (France).
costalis Tokunaga, 1963b: 132. Papua New Guinea.
novairelandi Tokunaga, 1962b: 512. Papua New Guinea.
polynesiae Wirth and Arnaud, 1969: 518. American Samoa (USA).

Subgenus unplaced, *daedalus* species group

antefurcatus Wirth and Blanton, 1959: 315. Panama.
beaveri Wirth and Barreto, 1978: 557. Colombia.
commatis Wirth and Blanton, 1959: 321. Panama.
crescentis Wirth and Blanton, 1959: 317. Panama.
cummingi Spinelli and Borkent, 2004a: 379. Costa Rica.
daedaloides Wirth and Blanton, 1959: 330. Panama.
daedalus Macfie, 1948: 83. Mexico.
dunni Wirth and Blanton, 1959: 328. Panama.
luglani Jones and Wirth, 1958: 89. USA (Texas).
pampoikilus Macfie, 1948: 79. Mexico.
 dominicii Ortiz, 1951b: 7. Venezuela.
phaeonotus Wirth and Blanton, 1959: 326. Panama.

picadoae Spinelli and Borkent, 2004a: 381. Costa Rica.
pseudocrescentis Tavares and Luna Dias, 1980: 397. Brazil.

Subgenus unplaced, *dasyophrus* species group

dasyophrus Macfie, 1940d: 27. Guyana.
estevezae Ronderos and Spinelli, 1994: 47. Argentina.
guerrai Wirth and Blanton, 1971a: 41. Trinidad and Tobago.
rodriguezi Ortiz, 1968: 67. Venezuela.

Subgenus unplaced, *dekeyseri* species group

dekeyseri Clastrier, 1958b: 214. Senegal.
galliardi Callot, Kremer and Molet, 1973: 381. Lesotho.
hirsutus Khamala and Kettle, 1971: 59. Uganda.
kaimosiensis Khamala and Kettle, 1971: 58. Kenya.
zikaensis Khamala and Kettle, 1971: 56. Uganda.

Subgenus unplaced, *eublepharus* species group

archboldi Wirth and Blanton, 1970b: 39. Dominica.
caldasi Browne, 1980: 535. Colombia.
caucaensis Wirth and Lee, 1967: 19. Colombia.
eublepharus Macfie, 1948: 86. Guyana.
transferrans Ortiz, 1953a: 801. Venezuela.
florenciae Messersmith, 1972: 167. Colombia.
guadeloupensis Floch and Abonnenc, 1950b: 2. Guadeloupe.
guarani Ronderos and Spinelli, 1994: 48. Argentina.
micayensis Spinelli, Santamaría, Cabrera, Ronderos and Suárez, 2009: 85. Colombia.
pabloi Browne, 1980: 541. Colombia.
propriipennis Macfie, 1948: 84. Mexico.
rangeli Ortiz and Mirsa, 1952b: 126. Venezuela.
donajii Vargas, 1954: 28. Mexico.
patulipalpis Wirth and Blanton, 1959: 421. Panama.
tamaensis Perruolo, 2006: 115. Venezuela.
tamboensis Wirth and Lee, 1967: 20. Colombia.
zumbadoi Spinelli and Borkent, 2004a: 383. Costa Rica.

Subgenus unplaced, *fluvialis* species group

balsapambensis Ortiz and León, 1955: 569 (as variety of *pifanoi*). Ecuador.
castillae Fox, 1946a: 251. Honduras.
gibsoni Wirth, 1952d: 246. Guatemala.
flochabonnenci Ortiz and Mirsa, 1952a: 267. Venezuela.
fernandezi Ortiz, 1954: 223. Venezuela.
fluvialis Macfie, 1940d: 25. Guyana.
leopoldoi Ortiz, 1951c: 579. Venezuela.
lichyi Floch and Abonnenc, 1949: 1 (1950a: 69). Venezuela.
pulchripennis Macfie, 1939c: 200. Brazil.
tetrathyris Wirth and Blanton, 1959: 409. Panama.
williamsi Spinelli, *in* Spinelli et al., 2005: 147. Paraguay.
yaracuyensis Ortiz, 1959: 364 (as *yaracuyanus*). Venezuela.

Subgenus unplaced, *immaculatus* species group

agas Wirth and Hubert, 1989: 438. Indonesia.

collessi Bellis and Dyce *in* Bellis, et al, 2013: 25. New Caledonia (France).
immaculatus Lee and Reye, 1953: 375. Australia (Queensland).
shivasi Bellis and Dyce *in* Bellis, et al., 2013: 25. Australia (Northern Territory).

Subgenus unplaced, *inornatipennis* species group

amaniensis Khamala and Kettle, 1971: 25. Tanzania.
arenarius Edwards, 1922: 164. Somalia.
excavatus Khamala and Kettle, 1971: 24. Uganda.
inornatipennis Carter, Ingram and Macfie, 1920: 227. Ghana.
kumbaensis Callot, Kremer, Mouchet and Bach, 1965: 540. Cameroon.
latifrons Khamala and Kettle, 1971: 23. Uganda.
nairobiensis Glick, 1990: 131. Kenya.
nigeriae Ingram and Macfie, 1921: 325. Nigeria.

