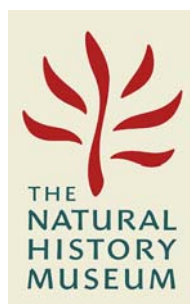


**A REVISED TAXONOMIC AND GEOGRAPHICAL  
INVENTORY OF WORLD BLACKFLIES  
(DIPTERA : SIMULIIDAE)**

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# A REVISED TAXONOMIC AND GEOGRAPHICAL INVENTORY OF WORLD BLACKFLIES (DIPTERA : SIMULIIDAE)

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## Synopsis

This work is a revised taxonomic and faunal inventory of world blackflies that updates and supersedes the main text (pp. 10-83) of an earlier such inventory authored by us and published over six years ago by The Natural History Museum in London (Crosskey & Howard, 1997). That work contained information published before 1 November 1996 and was issued as a print product from the electronic database. The present inventory on the Web is essentially a completely new edition and covers information known to us to have been published prior to 1 November 2003. The prime purpose of the work remains the same as for the previous printed inventory, i.e. to provide a user-friendly systematic aid to a wide audience involved with almost any aspect of simuliid research, particularly in relation to biodiversity studies. A total of 1809 formally named species are listed as valid on present knowledge (1798 living and 11 fossil). For each species a geographical statement is provided to show the countries from which it has been reported, with specification of the type locality country for synonyms as well as nominal species considered valid; more refined distributional data - region, state, province, island - are given for large countries, especially those covering diverse biomes or having island constituents. Taxonomic information includes the listing of many 'cytoforms', i.e. entities that are informally named in the literature (e.g. by chromosomal inversion formulae, numbers, letters or place names) and might prove to be valid species in nature. Significant misidentifications and some persistent misspellings of names are recorded.

## Introduction

The last few years have been a period of surprisingly intense activity in taxonomic and faunal studies on blackflies. Trying to keep abreast of all the many concomitant changes - descriptions of new species, characterizations of cytoforms, suppression of names into synonymy, the recovery of names from synonymy, new geographical records affecting the distributional picture, changing ideas in classification - has 'kept us on our toes'. We may well have missed the occasional item, especially if hidden in publications (for example some Chinese journals) which even with modern facilities are hard to obtain. We shall trust that any shortcomings there may be are few and not too evident! Except for some minor changes to the 'Explanatory information' (necessitated by some name changes to certain geographical entities and by the requirements of the latest *International Code of Zoological Nomenclature*) we have confined the inventory revision to the nub of the former edition, i.e. to the section headed 'Inventory of recent and fossil taxa' on pp. 10-83. The notes provided earlier, and the other add-on sections in the 1997 inventory are not repeated, neither have we included species and country indexes (non-essential in the new electronically searchable version). As to recently published identification keys we note that references to these can be found in the published inventory updates (Crosskey, 1999, 2002). See also the Addendum at the end of this Inventory.

For various reasons The Natural History Museum, London, which issued the original inventory in 1997 (and through us has maintained it to the present time), will not be able to continue the necessary work beyond the end of 2003. Consequently, if the inventory database is to be updated and kept topical, it will be necessary to hand over the 'baton' to a successor organization whose hands are sufficiently on the pulse of blackfly studies worldwide to keep up the very close literature monitoring that inventory maintenance needs. We hope to have found the best of all possible successors to keep the inventory in being. Contacts between R.W.C. and Peter H. Adler hint that the inventory could perhaps come under the wing of Professor Adler's department at Clemson University in South Carolina - which would be a fitting place, for Clemson is today the centre of gravity for blackfly research in North America.

