

**Notes on some types of *Culex (Culex)*
(Diptera, Culicidae) deposited in
England and France**

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ABSTRACT. Observations and comments are provided on the location, number and/or validity of type-specimens for 30 names representing 16 currently-recognized species of the subgenus *Culex*. The repository and number of type-specimens are confirmed for another 30 nominal species.

During August and September 1982, a visit was made to the British Museum (Natural History) (BM), Institut Pasteur, Paris (PIP) and the Museum National d'Histoire Naturelle, Paris (MNHP) to examine type-specimens for a revisionary study of the *Culex (Culex)* of northern Africa and southwestern Asia. Sixty type-series were to be studied in detail, but only 53 of these could be located. The 7 not located are presumed lost. Additionally, some invalid types were discovered and a number of discrepancies were found between published and existing numbers of type-specimens for certain nominal species. Details follow.

***Culex auritaenia* Enderlein, 1920.**

Culex auritaenia, currently considered a junior synonym of *Culex poicilipes* (Theobald), was described from a series consisting of one male and 42 females collected in Tananarive, Madagascar (Enderlein 1920:50). Stone and Knight (1977:220) list the type-specimens as being in the Zoologisches Museum der Humboldt Universität, Berlin, East Germany (stated as West Germany, but corrected to East Germany by Knight 1978:71). Six of the females, however, are in the BM. All 6 of these bear a blue label with "Madagascar/Tanararivo [*sic*]/Friederichs S.V." printed on it, 5 have a red type label, and 4 of the latter have 2 additional labels inscribed with "Culex/auritaenia/Type Enderl. ♀/Dr. Enderlein det. 1920//1920.375."

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***Culex bicolor* Meigen, 1818.**

Meigen (1818:9) had an adult male and female before him when he described *Culex bicolor*, currently considered a synonym of *Culex pipiens* Linnaeus, but only the female is in the MNHP. "Das Mannchen von Hrn. Megerle" may never have been acquired by the museum.

***Culex (Culex) alpha* Séguy, 1924.**

Séguy (1924:41) described *Culex alpha* from an undisclosed number of larvae collected in Algiers. Knight and Stone (1977:200) list the type as deposited in the MNHP, but the specimen may be lost. A thorough search at the MNHP turned up larvae mounted on slides labelled as *alpha*, but only 2 of these might possibly be type-specimens because the others were collected in the Comoro Islands. One of the 2 resembles the larva figured by Séguy, but is unlikely to be a type-specimen. It is mounted on a slide inscribed with "C. alpha/(du groupe typuliformis [*sic*])/Séguy." The inscription, however, does not appear to be in Séguy's handwriting. The slide also bears Dr. P.F. Mattingly's determination label identifying the specimen as *Culex (Culex) theileri* Theobald. The slide bearing the second larva has a label with "Culex α /Alger Surcouf/Séguy det." written by Séguy. The data on the label match the locality and collector of *alpha*, but the specimen does not resemble the larva figured by Séguy.

***Culex (Culex) beta* Séguy, 1924.**

Culex beta was also described from an undisclosed number of larvae collected in Algiers (Séguy 1924:41). Although Knight and Stone (1977:203) list this species with the type deposited in the MNHP, I was unable to locate a single slide labelled as *Culex beta* in this repository. This type-series may be lost. To date, I have been unable to determine if this type-series is present in the Institut Pasteur, Algiers.

***Culex (Culex) brumpti* Galliard, 1931.**

Knight and Stone (1977:204) record the location of the type-series of *brumpti* as unknown. There is a female syntype, however, in the BM. The specimen is accompanied by 2 labels. The first is a yellow label with "Culex" written above and "brumpti/Gall." written below the word "Co-/type." The second bears the written inscription "Corsica./Pres. 1931 by/Dr. H. Galliard." *Culex brumpti* was described from specimens collected in several localities on the island of Corsica.