Subgenus unplaced, *kusaiensis* species group

ardentissimus Tokunaga, 1940a: 216. Micronesia.
kusaiensis Tokunaga, 1940a: 215. Micronesia.
leei Tokunaga, 1960b: 72. Papua New Guinea.

Subgenus unplaced, *leoni* species group

benarrochi Ortiz and Mirsa, 1952b: 126 (as *benarrochei*). Venezuela.
fieldi Wirth and Blanton, 1956c: 50. Honduras.
gabaldoni Ortiz, 1954: 221. Venezuela.
glabellus Wirth and Blanton, 1956c: 47. Panama.
leoni Barbosa, 1952: 17 (1953: 19). Ecuador.
reevesi Wirth, 1952a: 193. USA (California).
trifidus Spinelli and Borkent, 2004a: 385. Costa Rica.

Subgenus unplaced, *limai* species group

antunesi Forattini, 1954b: 315. Brazil.
boliviensis Spinelli and Wirth, 1984a: 172. Bolivia.
carvalhoi Wirth and Blanton, 1973: 429. Brazil.
duartei Tavares and Luna Dias, 1980: 395. Brazil.
galindoi Wirth and Blanton, 1953a: 73. Panama.
limai Barretto, 1944: 99. Brazil.
lobatoi Felipe-Bauer, *in* Felipe-Bauer and Quintelas, 1994: 25. Brazil.
lopesi Barretto, 1944: 102. Brazil.
santanderi Browne, 1980: 536. Colombia.
tenuilobus Wirth and Blanton, 1959: 354. Panama.
vernoni Wirth and Blanton, 1973: 448. Brazil.
willinki Spinelli and Veggiani, *in* Spinelli, et al., 2013: 587. Argentina.

Subgenus unplaced, *melanesiae* species group

leanderensis Lee and Reye, 1963: 355. Australia (Queensland).
melanesiae Macfie, 1939b: 368. Papua New Guinea.

Subgenus unplaced, *milnei* species group

africanus Clastrier, 1959a: 186. Senegal.
austeni Carter, Ingram and Macfie, 1920: 261. Ghana.
diamouanganai Itoua and Cornet, 1986: 237. Congo.

giganteus Khamala and Kettle, 1971: 35. Kenya.
hortensis Khamala and Kettle, 1971: 29. Uganda.
isioloensis Cornet, Nevill and Walker, 1974: 240. Kenya.
kerichoensis Khamala and Kettle, 1971: 37. Kenya.
krameri Clastrier, 1959a: 194. Senegal, Ivory Coast and Mali.
ciliodontatus Khamala and Kettle, 1971: 28. Uganda.
milnei Austen, 1909: 283. Kenya.
lugens Kieffer, 1918a: 51. South Africa.
moreli Clastrier, 1959a: 189. Senegal and Ivory Coast.
murtalai Boorman and Dipeolu, 1979: 41. Nigeria.
nobrei Caeiro, 1961: 241. Angola.
quinquelineatus Goetghebuer, 1934d: 192. Democratic Republic of the Congo.
rutshuruensis Goetghebuer, 1935d: 174. Democratic Republic of the Congo.
sylvicola Khamala and Kettle, 1971: 36. Kenya.
trouilleti Itoua and Cornet, 1986: 239. Congo.
vitshumbiensis Goetghebuer, 1935d: 176. Democratic Republic of the Congo.
wasoni Goetghebuer, 1935c: 477. Democratic Republic of the Congo.
obscuripennis Clastrier and Wirth, 1961b: 318. Gambia.
zuluensis de Meillon, 1936: 145. South Africa.
acastus de Meillon, 1947: 118. South Africa.

Subgenus unplaced, *mohave* species group

bajensis Wirth and Moraes, 1979: 291. Mexico.
hoguei Wirth and Moraes, 1979: 293. USA (California).
mohave Wirth, 1952a: 187. USA (California).
woodruffi Spinelli and Huerta, 2015: 821. Mexico.

Subgenus unplaced, *molestus* species group

cancrisocius Macfie, 1946: 15. Fiji.
molestus (Skuse), 1889: 305 (*Ceratopogon*). Australia (New South Wales).
subimmaculatus Lee and Reye, 1953: 375. Australia (New South Wales).
submagnesianus Tokunaga, 1962b: 484. Papua New Guinea.

Subgenus unplaced, *monticola* species group

andinus Wirth and Lee, 1967: 17. Colombia.
magnipalpis Wirth and Blanton, 1953a: 76. Panama.
monticola Wirth and Lee, 1967: 15. Colombia.
pichindensis Browne, 1980: 538. Colombia.

Subgenus unplaced, *neavei* species group

bernardae Itoua and Cornet, 1986: 244. Congo.
bwambanus de Meillon, 1952: 173. Uganda.
citroneus Carter, Ingram and Macfie, 1920: 259. Ghana.
eriodendroni Carter, Ingram and Macfie, 1920: 250. Ghana.
neavei Austen, 1912: 102. Uganda.
ovalis Khamala and Kettle, 1971: 88. Kenya.
punctithorax Carter, Ingram and Macfie, 1920: 235. Ghana.
vomensis Boorman and Dipeolu, 1979: 61. Nigeria.
yankari Boorman and Dipeolu, 1979: 62. Nigeria.

Subgenus unplaced, *nigripennis* species group

nigripennis Carter, Ingram and Macfie, 1920: 253. Ghana.
rageai Vattier and Adam, 1966b: 727. Congo.