A move to Clemson would be particularly appropriate inasmuch as publication is expected early in 2004 of *The Black Flies (Simuliidae) of North America* (Adler *et al.*), an outstandingly comprehensive work masterminded to publication by Professor Adler. The book is the product of an enormous quantity of research undertaken on the Simuliidae in the USA, Canada and elsewhere over the last several decades and its appearance will in itself necessitate changes to the world simuliid inventory. Among the anticipated changes are many new species names, erstwhile synonyms restored to valid use for sibling species which previously had vernacular terminology, many new synonyms at both specific and genus-group levels (these relating to names across the Holarctic realm) and much new geographical information. At tribal level a difference will apply to the Prosimuliini. In the forthcoming book (Adler *et al.*, *op. cit.*) this tribe will be defined in a restricted sense and not in the wide sense that we adopted for the first inventory (Crosskey & Howard, 1997) and use again in the interest of harmony between old and new versions. (See Crosskey, 2002, where a change in the inventory classification to reflect a narrower scope for the Prosimuliini is discussed.)

## Explanatory information on the Inventory text

### (1) Taxonomic information

#### *Scope*

The Inventory covers nominal taxa of blackflies known to us to have been described up to 1 November 2003. Fossil taxa are included if they are unequivocally Simuliidae and their palaeontological status is highlighted by enclosure of the entries in square brackets; the geological period is included as part of the provenance data. The following fossils that have been associated with Simuliidae are excluded on grounds that their assignment to the family is clearly erroneous: *Liauningius robustus* (Hong, 1982) (Chironomidae), *Mesasimulium lahaigouense* Zhang, 1986 (family uncertain), *Pseudosimulium humidum* (Westwood in Brodie, 1845) (family uncertain), *Simulia pasitheia* Heyden, 1870 (? Ceratopogonidae), *Simulia terribilis* Förster, 1891 (? Ceratopogonidae), *Simulidium priscum* Westwood, 1854 (Anisopodidae), *Simulium ? ventricum* Lin, Yao, Xiang & Xia, 1988 (family uncertain). Vernacularly named taxa, i.e. those that can be found at least partially described in the literature (if only in keys) and are known only by letters, numbers, place names, chromosomal diagnostic features, etc., are included in their appropriate positions. However, the simuliid literature is enormous and we do not guarantee that every vernacular ‘handle’ has been unearthed.

#### *Subspecies and complexes*

The subspecies category has not been widely used in the Simuliidae and when it has the concept has usually borne little relation to the ‘Mayrian’ geographically based concept of a subspecies. Its main use has been in various works on the Palaearctic fauna by I.A. Rubtsov and summarised in Rubtsov & Yankovsky (1988). However, Yankovsky (1995) has since ceased to recognise these Rubtsovian subspecies as having separate validity and has disposed of most of them as straight synonyms. In the Inventory we list no subspecies as such but indicate where names are still sometimes applied to subspecies by a few authors in contemporary literature by suffixing the names with ‘(ssp.)’ where they are listed in the appropriate species entry. It is now long established that some apparently single species (morphospecies) are complexes of biologically separate sibling species, these usually defined on chromosomal criteria and conveniently called cytospecies. Where a morphospecies is known to be such an aggregate of sibling species the suffix ‘(complex)’ has been given immediately following the valid species/author/date statement. In many such complexes the precise status of the constituents is often undetermined (i.e. they are not necessarily always of definite specific status) and they still lack formal scientific nomenclature. To deal with this situation we have suffixed each such name based on chromosomal characterisation with the inert term ‘(cytoform)’: this is to be read as a non-committal umbrella for entities both of undetermined status (cytotypes) and of more or less completely definite sibling status (cytospecies). (The equivalent ‘morphoform’ has been used for entities based on hard-parts morphology but still only informally named.)

#### *Inventory format*

Scientific (Latinised) names entering into formal nomenclature are ranged to the left-hand margin if valid but indented if they are synonyms. Valid names are alphabetical but synonyms are in chronological order to show their relative priorities. Vernacular ‘names’ are similarly ranged left if on current knowledge they could pertain to valid species but are indented if they are synonyms. Vernacularly named entities are listed at the end of the appropriate entry, after the scientific names. Taxonomic rank and validity or invalidity of names are distinguished by lettering style: generic and subgeneric names are in capitals (bold type when valid and lightface italics when synonyms), and specific names in lower case letters (bold type when valid and lightface italics when synonyms). In species-group headings the specific epithet is highlighted by the use of capitals, e.g. ‘ORNATUM species-group’. In the very rare situation where a species appears to be ‘good’ but its name is at present technically invalid that name is ranged left and printed in lightface italics to show that it cannot be validly used; see below under ‘*Homonyms*’ where such cases refer to specific names that are unreplaced homonyms.

