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Corrections in the status and rank of names used to denote varietal forms of mosquitoes (Diptera: Culicidae)

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Abstract

The status and rank of mosquito varietal names listed in *A Catalog of the Mosquitoes of the World* are reviewed. Names proposed or adopted for existent varieties are deemed to be subspecific or infrasubspecific under provisions of the *International Code of Zoological Nomenclature* that regulate the rank of species-group names that follow binomina. Type data and taxonomic information are provided for each taxon.

Key words: Culicidae, mosquitoes, varieties, subspecies, infrasubspecies, taxonomy

Introduction

Recent work on an inventory of the mosquitoes of the world revealed the need to examine the status of varietal taxa in relation to provisions contained in Article 45 of the *International Code of Zoological Nomenclature* (ICZN, 1999) that regulate the rank of species-group names. Specifically, it became necessary to determine whether names proposed or adopted for varietal forms before 1961 are deemed to be subspecific or infrasubspecific under Article 45.6.

Fifty-seven nominal forms were formally recognized as varietal entities in *A Catalog of the Mosquitoes of the World* (Knight & Stone, 1977). The names of two of these forms were synonymized with specific names prior to 1977 and should not have been listed as valid varieties. The synonymic data for these two forms is provided in the first section below. Twenty-one of the varietal names listed in the catalog were either synonymized with a nominotypical form or raised to subspecific or specific rank before the end of January 1992. These changes are recorded in the three supplements to the catalog (Knight, 1978; Ward, 1984; Gaffigan & Ward, 1985; Ward, 1992). The taxonomic status of five varieties was changed after January 1992, which was the cut-off date for taxonomic changes recorded in the third supplement (Ward, 1992). These five names are listed in their current combinations in the second section below. The third section treats the 30 nominal taxa that were still recognized as varieties at the end of 2006. Finally, two nominal varieties reduced to infrasubspecific rank by White (1975) are discussed in the fourth section.

Taxa are listed alphabetically in each section below. The generic and subgeneric names of aedine mosquitoes comply with the classification of tribe Aedini proposed by Reinert *et al*. (2004, 2006). The 'traditional' generic and subgeneric names of taxa formerly included in genus *Aedes*, i.e. those recognized prior to the separation of *Ochlerotatus* and *Aedes* by Reinert (2000), are indicated in square brackets following the names proposed by Reinert *et al*. (2004, 2006). Each name in the third section is listed with its appropriate rank followed by its original combination and/or rank and authorship in parentheses. Taxa listed in all four sections are accompanied by type data and taxonomic information. The symbols ♀, ♂, L, P and E used to denote type

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specimens represent female, male, larva, pupa, and egg, respectively. Abbreviations denoting type depositories are those listed in Knight & Stone (1977), except IRD – L'Institut de recherche pour le développement, Montpellier, France. The morphological terminology follows Harbach & Knight (1980). Currently recognized geographical names are provided for type localities.

Varietal names placed in synonymy prior to 1977

"Ochlerotatus* (*Ochlerotatus*)" *cantans (Meigen, 1818).
Synonym: *Aedes cantans* var. *subvexans* Martini, 1922. Syntypes? (♀, L): Denmark (LU); synonymy by Natvig (1948).

Whether Martini (1922) intended to introduce the name *subvexans* as a new variety of *cantans* is questionable. He did not specifically indicate that the name was proposed for a new taxon, and he did not mention it in his later revision of the Palaearctic mosquitoes (Martini, 1931). Natvig (1948) clearly listed var. *subvexans* as a synonym of the nominotypical form.

Uranotaenia* (*Uranotaenia*) *macfarlanei Edwards, 1914.
Synonym: *Ur. campestris* var. *zelena* Barraud, 1934. Syntypes (♀, ♂): Pir Pao, Bombay, India (BM); synonymy by Peyton (1972).

Knight & Stone (1977) listed *zelena* as a variety of *macfarlanei* even though they credited Peyton (1972) with its synonymy with this species.

Current status of names in use for varietal entities in 1992

Bruceharrisonius doonii (*Aedes aureostriatus* var. *doonii* Wattal, Bhatia & Kalra, 1958). Holotype ♀: Kalsi, Dehra Dun, India (MSI).

This nominal variety of *Aedes aureostriatus* was accorded species status when Reinert (2003) introduced *Bruceharrisonius* as a new subgenus of genus *Ochlerotatus* [= *Aedes* (*Ochlerotatus*)]. It became a species of genus *Bruceharrisonius* when this nominal subgeneric taxon was raised to full generic rank by Reinert *et al.* (2006).