***Culex (Culex) decens* Theobald, 1901c.**

Theobald (1901c:vii) stated that *Culex decens* was "Described from a single σ and ρ in the collection." There are, however, 2 males and a female in the BM marked as types. One of the males is identified by labels bearing "Bonny/29 V 00" and "Culex/decens/(Type). Theobald." in Theobald's handwriting. The other male and the female each bear a syntype label and a

label with "SYNTYPE of/*Culex decens* Theo./det. J. Chainey 1975." The "syntype" female is dated "29 V 00" and is accompanied by a long strip of paper inscribed with "*Culex decens* Theob." in what appears to be Theobald's handwriting. The "syntype" male is dated "25 V 00" and has a similar strip of paper with "C. decens (?) type ♂" written by an unknown person. The first male is undoubtedly the specimen used by Theobald to describe the male of *decens*, as well as the type "♂ in B.M., Bonny, Nigeria" mentioned by Edwards (1941:336). The "syntype" female is more than likely the specimen upon which Theobald based the description of the female of *decens*. The second male, even though it might possibly have been in Theobald's possession when *decens* was described, cannot be regarded as a syntype, and the labels designating it as such should be removed.

***Culex (Culex) duttoni* Theobald, 1901c.**

Theobald described both sexes of this Ethiopian species "from a series bred from larvae..." (Theobald 1901c:vi), but only 2 females, each labelled "type" by Theobald, could be found in the BM. The type male noted by Edwards (1941:300) could not be located.

***Culex (Culex) ethiopicus* Edwards, 1912.**

When Edwards (1912:30) described *ethiopicus* as a variety of *Culex ager* Giles, he had before him a "single male specimen from Maiduguri, N. Nigeria...and a series...from Bole, Gold Coast...". The series in the BM from Bole consists of a female bearing a "type" label, and 9 specimens (4 females and 5 males) each bearing 2 labels identical to 2 of the labels that accompany the "type" female. I consider the female labelled "type" to be the holotype, and the other specimens to be paratypes. I did not specifically look for the paratype male from Maiduguri.

***Culex (Culex) laticinctus* Edwards, 1913.**

The holotype male and 3 paratype females of *Culex laticinctus* from the type-locality of Tiberias, Israel (originally Palestine) are in the BM, but I was unable to locate a male and 2 other female paratypes also from the type-locality. I did not search for the 10 paratypes (5 males and 5 females) from Gibraltar.

***Culex (Culex) simpsoni* Theobald, 1905.**

In addition to a male and female each clearly marked as a "type" of *Culex simpsoni* by Theobald, there are 5 females and 2 males in the BM with identical labels that are similar to the labels borne on the pin with the type female. Also, there are 5 slides each bearing a label with "*Culex/simpsoni/n.sp.* F.V.T." One of the slides has a male mounted on it with its abdomen missing beyond segment II. Two slides carry abdominal segments II-VIII with intact genitalia. One of these could be the abdomen from the specimen on the first slide. The fourth slide bears the head, and the fifth the right legs, of a female. It appears that the 7 pinned adults and the 5 slide-mounts belong to

the type-series, and I have labelled them all as syntypes. Theobald (1905:28) provided no data on the number of specimens in the original series, but described details of the legs of the female and the head and genitalia of the male indicating that he had representatives of these mounted on slides.

***Culex (Culex) thalassius* Theobald, 1903b.**

The original description of *Culex thalassius* is of the female only (Theobald 1903b:168). The collection in the BM, however, has 2 females and a male labelled as "types" by Theobald. The male, of course, has no status as far as the name *thalassius* is concerned. Evidently, as was Theobald's practice, this specimen was selected as the "type" of the undescribed sex sometime after the description was prepared or published.

***Culex (Culex) univittatus* Theobald, 1901b.**

Theobald (1901b:29) did not divulge the number of specimens on which he based the description of *univittatus*. Edwards (1941:312) removed 3 and described them as *Culex terzii*. White (1975:321) stated that there are 12 syntypes of *univittatus*. There are, however, 10 specimens in the BM, all bearing a label with "SALISBURY/Mashonaland/[dated "Feb.," "March" or "April 1900"]/G.A.K. Marshall." The lectotype female selected by White (1975:321) is dated "March 1900."