#### *Nomenclature*

Spellings, authorship, dating, availability status, and other relevant aspects accord with the requirements of the current (fourth) edition of the *International Code of Zoological Nomenclature* published in 1999 and effective from 1 January 2000. It is noted particularly that, in accordance with articles 31.2 and 34.2, the spellings of specific names conform to the gender of the generic names with which they are combined; the gender of the subgenus (if any) is not relevant.

*Nomenclatural annotations.* Appropriate annotations are given when necessary, for instance when a name as published is unavailable (e.g. a *nomen nudum* or proposed for a variety or form after 1960) or was published as a replacement name for a preoccupied (junior) homonym, or the name has the technical status of an incorrect original or incorrect subsequent spelling (the latter limited to misspellings of some consistency or importance). Where a name has been the subject of an official Opinion of the International Commission on Zoological Nomenclature the Opinion number is given accompanied where relevant by the word ‘List’ or ‘Index’, the former referring to the Official List of Specific Names in Zoology and the latter to the Official Index of Rejected and Invalid Names in Zoology. (There is one instance of ‘Gen. List’ (i.e. *Cnetha*), this referring to the Official List of Generic Names in Zoology.)

*Homonyms.* It is necessary to call attention to a terminological change for names used to replace preoccupied names (homonyms). When the 1997 Inventory was published these names, following the provisions of the then current 3<sup>rd</sup> edition of the *International Code of Zoological Nomenclature*, were termed ‘replacement names’ or (if not in fact needed) ‘unjustified replacement names’. Regrettably, a wholly unnecessary change has been made in the 4<sup>th</sup> edition of the *Code* whereby replacement names (unless being published for the first time) are called ‘substitute names’ and those already made but not required are called ‘unnecessary substitute names’. The appropriate change has been made in order to conform to the current *Code*, and the abbreviation ‘subst.’ will be found in place of ‘repl.’.

*Type species.* The type species is shown that applies for each generic and subgeneric name (whether valid or in synonymy) and its mode of fixation stated. The authors of names of the type species are omitted since these are provided in the appropriate species entry. If the nominal type species is not now valid the present senior synonym is shown in addition, e.g. ‘*HELLICHIA* Enderlein, 1925 (as genus). Type species: *macropyga*, as *latifrons*’ indicates that *latifrons* was the cited type species when *Hellichia* was established but is now a junior synonym of *macropyga*.

*Changed combinations.* The author’s name and year date of description are enclosed in parentheses (round brackets) whenever the species concerned is no longer in its original genus, i.e. when the current binomen (combination) differs from that of the original publication. This is to accord with *Code* Article 51.3. A point worth stressing here, since errors are still occurring in the simuliid literature, is that transfer of a species from one *subgenus* to another without change of generic assignment does not constitute a new combination in the meaning of the *Code*.

*Dates.* The year date applicable to a zoological name is that on which the publication containing it was issued (distributed). This date usually agrees with that stated on or in the publication, but in many cases the date is later than (or even precedes) the stated date on the title page of the book or periodical part. When the actual date of issue can be found somewhere inside the publication (or in a list of issue dates specifically provided) but differs from the nominal date the two dates are given in the form ‘1934 [1933]’; when the actual date of issue has been determined from outside the publication (e.g. from information provided by a publisher) the two dates are given in the form ‘[1988] [1987]’. In both cases the first date given is the correct one under the *Code* and should be cited for the taxon concerned. See *Code* recommendation 22A.2.3 relating to mode of citation.