Uranotaenia* (*Pseudoficalbia*) *apicotaeniata (*Uranotaenia apicotaeniata* Theobald, 1909). Lectotype ♂: Obuasi, Ashanti, Ghana (BM); designation by da Cunha Ramos (1993).

This nominal species was treated as a synonym of *Ur. annulata* Theobald by Edwards (1932) and as a variety of that species by Edwards (1941). Its original specific status was reinstated by da Cunha Ramos (1993).

Uranotaenia* (*Uranotaenia*) *fraseri (*Uranotaenia bilineata* var. *fraseri* Edwards, 1912). Lectotype ♀: Mpumu Forest, Uganda (BM); designation by da Cunha Ramos, 1993.

Synonym: *Ur. bilineata* var. *obsoleta* Edwards, 1936. Holotype ♂: Kasakiro, Uganda (BM); synonymy by da Cunha Ramos (1993).

Edwards (1912) described *Ur. bilineata* var. *fraseri* from two females that "were at first thought to represent a distinct species". Edwards elected, however, to regard them as a variety of *Ur. bilineata* because closer examination revealed traces of the leg-banding which is characteristic of that species. The entity bearing the name *fraseri* was considered to be a variety of *Ur. bilineata* until da Cunha Ramos (1993) recognized it as a distinct species, and established that the nominal varietal name of *obsoleta* Edwards represents the same taxon.

Uranotaenia* (*Uranotaenia*) *connali (*Uranotaenia connali* Edwards, 1912). Lectotype ♀: Accra, Ghana (BM); designation by da Cunha Ramos, 1993.

Edwards (1912) described and named *Ur. connali* from a male and a female collected in latrines. Edwards (1941) subsequently regarded it as a variety of *Ur. bilineata*, and it was treated as such until da Cunha Ramos (1993) once again recognized it as a distinct species.

Veritable rank of names in use for varietal entities until now

Genus *Anopheles* Meigen
Subgenus *Anopheles*

bancroftii subspecies ***barbiventris*** (var. *barbiventris* Brug, 1938). Syntypes (♀, ♂): Kalawara, Palow, res. Menado, Sulawesi, Indonesia (BM).

Brug (1938) described and named *An. bancroftii* var. *barbiventris* from specimens that he distinguished from the nominotypical form and *An. pseudobarbirostris* Ludlow (as *An. bancroftii* var. *pseudobarbirostris*). It is only known from the type locality in Sulawesi whereas the nominotypical form occurs in Irian Jaya, Papua New Guinea, including the Admiralty Islands, and northern Australia (Lee *et al*., 1987). Based on its distribution and features of the adults, larva and male genitalia that easily distinguish it from both the nominotypical form and *An. pseudobarbirostris*, it is probably a distinct biological species. However, until further data are available to support this, *barbiventris* must be treated as a subspecies of *An. bancroftii* from its original publication in accordance with Article 45.6.4 of the *Code*.

eiseni subspecies ***geometricus*** Corrêa, 1944. Syntypes (♂, L, P, E): Guarujá, Ilha de Santo Amaro, São Paulo, Brazil (NE).

Corrêa (1944) originally described and named *geometricus* as a subspecies of *An. eiseni* Coquillett. Curiously, there is no mention of this taxon in the literature until Stone *et al*. (1959), followed by Belkin *et al*. (1971) and Knight & Stone (1977), listed it as a variety without explanation. In the absence of supporting evidence, *geometricus* should retain subspecific rank as originally proposed.

gigas subspecies ***formosus*** (*Anopheles formosus* Ludlow, 1909). Holotype ♀: Camp John Hay, Benguet Province, Luzon, Philippines (USNM).

Knight & Stone (1977) listed 10 forms of *An. gigas* Giles: the nominotypical form, eight varieties and one subspecies. Harrison *et al*. (1991) subsequently elevated var. *baileyi* Edwards to species status, thus leaving the seven formally designated varieties that are dealt with here, i.e. *formosus* and the following six nominal forms. Although all of these nominal forms were treated as subspecies at one time or another in various publications, it appears that Stone *et al*. (1959) and Knight & Stone (1977) elected to regard them as varieties as originally proposed.