***Culex dissimilis* Theobald, 1901a.**

Culex dissimilis, currently considered a synonym of *Culex duttoni* Theobald, was "Described from three ♂'s and two ♀'s..." (Theobald 1901a:378). I found all but one of the females in the BM. One of the males and the single female were labelled type by Theobald.

***Culex laurenti* Newstead, 1907 (in Newstead et al. 1907).**

Culex laurenti, currently considered a synonym of *Culex antennatus* (Becker), was described from "Two males and one female..." collected in "Leopoldville (Oct. and Dec., 1903)" (Newstead 1907:24, in Newstead et al. 1907). In the BM are 3 specimens, a female labelled "TYPE/ ♀," a male labelled "TYPE/ ♂" and a second male labelled "COTYPE/ ♂." The "type ♀" and "type ♂" are mounted dorsal up on minuten nadeln inserted into a circular piece of cardboard. The "cotype ♂" is mounted right side up on minuten nadeln inserted into a strip of acetate. The piece of cardboard supporting the "type ♀" is inscribed with "E/Dec 11/03"; that supporting the "type ♂" bears "C/Dec 9/03." The "type ♀" is also accompanied by the following labels: "SYN-/TYPE//SYNTYPE of/Culex laurenti/Newstead/det. J. Chainey 1975//SCHOOL OF TROP. MED.,/LIVERPOOL UNIVERSITY/Culex/laurenti/(Newst.)." Both males bear these same labels except that the species-author designation on the last label is replaced with "Culex lau-*renti*. (Newst.)/Congo" in the case of the "type ♂," and with "Culex laurenti./Leopoldville,/Belgian Congo,/December 1903./ Drs. Dutton & Todd" in the case of the "cotype ♂." Here, then, lies the paradox. While Newstead states that his specimens were collected in October

and December, the specimens in the BM are all labelled as collected in December. Obviously, either Newstead erred or at least one of the specimens in the BM is an invalid syntype of *laurenti*. Edwards (1914a:70) examined and illustrated the genitalia "of the type of this species," which he borrowed from Newstead at the Liverpool School of Tropical Medicine, and only the "cotype ♂" has its genitalia removed and mounted for study. Presumably an error was committed, either when the specimens were labelled or when the description was prepared.

***Culex masculus* Theobald, 1901b.**

This currently-recognized synonym of *Culex decens* Theobald was described from "Three ♂'s" and one ♀..." (Theobald 1901b:127). A male and female each marked "type" by Theobald were located in the BM. I also located a third specimen, another male, with 2 labels that are identical to 2 of the 4 labels accompanying both of the designated types. I marked this specimen as a syntype of *masculus*. I could not find the fourth syntype, another male.

***Culex minutus* Theobald, 1905.**

Theobald (1905:30) did not reveal the number of specimens on which he based the description of *minutus*. Edwards (1941:337) "found that the original material included a mixture of species; the pinned specimen labelled type by Theobald is *C. decens*, the slide mount which he figured is *C. duttoni*, and his second slide mount is *C. pipiens*." My findings at the BM concur. The pinned specimen, however, is a male, with a genitalia preparation attached to the pin, and not a female as listed in synonymy under *decens* by Knight and Stone (1977:206). The syntype male listed by Knight and Stone (p. 207) as a synonym of *duttoni* is represented by a genitalia on a slide labelled "Culex/minutus/n.sp. F.V.T." and bearing the notation "Take as type of/*C. minutus*/Specimen figured/by Theobald./F.W.E. 28.II.39." The "second slide mount" referred to by Edwards bears the right wing of a female.