*Specific names involving ‘-cola’.* There are several of these in the Simuliidae and there has been confusion concerning them. The suffix ‘-cola’ is a noun in classical Latin (e.g. see Stearn, 1995) but the New Latin adjectival derivatives ‘-colus’ (masculine), ‘-cola’ (feminine) and ‘-colum’ (neuter) have a long pedigree in zoology and their use in nomenclature has never been prohibited by the International Commission on Zoological Nomenclature. The spelling is not subject to alteration where it was clearly originally used as a noun, e.g. *Simulium monticola* Friederichs (mountain-dweller, use of *-cola* with neuter generic name) but is subject to gender change when used as an adjective, e.g. *Eusimulium alticolum* Dyar & Shannon (dwelling high, spelling showing use as adjective in combination with neuter generic name). Thus in the latter case the original spelling *alticolum* is subject to mandatory change to *alticola* when combined with *Cnephia* or *Mayacnephia* (both feminine). See also Brown (1956: 48).

*Varieties and forms described after 1960.* Under the *International Code of Zoological Nomenclature* (Article 45.6) a name published for a ‘variety’ or ‘form’ after 1960 has no status in zoological nomenclature. It lies outside the provisions of the *Code*, is unavailable and thus not a nominal taxon based upon type specimens. Such a name can become available by the action of the original author or some other later author if the entity is later treated as a subspecies or species (when it would enter into the purview of the *Code*). Not all authors publishing on Simuliidae since 1960 have noticed or observed this aspect of the *Code* and there are some names to be accounted for that come into this category. These are suitably annotated in the text. Fourteen of the names concerned (the majority) were published by Rubtsov for ‘varieties’ in 1962-1964 but only two of these have subsequently been made available. The others remain unavailable, though Yankovsky (1995) has listed them as if they are available nominal taxa and has cited for them ‘holotypes’ or ‘lectotypes’. In fact, since the names are still unavailable (and likely to remain so) these putative primary types have no status as types. Rubtsov & Yankovsky (1988) listed the ‘var.’ names concerned as trinomials but did not state that they intended by this to ‘promote’ the entities to subspecies rank and Yankovsky (1995) has since disregarded the varietal names as mere synonyms of the species names concerned. The listing in trinomial form by Rubtsov & Yankovsky (1988) therefore did not confer availability upon them.

### *Misidentifications*

The history of simuliid taxonomy is marked by an enormous amount of misidentification, not because of the incompetence of its practitioners but because of the extraordinary similarity of many species, especially when their early stages are still unknown - and sometimes even when they are known. Much of this was long ago and it would be unrealistic and pointless (even if it was practicable) to attempt to capture every instance which bedevils the literature. Some misidentifications, however, have been serious and/or long persistent and still have some continuing potential for misunderstanding. We have entered misidentifications, even if quite old, when their entry appears to us warranted in the interests of clarification. The included misidentifications are enclosed in square brackets and are given in the general form ‘[*hirtipes*: authors, not Meigen]’ when the error occurs rather generally in the literature but in the more precise form ‘[*exiguum*: Dalmat, 1955, not Roubaud]’ when the error pertains to, or originated in, an influential work of a certain date by a particular author. Where the misidentification involves important literature for a particular area this is indicated by an appropriate addition, e.g. ‘[*mutata*: Japanese authors, not Malloch]’.

## *Authors' names*

A few authors published under variant versions of their names. We have standardised as follows: Baranov (not Baranoff); Ramírez-Pérez (not Ramirez Perez, Ramírez Pérez); Rubtsov (not Rubtzov, Rubzov, Rubzow); Zivkovitch (not Zivkovic). For 'De' versus 'de' we have standardised to 'De' even if an author has occasionally used the lower case variant, hence for example De Meillon, De León. It proved impracticable, within the restraints of the format, to distinguish in a neat and uncluttered fashion between authors who happen to share the same surname, e.g. the Canadian specialist D.M. Davies and the British specialist L. Davies. Consequently, in common with usual catalogue and checklist procedure, the initials of 'duplicated' authors are omitted. (In practice the author(s) and year date given for any name will be sufficient to trace the original reference through the *Zoological Record*.)