Subgenus unplaced, *ornatus* species group

belkini Wirth and Arnaud, 1969: 509. French Polynesia (France).
circumbasalis Tokunaga, 1959: 232. Indonesia.
 praesignis Delfinado, 1961: 652. Philippines.
cordiger Macfie, 1934c: 193. Malaysia.
 magnesianus Lee and Reye, 1953: 385. Australia (Queensland).
corti Causey, 1938: 411. Thailand.
damnosus Delfinado, 1961: 642. Philippines.
flumineus Macfie, 1937c: 116. Malaysia.
garciai Wirth and Hubert, 1989: 304. Malaysia.
griffithi Wirth and Hubert, 1989: 307. Thailand.
hewitti Causey, 1938: 413. Thailand.
hollandiensis Tokunaga, 1959: 226. Indonesia.
infulatus Delfinado, 1961: 644. Philippines.
longior Hagan and Reye, 1986: 340. Australia (Queensland).
maai Wirth and Hubert, 1989: 312. Malaysia.
marmoratus (Skuse), 1889: 304 (*Ceratopogon*). Australia (New South Wales).
mcdowellii Delfinado, 1961: 647. Philippines.
mollis Edwards, 1928: 55. Western Samoa.
niphanae Wirth and Hubert, 1989: 316. Thailand.
okinawensis Arnaud, 1956a: 118. Japan.
ornatus Taylor, 1913: 73. Australia (Queensland).
palawanensis Delfinado, 1961: 648. Philippines.
pampangensis Delfinado, 1961: 650. Philippines.
pangkorensis Wirth and Hubert, 1989: 326. Malaysia.
papuensis Tokunaga, 1962b: 513. Papua New Guinea.
paragarciai Dyce, 1996: 313. Papua New Guinea.
peliliouensis Tokunaga, *in* Tokunaga and Esaki, 1936: 55. Belau (USA).
 ejercitoi Delfinado, 1961: 643. Philippines.
pongsomiensis Chu, 1986: 254. Cambodia.
quatei Wirth and Hubert, 1989: 333. Malaysia.
quaterifasciatus Tokunaga, 1959: 240. Papua New Guinea.
sabroskyi Tokunaga, *in* Tokunaga and Murachi, 1959: 336. Belau (USA).
samoensis Wirth and Arnaud, 1969: 513. American Samoa (USA).

Subgenus unplaced, *pachymerus* species group

almirantei Wirth and Blanton, 1959: 454. Panama.
atelis Wirth, 1982b: 249. Panama.
caprilesi Fox, 1952: 364. Venezuela.
 kintzi Wirth and Blanton, 1953a: 72. Panama.
cylindricornis Wirth and Blanton, 1973: 430. Brazil.
obnoxius Fox, 1952: 365. Venezuela.
pachymerus Lutz, 1914: 83. Brazil.
uniradialis Wirth and Blanton, 1953a: 70. Panama.

Subgenus unplaced, *palmerae* species group

calexicanus Wirth and Rowley, 1971: 156. USA (California).
davisi Wirth and Rowley, 1971: 157. USA (Washington).
hawsi Wirth and Rowley, 1971: 159. USA (Washington).

leechi Wirth, 1977: 53. USA (California).
novamexicanus Atchley, 1967: 1012. USA (New Mexico).
oregonensis Wirth and Rowley, 1971: 162. USA (Oregon).
palmerae James, 1943a: 151. USA (Colorado).
utahensis Fox, 1946: 246. USA (Utah).
wirthi Foote and Pratt, 1954: 36. USA (Montana).

Subgenus unplaced, *piliferus* species group

alexanderi Wirth and Hubert, 1962: 190. USA (Massachusetts).
pseudopiliferus Wirth and Hubert, 1962: 189. USA (Maryland).
bickleyi Wirth and Hubert, 1962: 188. USA (Maryland).
cavaticus Wirth and Jones, 1956: 166. USA (California).
chewaclaë Glick and Mullen, 1983: 378. USA (Alabama).
denticulatus Wirth and Hubert, 1962: 193. USA (Wisconsin).
doeringae Atchley, 1967: 1014. USA (New Mexico).
downesi Wirth and Hubert, 1962: 186. Canada (Ontario).
franclemonti Cochrane, 1974: 128. USA (New York).
husseyi Wirth and Blanton, 1971c: 76. USA (Florida).
jamnbacki Wirth and Hubert, 1962: 192. USA (New York).
kirbyi Glick and Mullen, 1983: 380. USA (Maryland).
lophortygis Atchley and Wirth, 1975: 1422. USA (California).
parapiliferus Wirth and Blanton, 1974a: 71. USA (New York).
piliferus Root and Hoffman, 1937: 163. USA (Maryland).
riggsi Khalaf, 1957: 198 (as *piliferus* ssp.). USA (Oklahoma).
scanloni Wirth and Hubert, 1962: 187. USA (Virginia).
snowi Wirth and Jones, 1956: 163. USA (Virginia).
testudinalis Wirth and Hubert, 1962: 191. USA (Pennsylvania).
unicolor (Coquillett), 1905: 65 (*Ceratopogon*). USA (California).
utowana Jamnback, 1965: 109. USA (New York).