***Culex nigrocostalis* Theobald, 1909.**

Theobald (1909:16) described this currently-recognized synonym of *Culex decens* Theobald "...from a single perfect ♀ and three ♂'s." In the BM, I found a pinned male and female each bearing Theobald's type-label. I also found a slide with the left wing of the type female, and 3 slides with male parts mounted on them. Each of the latter are marked "type ♂" by Theobald. One bears a head, another various parts of legs and the third has a genitalia mounted on it. Whether these are the remains of one or both of the missing syntype males could not be determined.

***Culex onderstepoortensis* Theobald, 1911.**

Culex onderstepoortensis, currently considered a junior synonym of *Culex theileri* Theobald, was "described from 7 females (Nos. 456, 545, 595, 654, 6984 and 708, and another)" (Theobald 1911:265), but only 2 of these, numbers 595 and 698 (misprinted as 6984 in Theobald), and a slide with the left wing

from specimen number 456 could be located in the BM. Specimen number 698 bears a type-label written by Theobald. Three other females, each bearing a label with "Onderstepoort/Transvaal" in Theobald's handwriting, were found in the collection, but whether or not these are syntypes of *onderstepoortensis* can not be established. It is possible that 2 of these are the missing syntypes of *Culex theileri* var. *annulata* Theobald (see below) which were also collected in Onderstepoort.

***Culex pettigrewi* Theobald, 1910a.**

Theobald had 4 specimens before him when he described this currently-recognized synonym of *Culex theileri* Theobald. He stated: "Described from a perfect unengorged ♀. Three other ♀'s were fully gorged and black." (Theobald 1910a:17). From this statement it is obvious that the unengorged female was the primary specimen used for the description. Sirivanakarn (1976:45), however, indicated that he had examined the "holotype." I do not agree with this, as I consider the 4 specimens to be syntypes.

***Culex richteri* Ingram and De Meillon, 1927.**

The adult of *Culex richteri*, currently considered a junior synonym of *Culex simpsoni* Theobald, was "Described from two males and two females reared from larvae taken in rock pools in the bed of the Begamuzi river, Zululand, March 22nd, 1927" (Ingram and De Meillon 1927:73). One of the males is apparently the type-specimen which I located in the BM. In addition to a type-label, this specimen bears a second label inscribed with "Zululand./1927./Dr. A. Ingram./B.M. 1928-27." Also in the collection are 3 females, another male and 3 slides all bearing a label identical to the second label accompanying the type. The second male is obviously a paratype, but which of the females are paratypes cannot be determined (perhaps the authors actually had 3 rather than 2 females before them). Each of the slides bears a second label indicating the kind of specimen mounted on it, the species name and the collection data, i.e., "Begamuzi [*sic*]," "Zululand" and "March 1927." One of the slides bears the genitalia of a male (not that of the type or paratype), the second bears the pupal exuviae of a male (cephalothorax and abdomen separated) and a female (intact), and the third has 3 larvae mounted on it (one severed between abdominal segments V and VI and 2 between segments VI and VII). As these are almost certainly the specimens used by Ingram and De Meillon to describe the male genitalia, larva and pupa of *richteri*, I regard them as paratypes.

***Culex rufus* Meigen, 1818.**

Knight and Stone (1977:216) indicate that *Culex rufus*, currently considered a synonym of *Culex pipiens* Linnaeus, was described from a male deposited in the MNHP. Meigen (1818:7), however, described *rufus* without definitely stating the sex of the material before him. The manner in which he referred to the palpi of the male implies that he had a female as well as a male. This is borne out by the presence of both a male and female type in the MNHP. These specimens should be considered syntypes.

***Culex salus* Theobald, 1908.**

Culex salus, currently recognized as a synonym of *Culex sitiens* Wiedemann, was "Described from two pinned females and micro-preparations of the male" (Theobald 1908:256). One of the females, labelled "type" by Theobald, was located in the BM, but the other could not be found. The "micro-preparations of the male" consist of the maxillary palpi, proboscis and part of the head capsule mounted on one slide, and the genitalia (intact with abdominal segment VIII and part of VII) mounted on another. Both slides were marked "TYPE" by Theobald. The "type ♀" is missing both wings, and although two wings were found mounted separately on slides, neither belongs to this specimen. One of the wings is that of a female, and from the labels on the slide it is almost certainly that of the missing syntype. The other wing is that of a male, and probably belongs to the dissected syntype. I have labelled the slides appropriately.