Ludlow (1909) described and named *Anopheles formosus* from a female collected in the mountains of Benguet Province in northern Luzon. It retained specific rank until Christophers (1924a) considered it to be a variety of *An. gigas*. Dyar & Shannon (1925) listed it as a synonym of *An. gigas* noting that "The synonymy previously made seems confirmed", but no earlier record of the synonymy could be found in the literature. All later authors treated *formosus* as either a variety or a subspecies, notably, e.g., as a variety by Edwards (1932), Christophers (1933) and Bonne-Wepster & Swellengrebel (1953); as a subspecies by Simmons & Aitken (1942), Russell *et al*. (1943), Puri (1949) and Baisas (1963). In accordance with ICZN Article 45.6.4.1, *formosus* has subspecific rank from its original publication because it was used (originally) as the valid name of a species before 1985. This taxon is known only from the Philippine Islands and is likely to be a distinct biological species.

gigas subspecies ***simlensis*** (*Patagiamyia simlensis* James, 1911, *in* James & Liston, 1911). Syntype ♀: Murree, Pakistan; ?syntypes (f, m): [Simla Hills and Simla, respectively], India (BM); see Townsend *et al*. (1990).

James (1911, in James & Liston, 1911) described and named *Patagiamyia simlensis* for a taxon that apparently occurs in the Himalayas and eastward to northern Myanmar. The original description is based on specimens collected from "Mahasu near Simla at a height of 8,000 feet above sea-level… Rathlighat in Garhwal (6,000 feet) (collected by A. D. Imms) and at Murree (collected by Major F. Smith, H.A.M.C.)". Christophers (1916) synonymized *simlensis* with *An. gigas* and Christophers (1924b) raised it to varietal status, stating that it should be "considered a variety of the former in the sense of a true variety or sub-species". This nominal form differs from the nominotypical form in having poorly developed or no pale wing spots at the apices of veins R_{4+5}, M_1 and rarely M_2, a large yellow spot or band at the apex of the midfemur and two dark areas on the distal half of the costa. Larvae usually have a simple seta 2-C. Available data indicate that *simlensis* and the nominotypical form occur in sympatry, which suggests that the former may be a distinct biological species. However, because *simlensis* was adopted (originally) as the valid name of a species, and treated as a subspecies (e.g. Russell *et al*., 1943; Puri, 1949; and Wattal, 1963) before 1985, it must be treated as a subspecific name (Article 45.6.4.1) with availability from its original publication as a species of *Patagiamyia* until further research reveals otherwise. Incidentally, a number of Chinese workers treated *An. gigas simlensis* as a subspecies after 1985, most notably Lu Baolin *et al*. (1997).

gigas subspecies ***refutans*** (var. *refutans* Alcock, 1913). Syntypes? (♀): [Maskeliya], Sri Lanka (BM).

Alcock (1913) described and named *An. gigas* var. *refutans* based on specimens from Sri Lanka (as Ceylon) that differ "from the typical form only in having 3 or 4 *very* narrow white bands on the palpi, one of them *usually* being terminal". According to Edwards (1929), this form lacks the pale fringe spots at the apices of veins R_{4+5}, M_1, M_2 and M_{3+4} that characterize the nominotypical form. Christophers (1933) pointed out that the "type-form" only occurs, as far as known, in the Nilgiri and other hills of southern India, and that the *refutans* form has only been recorded from Sri Lanka. Consequently, the allopatric distributions of the two forms support the subspecific status of *refutans* that is required by Article 45.6.4 of the *Code*. Previous treatment of *refutans* as a subspecies prior to 1985, e.g. Russell *et al*. (1943), Puri (1949) and Wattal (1963), also requires this nominal taxon to be recognized as a subspecific form (Article 45.6.4.1).

gigas subspecies ***sumatrana*** (var. *sumatrana* Swellengrebel & Rodenwaldt, 1932). Syntypes (♀, L): Karoo-Hochebene and Kotaradja, Sumatra, Indonesia (LU).

This and the next three nominal forms were described as varieties of *An. gigas* based on specimens collected in Sumatra. Swellengrebel & Rodenwaldt (1932) described and named var. *sumatrana* based on specimens

collected in northeastern Sumatra that differ markedly from the type form of *An. gigas* (type locality: Nilgiri Hills, India) in having a large pale fringe spot between wing veins M_{3+4} and CuP (rather than between veins 1A and CuP) and lacking narrow pale fringe spots at the apices of veins R_{4+5}, M_1, M_2 and M_{3+4}. Based on these differences, and the short seta 2-C on the head of the presumed larva (Bonne-Wepster & Swellengrebel, 1953), this taxon would appear to be a distinct biological species; however, pending further study it must be regarded as a subspecies of *An. gigas* from its original publication because it was expressly used as a variety before 1961 (Article 45.6.4) and treated as a subspecies several times before 1985 (e.g. Russell *et al*., 1943; Puri, 1949; and Bonne-Wepster,1963). Certain later workers, e.g. Scanlon *et al*. (1968), also adopted *An. gigas sumatrana* as a valid subspecies.

gigas subspecies ***danaubento*** (var. *danaubento* Mochtar & Walandouw, 1934). Syntypes (♀, ♂): Danau Bento, North Kerintji [or Kerinci], Sumatra, Indonesia (?GLB).