Subgenus unplaced, *purus* species group

capricorniae Dyce and Wirth, 1997: 586. Australia (Queensland).
dubiosum Dyce and Wirth, 1997: 591. Australia (Queensland).
elizabethae Dyce and Wirth, 1997: 584. Papua New Guinea.
eupurus Dyce and Wirth, 1997: 582. Indonesia.
purus Lee and Reye, 1963: 352. Australia (New South Wales).
queenslandae Dyce and Wirth, 1997: 589. Australia (Queensland).

Subgenus unplaced, *reticulatus* species group

amazonicus Santarém, Felipe-Bauer and Trindade, *in* Santarém, et al., 2014: 259. Brazil.
aureus Ortiz, 1951c: 585. Venezuela.
miyamotoi Wirth and Blanton, 1953b: 231. Panama.
castelloni Santarém and Felipe-Bauer, *in* Santarém et al., 2015:959. Brazil.
diplus Santarém and Felipe-Bauer, *in* Santarém, et al., 2014: 261. Colombia.
fittkai Wirth and Blanton, 1973: 432. Brazil.
fluminensis Santarém and Felipe-Bauer, *in* Santarém, et al., 2014: 263. Brazil.
forattinii Ortiz, 1961: 211. Venezuela.
goeldii Wirth and Blanton, 1973: 437. Brazil.
guamai Wirth and Blanton, 1973: 438. Brazil.
guyanensis Floch and Abonnenc, 1942a: 4. French Guiana.
recifensis Barbosa, 1943: 263. Brazil.
stubalensis Fox, 1946a: 254. Trinidad and Tobago.
irregularis Santarém, Felipe-Bauer and Castellón, *in* Santarém, et al., 2014: 265. Brazil.
kuripako Felipe-Bauer, *in* Felipe-Bauer et al., 2010: 863. Brazil.
kuscheli Wirth and Blanton, 1978: 236. Chile.
lanei Ortiz, 1950a: 431. Panama.
lyrinotatus Wirth and Blanton, 1955b: 126. Panama.
macrostigma Wirth and Blanton, 1953b: 230. Panama.
martinezi Wirth and Blanton, 1970b: 43. Trinidad and Tobago.
paucienfuscatus Barbosa, 1947: 23. Brazil.

pifanoi Ortiz, 1951c: 588. Venezuela.
tricoloratus Wirth and Blanton, 1953b: 233. Panama.
profundus Santarém, Felipe-Bauer and Trindade, *in* Santarém, et al., 2014:266. Brazil.
pseudoreticulatus Santarém, Felipe-Bauer and Castellón, *in* Santarém, et al., 2014:268. Brazil.
reticulatus Lutz, 1913: 49. Brazil.
rhombus Santarém, Felipe-Bauer and Castellón, *in* Santarém, et al., 2014: 270. Brazil.
tavaresi Felipe-Bauer and Wirth, 1988: 261. Brazil.

Subgenus unplaced, *shermani* species group

ardleyi Tokunaga, 1962b: 474. Papua New Guinea.
bigeminus Wirth and Hubert, 1989: 336. Malaysia.
dryadeus Wirth and Hubert, 1972: 41. Malaysia.
geminus Macfie, 1937d: 472. Malaysia.
interrogatus Lee and Reye, 1963: 358. Australia (New South Wales).
jefferyi Kitaoka, 1983: 96. Malaysia.
kelantanensis Wirth and Hubert, 1989: 346. Malaysia.
kepongensis Lee, 1988: 69 (as *kepongensis* Wirth and Hubert). China.
kepongensis Wirth and Hubert, 1989: 346 (preoccupied by *Culicoides kepongensis* Lee, 1988).
Malaysia.
macclurei Wirth and Hubert, 1989: 348. Malaysia.
mackerrasi Lee and Reye, 1963: 355. Australia (Northern Territory).
marginatus Delfinado, 1961: 646. Philippines.
minipalpis Wirth and Hubert, 1989: 351. Malaysia.
moreensis Lee and Reye, 1955: 239. Australia (New South Wales).
neomelanesiae Tokunaga, 1963b: 123. Papua New Guinea.
nigripes Wirth and Hubert, 1989: 353. Thailand.
rabauli Macfie, 1939b: 367. Papua New Guinea.
angularis Lee and Reye, 1953: 384. Australia (New South Wales).
reduncutheca Yu, Wang and Tan, *in* Wang, et al., 2012: 284. China.
selangorensis Wirth and Hubert, 1989: 355. Malaysia.
shermani Causey, 1938: 404. Thailand.
siamensis Wirth and Hubert, 1989: 359. Thailand.
thurmanae Wirth and Hubert, 1989: 360. Thailand.
wenzeli Delfinado, 1961: 649. Philippines.

Subgenus unplaced, *stigmalis* species group

alvarezi Ortiz, 1957: 161. Venezuela.
deanei Felipe-Bauer and Wirth, 1987: 416. Brazil.
fluviatilis (Lutz), 1914: 82 (*Johannseniella*). Brazil.
scorzai Ortiz, 1956: 93. Venezuela.
stigmalis Wirth, 1952d: 245. Guatemala.