***Culex theileri* var. *annulata* Theobald, 1913.**

Theobald (1913:321) described *annulata*, currently synonymized with the specific name, from 2 females labelled "M.T. 1, 22.11.10 and 19.8.11, 4881." These specimens could not be located in the BM (see note under *Culex onderstepoortensis*).

***Culicelsa neotaeniorhynchus* Theobald, 1910c.**

Culicelsa neotaeniorhynchus, a currently-recognized synonym of *Culex thalassius* Theobald, was "Described from four ♀'s and two ♂'s" (Theobald 1910c:321). There are 3 pinned females and a pinned male of *neotaeniorhynchus* in the BM. One of the females and the male each bear the "type" notation of Theobald. Two slides, each bearing a wing, account for the missing syntypes. Both slides are labelled "type." One has the right wing of a female mounted on it; the other the left wing of a male.

***Heptaphlebomyia montforti* Ventrillon, 1905a.**

Ventrillon (1905a:448) described both sexes of *montforti*, a recognized synonym of *Culex univittatus* Theobald, from an undisclosed number of specimens collected in Ankajobé, Arivonimamo and Tananarive, Madagascar. Knight and Stone (1977:227) list the type-locality as only Ankajobé, without explaining this restriction.

Edwards (1941:306), and later Stone et al. (1959:264), indicate that the types of *montforti*, a male and female, were in the MNHP. I was able to locate 8 female syntypes in this repository, but no males.

Theobald (1910c:482) stated that there was a "Co-type in the British Museum." There are, however, 2 males and 2 females in the BM, each bearing a label inscribed with "Madagascar./Dr. Ventrillon./Recd. Fr./F.V. Theobald,/Jan. 1905./? Co-Type." One of the males bears the lectotype designation of White (1975:321). However, there is no solid evidence to confirm that the male selected as lectotype is an actual syntype of *montforti*,

since the specimen was originally labelled as a questionable co-type.

The original spelling of the specific name for this nominal species is "*monforti*." Though Ventrillon indicated (p.450) that the species was named in honor of "Dr. Monfort," his figure of the wing of a male (Fig. 1, p.449) is labelled "*Heptaphlebomyia Montforti [sic]*." That Ventrillon and/or an assistant was careless is evident from the syntypes in the MNHP which are variously labelled as follows: 5 females (2 bearing cotype labels) with "*Heptaphlegomyia [sic] monforti [sic]*," one female (bearing a cotype label) with "*Heptaphlegomia [sic] montforti*" and 2 females with "*Heptaphlebomyia monfortii [sic]*." Later workers, beginning with Theobald (1910c:482), must have regarded the original spelling as a *lapsus calami*.

***Taeniorhynchus ager* Giles, 1901b.**

Taeniorhynchus ager is currently recognized as a junior synonym of *Culex bitaeniorhynchus* Giles. A brief description of the adult of *bitaeniorhynchus* (sex not specified) was included in a paper read by Giles before the Bombay Natural History Society on 11 December 1900, and published (Giles 1901a:607) on 18 May 1901 in the Society's journal. The description of the female of *ager* (Giles 1901b:196) was published in July 1901. Theobald (1901b:199) described the male of *ager* in volume 2 of his Monograph of the Culicidae which was released for sale on 23 November 1901.