Mochtar & Walandouw (1934) explicitly gave the name *An. gigas* var. *danaubento* to a morphological form that differed from the allopatric var. *sumatrana* that was described two years earlier. This nominal variety was also treated as a subspecies prior to 1985 (e.g. Stoker & R. Wakoedi, 1949; Bonne-Wepster, 1963).Accordingly, *danaubento* is deemed to have subspecific rank from the date of its original publication.

gigas subspecies ***oedjalikalah*** (var. *oedjalikalah* Nainggolan, 1939). Syntypes (♀, ♂, L): Oedjali Kalah, Mount Kerintji [or Kerinci], Sumatra, Indonesia (LU).

Nainggolan (1939) described and named *An. gigas* var. *oedjalikalah* from morphologically variable specimens that mainly differ from var. *danaubento*, which was also described from specimens collected in the realm of Mount Kerintji, in having the apex of vein CuP dark-scaled rather than narrowly pale-scaled. Although available data suggest that *oedjalikalah* is probably a sympatric variant of *danaubento*, the name must be afforded subspecific rank in accordance with Article 45.6.4 of the *Code* because Nainggolan (1939) specifically indicated that it was proposed for a variety rather than an infrasubspecific form. Furthermore, this nominal variety was treated as a subspecies before 1985 (e.g. Stoker & R. Wakoedi, 1949; Bonne-Wepster, 1963, as *oedjalikalahensis*).

gigas subspecies ***pantjarbatu*** (var. *pantjarbatu* R. Waktoedi, 1954). Syntypes (L): Sumatra, Indonesia (LU).

R. Waktoedi (1954) named var. *pantjarbatu* based on larvae collected at one or more undisclosed localities in Sumatra and provided characters in a key to distinguish the larvae from those of other nominal varieties of *An. gigas*, including *danaubento* and *oedjalikalah* which also occur in Sumatra. In the absence of collection data, it is not possible to surmise whether *pantjarbatu* may be sympatric with either *danaubento* or *oedjalikalah* or both of these nominal forms. Because the information provided by R. Waktoedi does not reveal that he may have considered *pantjarbatu* to be an infrasubspecific form, and also because it has been treated as a subspecies before 1985 (e.g. Stoker & R. Wakoedi, 1949; Bonne-Wepster, 1963), it must be afforded subspecific rank from its original publication in accordance with Articles 45.6.4 and 45.6.4.1 of the *Code*.

pseudopunctipennis infrasubspecies ***bifoliata*** (var. *bifoliata* Osorno-Mesa & Munoz-Sarmiento, 1948). Holotype ♂: Florida, Valle del Cauca, Colombia (DMB).

Osorno-Mesa & Munoz-Sarmiento (1948) published the name *bifoliata* as an addition to a binomen but expressly gave it varietal rank: "*Anopheles pseudopunctipennis bifoliata*, n. var.". The authors compared the egg, larva and male genitalia of *bifoliata* and the nominotypical form, and noted the presence of both forms

and an extreme range of intermediate forms ("extensa gama de formas intermedias") among specimens collected one kilometre from the type locality. Because this clearly indicates that Osorno-Mesa & Munoz-Sarmiento proposed the name *bifoliata* for a non-genetic variant of a single species, it is infrasubspecific under Article 45.6.4; and since it was not adopted for a species or subspecies before 1985 (Article 45.6.4.1), it is unavailable as a species-group name (Article 45.4) and excluded from the provisions of the *Code* (Article 1.3.4).

Genus *Anopheles*
Subgenus *Cellia* Theobald

ludlowae subspecies ***torakala*** (var. *torakala* Stoker & R. Waktoedi, 1949). Syntypes? (♀, ♂): Torakala, Sulawesi, Indonesia (LU) (for information regarding the type locality see Kitzmiller, 1982).

The availability of the name *torakala* is attributed to Stoker & R. Waktoedi (1949) who listed it, along with illustrations and brief descriptions of the wing, palpus of both sexes and hindleg of the nominal variety, without indicating that it was proposed as new. A note in the introduction to their "Illustrated map of the anopheline imagines of Indonesia" states that this publication "is a corrected and supplemented edition … of the 'Kaart en determinatietabel de Anophelinen in Ned. Oost Indië' (edition Pubic Health Service, section malariacontrol [*sic*] 1938)". Because it has not been possible to obtain a copy of the earlier publication, it is not known whether or not the name was originally introduced in 1938. Assuming that the name was not introduced earlier, it must be deemed to have subspecific rank because there is no indication that it may have been intended for an infrasubspecific entity.

tessellatus subspecies ***kalawara*** (var. *kalawara* Stoker & R. Waktoedi, 1949). Syntypes? (♀, ♂): Kalawara, Sulawesi, Indonesia (LU) (for information regarding the type locality see Kitzmiller, 1982).