## (2) Geographical information

### *Distribution*

For each species considered valid the distribution is shown in the right hand column by alphabetical listing of the countries from which it has been recorded. For large countries (e.g. Canada) and/or those spanning a very wide range of environments (e.g. Chile) the first-level subdivisions (e.g. province or region) for which there are records are shown, with the type locality given first and followed by the other subdivisions in alphabetical order of their abbreviations (see list of abbreviations below). Countries for which occurrence of the species is insufficiently substantiated are listed at the end, each with a parenthetical query mark against the name. If a country record is definitely an error this is shown by placing the country name in quote marks and within square brackets; e.g. the entries under *Simulium hirsutum* Pomeroy of ['Sierra Leone' error] and under *Simulium monticola* Friederichs of ['Britain' error] show that the published records of the species from those particular countries are now known to be wrong (i.e., based on misidentifications).

Siberia and Alaska are treated separately as if they are individual countries. The individuality of Siberia follows that established by Soós & Papp (eds) in their *Catalogue of Palaearctic Diptera* (14 volumes, 1984-1994), where the eastern part of the old USSR (now Russian Federation) is distinguished from European Russia. This has much to commend it both on practical and faunistic grounds. Likewise, we treat Alaska as an individual entity equivalent to a country because of its size, its separateness from the contiguous USA and the close relations of its boreal fauna to those of Siberia: we think the reader interested in Alaska will benefit because Alaskan distributions will stand out more obviously in the Inventory. Another departure from the strictly administrative basis concerns Labrador and Newfoundland, entries for the latter referring only to the island and the mainland area (Labrador) being entered independently. Isolated archipelagos have been treated separately from the mother country of which they are part: thus the Balearics and Canaries are treated independently of Spain, the Azores and Madeira independently of Portugal.

A word should be said about the 'negative' aspects of distribution, those areas for which there are no records for one or other of three reasons: (1) areas not adequately prospected where Simuliidae presumed to occur; (2) areas well prospected and with suitable lotic habitat but Simuliidae absent; (3) areas without trace of running water and Simuliidae absent. Some of the presently negative areas worth pinpointing are as follows. In the first category the large countries of Cambodia, Laos, Mauritania and Western Sahara and the Andaman and Nicobar Islands (no records traced for any of these areas). In the second category are the Hawaiian Islands, Samoan Islands, Tristan da Cunha and Kerguelen; in the third category are the streamless calcareous islands such as Bahamas, Bermuda and Cayman Islands and superabundant streamless corals islands and atolls of the Pacific and Indian Oceans (also the dead volcano of Ascension Island). The Falkland Islands (Malvinas) appear to be negative but the streams have not been adequately surveyed.

### *Type locality*

For valid names the country of the type locality is given as the first entry in the geographical distribution statement, followed by a semicolon and augmented as appropriate by any first-level subdivisions given in parentheses. Where subdivisions within a country, or islands within an archipelago, are specified the first always pertains to the type locality and is given in unabbreviated form, e.g. 'USA (California, Ari, Kan, Neb, Nev, Texas)'. For synonyms the type locality is given as a country entry in square brackets after the synonym name entry, amplified if appropriate, e.g. '[Italy (Sicily)]'. There are a few instances in which the type locality country cited in the Inventory differs from that given in the original species description, the reason being that the original type material is lost and a neotype has been designated from elsewhere. In such a case the new type locality country is cited in the form 'Afghanistan [neotype]'.