Subgenus unplaced, *stonei* species group

melleus (Coquillett), 1901: 604 (*Ceratopogon*). USA (Florida).
mortivallis, Wirth and Blanton, 1971b: 465. USA (California).
owyheensis Jones and Wirth, 1978: 57 (as *owyheensis*). USA (Idaho).
pallidicornis Kieffer, 1919a: 46. Hungary, Romania.
susae Kieffer, 1919a: 44. Italy.
dileucus Kieffer, 1921a: 55. France.
brunneiscutellatus Zilahi-Sebess, 1933: 151 (as variety of *pallidicornis*). Hungary.
bruneoscutellatus Zilahi-Sebess, 1934: 155 (as variety of *pallidicornis*). Bulgaria.
niger Root and Hoffman, 1937: 168. USA (Maryland).
stonei James, 1943a: 149. USA (Colorado).

weesei Khalaf, 1952a: 44 (also 1952b: 351). USA (Oklahoma).
tissoti Wirth and Blanton, 1966: 279. USA (Florida).
werner Wirth and Blanton, 1971b: 463. USA (Arizona).

Subgenus unplaced, *shortti* species group

fadzili Kitaoka, 1983: 97. Malaysia.
rectilis Nandi and Mazumdar, 2014c: 62. India.
shortti Smith and Swaminath, 1932: 183. India.
fortis Sen and Das Gupta, 1959a: 622. India.
swaminathi Majumdar and Das Gupta, *in* Gangopadhyay and Das Gupta, 2000: 128. India.

Subgenus unplaced, *victoriae* species group

bougainvillae Tokunaga, 1962b: 492. Papua New Guinea.
bundensis Lee and Reye, 1955: 239. Australia (New South Wales).
crassus Tokunaga, 1962b: 508. Papua New Guinea.
cuniculus Lee and Reye, 1953: 389. Australia (Queensland).
flavidorsalis Tokunaga, 1959: 245. Papua New Guinea.
fulbrighti Lee and Reye, 1963: 361. Australia (New South Wales).
henryi Lee and Reye, 1963: 360. Australia (Queensland).
longiradialis Tokunaga, 1962b: 499. Papua New Guinea.
maculiscutellaris Tokunaga, 1959: 249. Indonesia.
magnipictus Tokunaga, 1962b: 494. Papua New Guinea.
mcmillani Lee and Reye, 1953: 391. Australia (New South Wales).
multimaculatus Taylor, 1918: 169. Australia (Victoria).
pallidothorax, Lee and Reye, 1963: 362. Australia (Northern Territory).
pallidizonatus Tokunaga, 1963b: 135. Papua New Guinea.
paupictus Tokunaga, 1977: 45. Papua New Guinea.
trizonatus Tokunaga, 1963b: 134. Papua New Guinea.
tritenuifasciatus Tokunaga, 1959: 242. Papua New Guinea.
victoriae Macfie, 1941: 67. Australia (Victoria).
magnimaculatus Lee and Reye, 1953: 388. Australia (New South Wales).
waringi Lee and Reye, 1955: 240. Australia (Western Australia).

Subgenus unplaced, *williwilli* species group

austropalpalis Lee and Reye, 1955: 240. New name for *palpalis*.
palpalis Lee and Reye, 1953: 380 (preoccupied by *Culicoides palpalis* Macfie, 1948). Australia (Queensland).
cambodiensis Chu, 1986: 253. Cambodia.
delfinadoae Wirth and Hubert, 1989: 386. Malaysia.
flaviscryptus Tokunaga, 1959: 252. Papua New Guinea.
murrayi Wirth and Hubert, 1989: 388. Indonesia.
narrabeenensis Lee and Reye, 1963: 357. Australia (New South Wales).
nattaiensis Lee and Reye, 1955: 237. Australia (New South Wales).
neopalpalis Tokunaga, 1962b: 483. Papua New Guinea.
pallidimaculosus Tokunaga, 1959: 219. Papua New Guinea.
palpisimilis Wirth and Hubert, 1989: 390. Malaysia.
petersi Tokunaga, 1962b: 490. Papua New Guinea.
pictilis Wirth and Hubert, 1989: 392. Malaysia.
pseudopalpalis Wirth and Hubert, 1989: 394. Indonesia.
semicircum Tokunaga, 1959: 208. Indonesia.
sigmoidus Lee and Reye, 1963: 359. Australia (Capital Territory).
smeei Tokunaga, 1960b: 73. Papua New Guinea.
williwilli Lee and Reye, 1955: 234. Australia (New South Wales).

yasumatsui Tokunaga, 1941a: 113. Micronesia.
lingensis Tokunaga, 1963b: 129. Papua New Guinea.