The availability of the name *kalawara* is also attributed to Stoker & R. Waktoedi (1949) despite the possibility that it may have been introduced in the 1938 edition of their publication. In the absence of any indication that this name may have been intended for an infrasubspecific form, it has subspecific rank in agreement with Article 45.6.4 of the *Code*.

tessellatus subspecies ***orientalis*** (*Neomyzomyia punctulata* var. *orientalis* Swellengrebel & Swellengrebel de Graaf, 1920). Syntypes (L): Paleleh, Sulawesi, Indonesia (NE).

Swellengrebel & Swellengrebel de Graaf (1920) established *Neomyzomyia punctulata* var. *orientalis* based on "larval characters only". Edwards (1932) listed this nominal variety as a questionable synonym of *An. tessellatus*. Later authors, e.g. Lee & Woodhill (1944) and Bonne-Wepster & Swellengrebel (1953), considered it to be a variety of *An. tessellatus*, with the exception of Bonne-Wepster (1963) who treated it as a subspecies. Because *orientalis* was proposed expressly for a varietal entity, it has subspecific rank from its original publication (Article 45.6.4).

turkhudi subspecies ***telamali*** (var. *telamali* Saliternik & Theodor, 1942). Syntypes (♀, ♂, L): Tel Amal, Plain of Esdraelon, Israel (DPHU).

Saliternik & Theodor (1942) described and named *Anopheles turkhudi* var. *telamali* from two females, one male and four larvae. They stated that this form "is more closely related to *A. turkhudi* than to any other species of the Myzomyia group with dark-tipped palpi. It differs, however, in several characters that are constant

in our small series. These differences are very marked in the wing venation; but as we have not sufficient material for comparison and the wing venation is notoriously variable in this group, it is difficult to establish the status of our insect exactly before more material for comparison is available. However, the differences mentioned seem to justify the creation of a separate variety, and we propose the name *Anopheles turkhudi* var. *telamali* var. nov.". Since the name *telamali* was proposed expressly for a varietal entity, it has subspecific rank from its original publication (Article 45.6.4).

Genus *Armigeres* Theobald
Subgenus *Armigeres*

subalbatus subspecies ***chrysocorporis*** (*Armigeres obturbans* var. *chrysocorporis* Hsieh & Liao, 1956. Syntypes (♀, ♂, L): Amoy, China (LU).

Hsieh & Liao (1956) described and named *Armigeres obturbans* var. *chrysocorporis* from an undisclosed number of males, females and larvae, or perhaps associated larval exuviae. Although *obturbans* (originally *Culex obturbans* Walker, 1860) is the logotype of genus *Armigeres*, Thurman (1959) treated the name as a *nomen dubium* and relegated *Ar. obturbans sensu auctorum* to synonymy with the common Oriental *Ar. subalbatus* (Coquillett) because "the type is lost and the diagnosis of the species differs among specialists". Consequently, Stone *et al*. (1959) and Knight & Stone (1977) listed *obturbans* as a *nomen dubium* and *chrysocorporis* as a variety of *Ar. subalbatus*. As noted by Lee *et al*. (1988), however, the holotype female of *Ar. obturbans* from Makassar, Sulawesi is in the National Museum of Victoria (NMM) in Melbourne, Australia. In as much as the specimen "differs from all available descriptions of species of the subgenus *Armigeres*" (Lee *et al*., 1988), *Ar. obturbans* is should be recognized as a valid species. Based on provenance, however, there is little doubt that Hsieh & Liao (1956) described *chrysocorporis* as a variety of *Ar. subalbatus*. Because *chrysocorporis* was introduced explicitly for a varietal entity, it has subspecific rank (Article 45.6.4) with availability from its original publication by Hsieh & Liao (1956).

Genus *Culex* Linnaeus
Subgenus *Culex*

aurantapex subspecies ***jinjaensis*** (var. *jinjaensis* Edwards**,** 1941). Lectotype ♂: Jinja, Uganda (BM); designation by Mattingly, 1956.