## Geographical abbreviations

Country names are given in full but to condense the text it has been necessary to abbreviate most names of second-level areas (regions, provinces, states). The basic principle has been to give single-word names in full up to a limit of five letters, abbreviating thereafter. Initial capitals are used for multiple-word names such as New York or San Luis Potosi and usually the first consecutive two or three letters for longer single-word names (varied if necessary to deal with names that share the first few letters). The abbreviations are: -

**Argentina:** BA, Buenos Aires; Cat, Catamarca; Chu, Chubut, Cór, Córdoba; Cos, Corrientes; ER, Entre Rios; For, Formosa; LP, La Pampa; LR, La Rioja; Men, Mendoza; Mis, Misiones; Nqn, Neuquén; RN, Rio Negro; SDE, Santiago del Estero; SJ, San Juan; SL, San Luis; SC, Santa Cruz; SF, Sante Fe; TDF, Tierra del Fuego; Tuc, Tucumán.

*Note:* Isla de los Estados (Staten Island), part of the province of Tierra del Fuego, has been specified when appropriate.

**Australia:** ACT, Australian Capital Territory; NSW, New South Wales; NT, Northern Territory; Qld, Queensland; SA, South Australia; Tas, Tasmania; Vic, Victoria; WA, Western Australia.

**Brazil:** Amz, Amazonas; BFD, Brasilia Federal District; ES, Espirito Santo; Mar, Maranhão; MG, Minas Gerais; MGr, Matto Grosso; MGrN, Matto Grosso do Norte; MGrS, Matto Grosso do Sul; Par, Paraná; Pba, Paraíba; Per, Pernambuco; RGN, Rio Grande do Norte; RGS, Rio Grande do Sul; RJ, Rio de Janeiro; Ron, Rondônia; Ror, Roraima; SC, Santa Catarina; SP, São Paulo; Toc, Tocantins.

**Britain:** CI, Channel Islands; En, England; Sc, Scotland; Wa, Wales.

*Note:* the Channel Islands, with only four species known, have minor significance and are listed last in the abbreviations sequence. The numerous islands associated with mainland Britain are not specified in the distribution data except for one instance where the Shetland Islands are type locality.

**Canada:** Alb, Alberta; BC, British Columbia; Lab, Labrador; Man, Manitoba; Nfld, Newfoundland; NB, New Brunswick; NS, Nova Scotia; NWT, Northwest Territories; Ont, Ontario; PEI, Prince Edward Island; Que, Quebec; Sask, Saskatchewan.

*Note:* Labrador and insular Newfoundland are separately listed for reasons given above. Islands of the Canadian Arctic for which there are records (Baffin, Banks, Southampton and Victoria) are specified when appropriate. The Queen Charlotte Islands have been specified within BC only when they are type locality.

**Chile:** Ant, Antofagasta; Ara, Araucania; Ata, Atacama; BB, Bio-Bio; Coq, Coquimbo; LL, Los Lagos; Mag, Magallanes; O'H, O'Higgins; San, Santiago; Tar, Tarapacá; Val, Valparaiso.

*Note:* Chiloé and Navarino Islands have been specified within the appropriate province whenever applicable.

**China:** Be, Beijing; Fu, Fujian; Gd, Guangdong; Gu, Guizhou; He, Heilongjiang; HK, Hong Kong; IM, Inner Mongolia; Ji, Jiangsu; Jx, Jiangxi; Li, Liaoning; Qi, Qinghai; Sg, Shandong; Sh, Shanxi; Si, Sichuan; Sx, Shaanxi; Xi, Xinjiang; Yu, Yunnan; Zh, Zhejiang.

**India:** AP, Andhra Pradesh; ArP, Arunachal Pradesh; HP, Himachal Pradesh; Ka, Karnataka (old Mysore); Ke, Kerala; Ma, Maharashtra; Me, Meghalaya; MP, Madhya Pradesh; Mr, Manipur; Na, Nagaland; Pu, Punjab; Sik, Sikkim; TN, Tamil Nadu (old Madras); UP, Uttar Pradesh; WB, West Bengal.