Miscellaneous unplaced species

adamskii Wirth, 1990: 242. Aldabra (Seychelles).
adersi Ingram and Macfie, 1923: 56. Kenya and Tanzania.
albipennis Kieffer, 1919a: 32. France.
albomaculus Root and Hoffman, 1937: 164. Mexico.
albosparsus Kieffer, 1918a: 52. Ethiopia.
algeriensis Clastrier, 1957: 426. Algeria.
alpicola (Strobl), 1910: 263 (*Ceratopogon*, as variety of *oculatus*). Austria.
aricola Kieffer, 1922f: 391. Austria.
arubae Fox and Hoffman, 1944: 109. Aruba.
badooshensis Khalaf, 1961: 460. Iraq.
bahrainensis Boorman, 1989: 177. Bahrain.
barrosmachadoi Callot, Kremer and Molet, 1967: 39. Angola.
bassetorum Callot, Kremer and Molet, 1973: 378. Lesotho.
belgicus Kieffer, 1919a: 43. Belgium.
biarcuatus Vimmer, 1932: 137. Israel.
bicornus Liu and Yu, *in* Yu et al., 2006: 1288. China.
bicultellus Yu and Liu, 1990: 3. China.
bilobatus Kieffer, 1912c: 6. Sri Lanka.
biscapus Kieffer, 1925a: 418. Vietnam.
bisignatus Kieffer, 1921b: 14. Cameroon.
bisolis Kremer and Brunhes, 1973: 287. Madagascar.
bodenheimeri Vimmer, 1932: 138. Israel.
brachcordylus Liu and Zhao, *in* Yu et al., 2006: 1290. China.
brevipenis Mai and Yu, *in* Hao et al., 1990: 42. China.
bromophilus Kieffer, 1922f: 391. Austria.
buettikeri Boorman, 1989: 179. Oman.
buhetoensis Takahasi, 1941: 81. China.
calloti Kremer, Delécolle, Bailly-Choumara and Chaker, 1979: 195. Morocco.
ceylanicus Kieffer, 1912c: 5. Sri Lanka.
chateau Cornet, 1970: 357. Senegal.
cilipes Kieffer, 1921d: 275. Latvia.
cinereus (Kieffer), 1925a: 417 (*Prosapelma*). Slovak Republic.
clarkei Carter, Ingram and Macfie, 1920: 246. Ghana.
cleaves Liu, 1995: 9. China.
clivus Yu and Liu, 1990: 3. China.
coarctatus Clastrier and Wirth, 1961b: 312. Nigeria.
confusus Carter, Ingram and Macfie, 1920: 250. Ghana.
coracinus Borkent, *in* Borkent and Wirth, 1997:65. New name for *niger*.
niger Tokunaga, 1941b: 98 (as *nigrus*, as variety of *arcuatus*, preoccupied by *Culicoides niger* Root and Hoffman, 1937). China.
cordiformis Kieffer, 1927: 61. Estonia.
corsoni Ingram and Macfie, 1921: 324. Ghana.
cunctans (Winnertz), 1852: 42 (*Ceratopogon*). Germany.
dentatus Kieffer, 1921b: 13. Cameroon.
donggangensis Liu, Zhou and Wu, 2007:211. China.
eremicus Yu and Liu, *in* Yu et al., 2006: 1296. China.
erkaensis Yu and Yang, *in* Yu, 1988: 135. China.
filamentis Liu, Yan and Liu, 1996: 34. China.
flavipes Vimmer, 1932: 136. Israel.
flavirostris Vimmer, 1932: 137. Israel.

floridensis Beck, 1951: 135. USA (Florida).
foleyi Kieffer, 1922g: 503. Algeria.
fossicola Kieffer, 1922c: 236. Germany.
fretensis Wang and Yu, *in* Wang et al., 1990: 73. China.
fuscus Goetghebuer, 1952: 1. Belgium.
guineensis Kieffer, 1918a: 54. Guinea.
herero (Enderlein), 1908: 460 (*Ceratopogon*). Namibia.
ibriensis Boorman, 1989: 181. Oman.
iranicus Navai, 1971: 202. Iran.
iriomotensis Kitaoka, 1975: 198. Japan.
javae Tokunaga, 1951: 103. Indonesia.
javanicus Salm, 1917b: 139. Indonesia.
jouberti Huttel, Huttel and Verdier, 1953: 98. Gabon.
judaeae Macfie, 1933c: 79. Israel.
kadenensis McDonald, Bolinguit and Lu, 1973: 639. Japan.
kasimi Khalaf, 1961: 464. Iraq.
korossoensis (Huttel and Huttel), 1952d: 472 (*Monohelea*). Mali.
kotonkan Boorman and Dipeolu, 1979: 35. Nigeria.
kribiensis Kieffer, 1921b: 18. Cameroon.
krombeini Giles, Wirth and Messersmith, 1981: 542. Sri Lanka.
kucheensis Liu and Yu, *in* Yu et al., 2006: 1302. China.
labis Yu and Liu, *in* Yu et al., 2006: 1303. China.
lamborni Ingram and Macfie, 1925: 283. Malawi.
landauae Kremer, Rebholtz-Hirtzel and Bailly-Choumara, 1975: 206. Morocco.
laoshanensis Yu and Kang, *in* Yu, 1988: 137. China.
latipennis Kieffer, 1919a: 37. Romania, Ukraine.
leizhouensis Lai and Yu, *in* Lai et al., 1990: 69. China.
longidens Arnaud, 1956a: 111. Japan.
paucidentatus Kitaoka, 1973: 216. Japan.
longipalpis Delfinado, 1961: 645. Philippines.
longzhouensis Hao and Yu, 1990: 40. China.
lui Yu and Liu, 1990: 10. China.
macintoshi Cornet and Nevill, 1980: 383. South Africa.
madagascarensis de Meillon, 1961: 40. Madagascar.
magnificus Sen and Das Gupta, 1959a: 622. India.
malariae Perruolo, 1990: 28. Venezuela.
marinus Yu and Zhu, *in* Lai et al., 1990: 70. China.
mayeri Goetghebuer, 1935a: 3. Germany.
mesghalii Navai, 1973: 196. Iran.
micromaculatus Vimmer, 1932: 139. Israel.
midorensis Arnaud, 1956a: 113. Japan.
minutunculus Yu and Liu, *in* Yu et al., 2006: 1312. China.
monoensis Wirth, 1952a: 193. USA (California).
murphyi Clastrier and Wirth, 1961b: 303. Nigeria.
musciicola Kieffer, 1925d: 85. France.
mystacinus Vimmer, 1932: 139. Israel.
nanellus Wirth and Blanton, 1969a: 564. USA (California).
nanus Root and Hoffman, 1937: 165. USA (Maryland).
neghmei Vargas, 1955: 673. Mexico.
nigroannulatus Goetghebuer, 1932b: 5. Indonesia.
nigrosignatus Kieffer, 1901a: 161. France.
nilogenus Kieffer, 1921b: 17. Sudan.
nilophilus Kieffer, 1921b: 20. Sudan.
noshaquensis Tokunaga, 1966b: 285. Afghanistan.
nudipennis Kieffer, 1922g: 507. Algeria.
nuntius Cambournac, 1970a: 249. Portugal.