Edwards (1941) described and named *Culex aurantapex* var. *jinjaensis* from specimens that are darker and exhibit different abdominal ornamentation than the nominotypical form. The brief description indicates that Edwards expressly used the name for a variety rather than an infrasubspecific form, and consequently *jinjaensis* has subspecific rank with availability from the date of the original publication.

grahamii subspecies ***farakoensis*** (var. *farakoensis* Hamon, 1955). Syntypes (♀, ♂, L): Farako, Sikasso, Mali (IERT, BM).

Hamon (1955) described and named *Culex grahamii* var. *farakoensis* from three males and two females reared from pupae, a larval exuviae and 21 larvae, but the name is based principally on characters that distinguish the larvae from those of the nominotypical form. Since the name *farakoensis* was proposed expressly for a varietal entity, it has subspecific rank from its original publication (Article 45.6.4).

guiarti subspecies ***sudanicus*** (var. *sudanicus* Edwards**,** 1941). Lectotype ♂: Bole, [Northern Territories], Ghana (BM); designation by Mattingly, 1956.

Edwards (1941) described and named *Culex guiarti* var. *sudanicus* for mosquitoes that he considered to be morphologically "Intermediate between *C. guiarti* and *C. weschei*"; however, he expressly proposed the name for a variety rather than an infrasubspecific form. Accordingly, *sudanicus* is deemed to have subgeneric rank with availability from Edwards (1941).

invidiosus subspecies ***vexillatus*** (var. *vexillatus* Edwards, 1941). Lectotype ♂: Kampala, Uganda (BM); designation by Mattingly, 1956.

Culex invidiosus var. *vexillatus* was described and named from a series of five males and a female (Mattingly, 1956) that closely resemble *Cx. invidiosus* in all respects except for the shape of seta *f* of the male gonocoxite (Edwards, 1941). Despite this seemingly minor difference, Edwards unquestionably introduced the name *vexillatus* for an entity he deemed to be a variety, and hence it has subspecific rank from its original publication.

Genus *Culex*
Subgenus *Eumelanomyia* Theobald

horridus subspecies ***rageaui*** (*Neoculex horridus* var. *rageaui* Hamon & Rickenbach, 1955). Holotype ♂: Nkolbisson, Yaoundé Region, Cameroon (IRD).

Hamon & Rickenbach (1955) described and named *Neoculex horridus* var. *rageaui* from six males which have differently developed setae on the subapical lobe of the gonocoxite that distinguish them from males of the nominotypical form. Since the name was proposed expressly for a varietal entity, it is deemed to be subspecific with availability from Hamon & Rickenbach (1955). Stone *et al*. (1959) listed *horridus* as a species of *Culex* (*Neoculex*) and Sirivanakarn (1971) transferred it to subgenus *Eumelanomyia*.

Genus *Mansonia* Blanchard
Subgenus *Mansonioides* Theobald

africana subspecies ***nigerrima*** (*Mansonia nigerrima* Theobald, 1910). Holotype ♀: Mpumu, Uganda (BM).

Theobald (1910) described and named *Mansonia nigerrima* from a single female. Three years later, Edwards (1913) listed it both as a synonym and a doubtful variety of *M. africanus* (as *Mansonioides africanus*), pointing out that it "may perhaps rank as a good variety; it is much darker than the type: the thorax is darker, with hardly a trace of pale markings; the dark scales of the wings are much more numerous than the light, and the white rings at the bases of the hind tarsal joints are much narrower than in typical *M. africanus*. The male genitalia, however, do not differ in any way". Despite Edwards' (1913) apparent reluctance to treat *nigerrima* as a variety, implying that it should perhaps be regarded as an infrasubspecific entity, it is deemed to have subspecific rank because it was adopted (originally) as the valid name of a species before 1985 (Article 45.6.4.1).

Genus *Ochlerotatus* Lynch Arribalzaga [= *Aedes* (*Ochlerotatus*)]
Subgenus *Rusticoidus* Shevchenko & Prudkina [= *Aedes* (*Rusticoidus*)]

rusticus subspecies ***subtrichurus*** (*Aedes subtrichurus* Martini, 1927). Lectotype ♂: Eastern end of Gulf of Ismid, Turkey (BM); designation by Mattingly (1955).

Martini (1927) described and named *Aedes subtrichurus* based on specimens from Seldjuk and the eastern end of the Gulf of Ismid. Martini (1931) considered *subtrichurus* to be a variety of *Aedes diversus* (Theobald). It has been recognized as a variety of *rusticus* since *diversus* became a synonym of that species (Edwards, 1932). Because *subtrichurus* was adopted (originally) as the valid name of a species, it must be treated as a subspecific name (Article 45.6.4.1) with availability from its original publication as a species of *Aedes*.