**Japan:** Hok, Hokkaido; Hon, Honshu; Ky, Kyushu, NI, Nansei (= Ryukyu) Islands; Sh, Shikoku.

**Mexico:** Ag, Aguascalientes; Ca, Chihuahua; Ch, Chiapas; Cl, Coahuila; Co, Colima; Cp, Campeche; Du, Durango; FD, Federal District; Gj, Guanajuato; Gu, Guerrero; Hi, Hidalgo; Ja, Jalisco; Ju, Juliaca; Mi, Michoacan; Mo, Morelos; MS, Mexico State; Na, Nayarit; NL, Nuevo Leon; Ox, Oaxaca; Pu, Puebla; Si, Sinaloa; SLP, San Luis Potosi; So, Sonora; Ta, Tamaulipas; Tb, Tabasco; Vz, Veracruz; Za, Zacatecas.

**New Guinea:** PNG, Papua New Guinea.

*Note:* the islands of Bougainville, Mussau, New Britain and New Ireland, all administratively parts of Papua New Guinea are specified when appropriate.

**Peru:** Anc, Ancash; Apu, Apurimac; Are, Arequipa; Huá, Huánuco.

**Russia:** CR, Central Russia; KM, Karelia-Murmansk; NR, Northern Russia; SR, Southern Russia.

*Note:* the latitudinal division of European Russia into northern, central and southern areas follows the system used by Soós & Papp (eds), *Catalogue of Palaearctic Diptera* (1984-1994). On this system the northern area lies north of (approximately) 60° north latitude, the central area between 60° and 50°, and the southern area south of 50° (limited by the Caucasus and Kazakhstan).

**Siberia:** ES, Eastern Siberia; FE, Far East; WS, Western Siberia.

*Note:* the longitudinal division of Siberia into three regions follows the system used by Soós & Papp (eds), *Catalogue of Palaearctic Diptera* (1984-1994). The areas are listed in the Inventory in the same non-alphabetical west to east sequence and the Soós & Papp definitions of the WS, ES and FE areas are used: West Siberia extends from the Urals to the Yenisei river, East Siberia from the Yenisei river to the border of the Magadan and Khabarovsk regions, and the Far East from that border to the Pacific limit of the Russian Federation.

**South Africa:** EC, Eastern Cape; FS, Free State; G, Gauteng; KZN, KwaZulu Natal; L, Limpopo; M, Mpumalanga; NC, Northern Cape; NW, North-West; WC, Western Cape.

*Note:* Mpumalanga was Eastern Transvaal (ET) and Limpopo Province was Northern Transvaal (NT) at the time of the 1997 Inventory.

**USA:** Ala, Alabama; Ari, Arizona; Ark, Arkansas; Cal, California; Col, Colorado; Con, Connecticut; DC, District of Columbia; Del, Delaware; Flo, Florida; Geo, Georgia; Ill, Illinois; Ind, Indiana; Kan, Kansas; Ken, Kentucky; Lou, Louisiana; Mar, Maryland; Mas, Massachusetts; Mic, Michigan; Min, Minnesota; Misp, Mississippi; Misr, Missouri; Mon, Montana; NC, North Carolina; ND, North Dakota; Neb, Nebraska; Nev, Nevada; NH, New Hampshire; NJ, New Jersey; NM, New Mexico; NY, New York; Okl, Oklahoma; Ore, Oregon; Pen, Pennsylvania; RI, Rhode Island; SC, South Carolina; SD, South Dakota; Ten, Tennessee; Ver, Vermont; Vir, Virginia; Was, Washington; Wis, Wisconsin; WV, West Virginia; Wyo, Wyoming.

### (3) General abbreviations

attrib.	-	attributed to
f.	-	form
incl.	-	including
ICZN	-	International Commission on Zoological Nomenclature
preocc.	-	preoccupied (of a junior homonym)
publ.	-	published
sp. -	-	species
spp.	-	species (plural)
ssp.	-	subspecies
subst.	-	substitute (of name substituting for junior homonym)
Syn. n.	-	new synonymy
unav.	-	unavailable (infringing some aspect of Chapter 4 of the <i>Code</i> )
unpubl.	-	unpublished
var.	-	variety

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Many friends and colleagues in the 'blackfly world' have provided us with information or reprints relevant to the inventory updates, and thus to the present revised inventory, and we thank them cordially.

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