octosignatus Kieffer, 1921b: 17. Democratic Republic of the Congo.
oculatus (Strobl), 1910: 262 (*Ceratopogon*). Austria.
odai Boorman, 1989: 195. Oman.
onderstepoortensis Fiedler, 1951: 6. South Africa.
onoi Tokunaga, 1940d: 147. China.
pancensis Browne, 1980: 537. Colombia.
paolae Boorman, *in* Boorman et al., 1996: 501. Italy.
perakensis Kitaoka, 1983: 95. Malaysia.
photophilus Kieffer, 1911d: 5. Germany.
pictellum (Rondani), 1869: 190 (*Ceratopogon*). Italy.
pilosipennis Kieffer, 1925e: 257. Egypt.
polystictus Kieffer, 1921c: 181. Paraguay.
posoensis Wirth and Blanton, 1969a: 562. USA (California).
propinquus Macfie, 1948: 81. Mexico.
pseudocordiger Wirth and Hubert, 1989: 447. Malaysia.
pseudolangeroni Kremer, Chaker and Delécolle, 1981: 291. Tunisia.
pumilus (Winnertz), 1852: 46 (*Ceratopogon*). Germany.
puripennis Austen, 1921: 109. Israel.
qingdaoensis Kong and Yu, 1990: 58. China.
qiongzhongensis Liu, Yan and Liu, 1996: 35. China.
quadrisignatus Kieffer, 1921b: 16. Cameroon.
quadrivittatus Vimmer, 1932: 136. Israel.
quinquemaculatus Vimmer, 1932: 132. Israel.
remerki Boorman and Dipeolu, 1979: 51. Nigeria.
remotus Kieffer, 1918a: 54. Guinea.
ribeiroi Lemblé, Messaddeq, Capela and Kremer, 1990: 267. Portugal.
riebi Delécolle, Mathieu, and Baldet, 2005: 70. France.
riouxi Callot and Kremer, 1961a: 679. France.
robini Cornet, 1970: 352. Senegal.
rochenus Cambournac, 1970a: 250. Portugal.
rubzovi Dzhafarov, 1960a: 1181. Azerbaijan.
rutilus Ingram and Macfie, 1921: 326 (as variety of *inornatipennis*). Ghana.
saboyae Cornet, 1970: 355. Senegal.
salihi Khalaf, 1952b: 351. USA (Oklahoma).
sasai Kitaoka, 1975: 192. Japan.
shamaensis Yu and Deng, *in* Zhang et al., 1990: 31. China.
shimoniensis Khamala and Kettle, 1971: 54. Kenya.
signatus Kieffer, 1921b: 19. Sudan.
silvestrii Kieffer, 1918a: 50. Cameroon.
simulans Vimmer, 1932: 136. Israel.
spinapenis Yu and Hao, *in* Hao et al., 1990: 41. China.
stagetus Lee, 1979b: 33. China.
stigmaticus Kieffer, 1911d: 4. Germany.
subdubius Tokunaga, 1962c: 53. Japan.
taylori (Boorman and Lane), 1979: 327 (*Neoculicoides*). Nigeria.
tobaensis Tokunaga, 1937a: 317. Japan.
towadaensis Okada, 1941: 25. Japan.
transferrans Ortiz, 1953a: 801. Venezuela.
travisi Vargas, 1949: 233 (new name for *simulans* Root and Hoffman). USA (Maryland).
 simulans Root and Hoffman, 1937: 167 (preoccupied by Vimmer, 1932). USA (Maryland).
 horneae Foote and Pratt, 1954: 25. USA (New York).
trilineatus Fox, 1946a: 250. Virgin Islands (USA).
tresignatus Kieffer, 1921b: 21. Cameroon.
tristanii Huttel, Huttel and Verdier, 1953: 100. Gabon.
turgeopalpulus Liu and Yu, 1990: 23. China.
turgidus Sen and Das Gupta, 1959a: 626. India.

uncistylus Wirth and Hubert, 1989: 449. Philippines.
unetensis Perruolo, 2001: 35. Venezuela.
vitreipennis Austen, 1921: 108. Israel.
wakuensis McDonald, Bolinguit and Lu, 1973: 647. Japan.
chaetocellaris Kitaoka, 1973: 214. Japan.
walkeri Boorman, 1979: 69. Kenya.
wardi Boorman, 1989: 209. United Arab Emirates.
wokei Fox, 1947: 90. Panama.
aethionotus Wirth and Blanton, 1955b: 121. Panama.
xanthogaster Kieffer, 1918a: 53. Guinea.
yaeyamaensis Kitaoka, 1975: 196. Japan.
yanbianensis Liu, Wu and Wang, 2006:321. China.
yichunensis Yu, 1982: 202. China.