Genus *"Ochlerotatus" sensu auctorum*
Subgenus *"Ochlerotatus" sensu auctorum*

caspius subspecies ***hargreavesi*** (*Aedes caspius* var. *hargreavesi* Edwards, 1920). Syntypes (♀): Taranto, Puglia, Italy (BM).

Edwards (1920) described and named var. *hargreavesi* based on six females that differed from the type form in having the central area of the scutum covered with whitish scales. He explicitly stated that "Nothing approaching this variation has been seen from elsewhere, and it therefore seems justifiable to distinguish them under a separate name". Since it is clear that Edwards did not consider the specimens to be an infrasubspecific variant, *hargreavesi* is a valid name of a subspecies (Article 45.6.4) with availability from Edwards (1920).

Genus *Phagomyia* Edwards [= *Aedes* (*Finlaya*)]

gubernatoris subspecies ***kotiensis*** (*Aedes gubernatoris* var. *kotiensis* Barraud, 1934). Syntypes (♀, ♂): Koti, near Kalka, [Himachal Pradesh], western Himalayas, India (BM).

Barraud (1934) described and named *Aedes gubernatoris* var. *kotiensis* based on larvae that differ from the nominotypical form in having shorter antennae and lateral palatal brush filaments with "comparatively very large teeth". Information provided by Barraud indicates that the two forms may be allopatric. In any case, there is no indication in the original description that Barraud considered *kotiensis* to be an infrasubspecific entity; hence, it is accordingly deemed to be subspecific in agreement with Article 45.6.4 of the *Code*.

Genus *Stegomyia* Theobald [= *Aedes* (*Stegomyia*)]

annandalei subspecies ***quadricincta*** (var. *quadricincta* Barraud, 1923). Holotype ♀: Nongpoh, Meghalaya, India (BM).

Barraud (1923) noted that *Stegomyia annandalei* Theobald is "subject to variation in the leg markings", and described variety *quadricincta* as follows: "Differs from the typical form in having four basal white rings on all the tarsi. The third and fourth rings on the fore and mid legs are very small and incomplete, those on the hind legs wider and complete. In the type form there are usually two rings on the fore and mid tarsi, at the bases of the first and second segments, and three on the hind tarsi, on the first, second, and fourth segments,

the last occupying nearly the whole segment". Barraud based his concept of variety *quadricincta* on a single female (holotype) from Nongpoh, Assam, and noted that "There is another female specimen from the same place which agrees with the above in the markings of the hind tarsi, but the fore and mid legs have only two rings, as in the type form". Although it is likely that the name *quadricincta* applies to an infrasubspecific form, it officially has subspecific rank from its original publication because Barraud (1923) explicitly named it as a variety (Article 45.6.4).

mediopunctata subspecies ***sureilensis*** (var. *sureilensis* Barraud, 1934). Holotype ♀: Sureil, Darjiling, West Bengal, India (BM).

Barraud (1934) described and named *sureilensis* as a variety of *Aedes mediopunctatus* from a single female that is "very similar to the type-form, but differs in the scaling of the scutellum and in marking of hind femur". He also noted that "The specimen may be an unusual variation only, or there is a possibility that it may belong to a distinct species". Since Barraud did not unambiguously reveal that the name was proposed for an infrasubspecific entity, it therefore has subspecific rank from the original publication (Article 45.6.4).

Genus *Trichoprosopon* Theobald

compressum subspecies ***mogilasium*** (*Joblotia mogilasia* Dyar & Knab, 1907) Lectotype ♀: Tabernilla, Canal Zone, Panama (USNM); designated by Stone (1944).

Knight & Stone (1977) indicated that *Joblotia mogilasia* was formally recognized as a subspecies of *Tr. compressum* by Stone (1944) and later afforded varietal status by Stone *et al*. (1959). This is incorrect as Stone (1944) unambiguously treated this nominal species as a variety of *Tr. compressum*. Because *mogilasium* was adopted (originally) as the valid name of a species prior to 1985, it is deemed to be subspecific with availability from its original publication (Article 45.6.4.1).

digitatum subspecies ***townsendi*** (var. *townsendi* Stone, 1944). Holotype ♂: Boa Vista [previously in Fordlandia, currently Belterra], Rio Tapajós, Pará, Brazil (USNM).

Stone (1944) named and described *townsendi* as a variety of *Tr. digitatum* (Rondani) based on differential characters observed in four males and 14 females that comprise the type series. Because the name was proposed expressly for a varietal entity, it is deemed to be subspecific in accordance with ICZN Article 45.6.4.

Genus *Uranotaenia* Lynch Arribalzaga
Subgenus *Uranotaenia*

pulcherrima subspecies ***elnora*** (*Uranotaenia pulcherrima elnora* Paterson & Shannon, 1927). Holotype ♀: Tres Pozos, Embarcación, Salta, Argentina (USNM).

Paterson & Shannon (1927) published the name *elnora* as an addition to a binomen denoting subspecific rank, but labelled it as a new variety: "*Uranotaenia pulcherrima Elnora* nueva variedad". In as much as the authors did not unambiguously indicate that the name was proposed for an infrasubspecific entity, it has subspecific rank from the date of its original publication.

Genus *Wyeomyia* Theobald
Subgenus *Wyeomyia*

hosautos subspecies ***leucotarsis*** (var. *leucotarsis* Lane, 1936). Syntypes (♀): Boa Esperança and Pocinho, Mato Grosso, Brazil (LU).

Lane (1936) described and named *Wy. hosautos* var. *leucotarsis* from eight females that differed from the nominotypical form in having much more extensive white scaling on the hindtarsi. Based on this, he inferred that the specimens either represented a new species or a variety of *Wy. hosautos*. He adopted the latter option because no other differences distinguished the specimens from the nominotypical form, and additional information was needed to prove that they were members of a different species. Because Lane clearly did not propose the name for an infrasubspecific entity, it is deemed to have subspecific rank from its original publication (Article 45.6.4).

Nominal varieties reduced to infrasubspecific rank by White (1975)

"Aedes* (*Aedimorphus*)" *cumminsii subspecies ***mediopunctatus*** (*Culicada mediopunctata* Theobald, 1909). Holotype ♀: Obuasi, Ashanti, Ghana (BM).

Edwards (1925) referred to *Culicada mediopunctata* of Theobald (1909) as a variety of *Aedes cumminsii* (Theobald) that bears small whitish median basal spots on the abdominal terga. It was subsequently listed as a variety of *cumminsii* by Edwards (1932) and treated as a subspecies of this species by Edwards (1941, as *mediopunctatus*). Stone *et al*. (1959) recorded *mediopunctata* as a synonym of *cumminsii* based on the following statement by Haddow *et al*. (1951) even though these authors listed it as a variety: "In view of the fact that both the named subspecies of *A. cumminsii* (though rare) occur in Bwamba [County, Uganda] together with the typical form, they cannot properly be regarded as subspecies. It is therefore suggested here that they should be reduced to the rank of varieties. It might even be preferable to consider *A. cumminsii* as a variable species rather than to subdivide it into a series of named varieties." Because morphological forms identifiable as *cumminsii* and *mediopunctatus* are sympatric in tropical Africa and the latter is allopatric in southern areas of the continent, White (1975) suggested that it would be worthwhile "to enter *mediopunctatus* in the forthcoming Catalogue [of the Diptera of the Afrotropical Region (Crosskey, 1980)] as an infrasubspecific form rather than leaving it sunk in the synonymy of *cumminsii*. By maintaining the currency of this name for the form having small median basal white spots on abdominal tergites the attention of geneticists and systematists may be drawn to deciding its true status." Unfortunately, White apparently did not realize that infrasubspecific taxa were no longer recognized after 1961 (Article 45.6.4). He should have either left the name in synonymy or reinstated it to its previous subspecific rank. Based on available evidence, *mediopunctatus* should be deemed to be subspecific in compliance with Article 45.6.4.1 because it was adopted (originally) as the valid name of a species, and subsequently as a subspecies, before 1985. The taxon was correctly listed as a subspecies of *Ae. cumminsii* in *A Catalog of the Mosquitoes of the World* (Knight & Stone, 1977). This should not have been changed in the second supplement to the catalog (Knight, 1978) to agree with White (1975) and the *Catalogue of the Diptera of the Afrotropical Region* (Crosskey, 1980).

Culex* (*Culex*) *pruina subspecies ***eschirasi*** (var. *eschirasi* Galliard, 1931). Syntypes (L): Sainte-Croix des Eschiras, Gabon (LU).

Although Galliard (1931) expressly introduced the name *eschirasi* for a variety of *Cx. pruina* Theobald, White (1975) suggested that it should be considered an infrasubspecific form and it was subsequently listed as

such in the *Catalogue of the Diptera of the Afrotropical Region* (Crosskey, 1980) and the second supplement to *A Catalog of the Mosquitoes of the World* (Knight, 1978). As this action was inappropriate in light of ICZN Article 45.6.4, the name should be regarded as a subspecies of *Cx. pruina* as indicated in *A Catalog of the Mosquitoes of the World* (Knight & Stone, 1977).

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