Fossil species (some placed to subgenera by authors)

abbreviatipennis Statz, 1944: 142. Germany. Oligocene.
agamus Borkent, 1995: 63. Canada (Manitoba). Upper Cretaceous.
ambericus Szadziwski and Grogan, 1998a: 40. Dominican Republic. Miocene.
antilleanus Szadziwski and Grogan, 1998a: 40. Dominican Republic. Miocene.
annosus Borkent, 1995: 65. Canada (Manitoba). Upper Cretaceous.
atratus Statz, 1944: 147. Germany. Oligocene.
austerus Statz, 1944: 144. Germany. Oligocene.
balticus Szadziwski, 1988: 41. Poland. Eocene.
bicolor Statz, 1944: 146. Germany. Oligocene.
bifidus Borkent, 1996: 19. USA (New Jersey). Upper Cretaceous.
brisaci (Choufani and Nel), 2013: 76 (*Devalquia*). France. Upper Cretaceous.
brodzinskyi Szadziwski and Grogan, 1998a: 40. Dominican Republic. Miocene.
bullus Borkent, 1995: 61. Canada (Alberta). Upper Cretaceous.
canadensis (Boesel), 1937: 47 (*Atrichopogon*). Canada (Manitoba). Upper Cretaceous.
carri Pierce, 1966: 91. USA (California). Miocene.
casei Grogan and Szadziwski, 1988: 809. USA (New Jersey). Upper Cretaceous.
ceranowiczi Szadziwski, 1988: 45. Poland. Eocene.
dasyheleiformis Szadziwski, 1988: 36. Baltic region. Eocene.
doyeni Choufani, Perrichot, Azar and Nel, 2014: 38. France. Upper Cretaceous.
elongatulus Statz, 1944: 143. Germany. Oligocene.
eoselficus Szadziwski, 1988: 43. Poland. Eocene.
filipalpis Remm, 1976b: 111. Russia. Upper Cretaceous.
fossilis Pierce, 1966: 91. USA (California). Miocene.
gedanensis Szadziwski, 1988: 46. Poland. Eocene.
gracilior Statz, 1944: 143. Germany. Oligocene.
grandiboca Borkent, 1996: 19. USA (New Jersey). Upper Cretaceous.
hispanicola Szadziwski and Grogan, 1998a: 41. Dominican Republic. Miocene.
jucundus Statz, 1944: 147. Germany. Oligocene.
kaluginae Remm, 1976b: 110. Russia. Upper Cretaceous.
laurae Pierce, 1966: 91. USA (California). Miocene.
liliputanus Statz, 1944: 142. Germany. Oligocene.
mammalicola Szadziwski and Grogan, 1998a: 41. Dominican Republic. Miocene.
megacanthus Palmer, 1957: 272. USA (California). Miocene.
mioceneus Pierce, 1966: 93. USA (California). Miocene.
obesus Statz, 1944: 145. Germany. Oligocene.
obscuratus Statz, 1944: 144. Germany. Oligocene.
obuncus Borkent, 1995: 64. Canada (Manitoba). Upper Cretaceous.
prussicus Szadziwski, 1988: 48. Baltic region. Eocene.
speciosus (Meunier), 1904a: 229 (1904b: 240) (*Ceratopogon*). Baltic region. Eocene.
sphenostylus Remm, 1976b: 112. Russia. Upper Cretaceous.

subgedanensis Szadziewski, 1993: 608. Germany. Eocene.
succineus Remm, 1976b: 113. Russia. Upper Cretaceous.
succivarius Szadziewski, 1988: 40. Poland. Eocene.
tenuipennis Statz, 1944: 147. Germany. Oligocene.
truncatus Borkent, 2000b: 461. USA (New Jersey). Upper Cretaceous.
tyrrelli (Boesel), 1937: 48 (*Dasyhelea*). Canada (Manitoba). Upper Cretaceous.
ventralis Borkent, *in* Borkent and Wirth, 1997:84. New name for *abdominalis*.
abdominalis Statz, 1944: 145 (preoccupied by *Dasyhelea abdominalis* (Santos Abreu), 1918).
Germany. Oligocene.
yoosti Borkent, 2000b: 462. USA (New Jersey). Upper Cretaceous.

Unplaced species of *Culicoides* (*nomina dubia*)

analis Santos Abreu, 1918: 297. Canary Islands (Spain).
australiensis Kieffer, 1917a: 188. Papua New Guinea.
meijereri Kieffer, 1919c: 192. New name for *guttipennis*.
guttipennis (de Meijere), 1906: 69 (*Ceratopogon*, preoccupied by *Culicoides guttipennis* (Coquillett), 1901a).
Indonesia.
nocivum (Harris), 1841: 405 (*Simulium*). New England, eastern Canada.
xanthoceras Kieffer, 1917a: 186. Papua New Guinea.