In addition to *bitaeniorhynchus*, Giles (1901a) included brief descriptions of 9 other new species in his report to the Bombay Natural History Society. Five of these species, presented again as new, accompanied the description of *ager* in his second paper (1901b). *Culex bitaeniorhynchus* was not included in the second paper, but its brief description was repeated verbatim as a diagnosis of *ager*. That Giles did not consider the reading and subsequent publication of the name *bitaeniorhynchus* to be valid is evident from the note that follows the description of *ager* in his handbook (Giles 1902:365): He states: "Mr. Theobald's description of this species for the Monograph [Theobald 1901b] was already in press when he received the paper containing another description [that of *bitaeniorhynchus*] which I sent through him to the "Entomologist," but with characteristic courtesy, he insists on its standing as mine under the name he had adopted for it. It appeared in my Prodrum of Indian *Culicidae* under the above synonym [*Culex bitaeniorhynchus*], but I was careful to note that the names of new species should be regarded as merely provisional, as it was quite possible that, though in correspondence, the same species might be described by Mr. Theobald and myself." It is not merely a coincidence that the type of *bitaeniorhynchus* is reported to be non-existent and that of *ager* is said to be lost, for these are objective synonyms.

There are 2 males in the BM labelled "*Taeniorhynchus/ager/* (Type). Theobald" in Theobald's handwriting. Both also have a label with "Capt. Cornwall./Madras." printed on it. One of the specimens bears 3 additional labels: One with "Paddy field/[2 illegible marks]/24.12.99" written in black ink, a red-bordered type label, and the last with "LECTOTYPE/*Taeniorhynchus/ager* Giles/By R.A. Bram '66." These specimens are obviously the "Two ♂'s, taken by Captain Cornwall in paddy-fields" on which Theobald (1901b:201) based his description of the male of *ager*. But since Giles' description predates

Theobald's by about 4 months, and since Theobald confirms that Giles "...found the ♀ of this species...and has described it...", these specimens clearly are not syntypes of *ager*. Consequently, the lectotype selected by Bram (1967:263) has no status and the designation is invalid.

Subspecies described by Roubaud.

Knight and Stone (1977:219) list the types of the following subspecies as being in the PIP: *Culex pipiens autogenicus* Roubaud, 1935:444; *Cx. pipiens berbericus* Roubaud, 1935:445; *Cx. autogenicus sternopallidus* Roubaud, 1945:54 and *Cx. autogenicus sternopunctatus* Roubaud, 1945:54. I searched the collection in the PIP for the types of these, but they could not be found and are presumed to be lost.

Additional type-specimens examined.

The type-specimens of the following nominal species were examined in addition to those discussed above. They are listed here to verify their presence in the depositories indicated.

In the BM -

- Aporoculex punctipes* Theobald, 1907 (type ♀, left wing on slide).
Culex albovirgatus Graham, 1910 (type ♀; type ♂; syntypes - 1♂, 1♀).
Culex anarmostus Theobald, 1903b (type ♀)
Culex bifoliata Theobald, 1905 (types - 2♂).
Culex creticus Theobald, 1903b (type ♀, left wing on slide).
Culex (Culex) neavei Theobald, 1906 (lectotype ♀, selected by White 1975:317; paralectotypes - 2♀).
Culex (Culex) perexiguus Theobald, 1903b (lectotype ♂, selected by White 1975:318; paralectotype ♀).
Culex (Culex) poicilipes (Theobald, 1903a) (type ♀).
Culex (Culex) theileri Theobald, 1903b (lectotype ♀, selected by Sirivanakarn 1976:45; syntype ♂).
Culex (Culex) torrentium Martini, 1925 (hololectotype ♂, selected by Mattingly 1955:31; allotype ♀; paratypes - 1♂, 1♀).
Culex (Culex) tritaeniorhynchus Giles, 1901a (type ♀).
Culex (Culex) vishnui Theobald, 1901a (type ♀).
Culex gnophodes Theobald, 1903a (type ♀).
Culex goughii Theobald, 1911 (only paralectotype ♀ examined, lectotype ♂ selected by White 1975:321).
Culex hirsutipalpis Theobald, 1901a (type ♀; type ♂).
Culex impellens Walker, 1859 (type ♀).
Culex jepsoni Theobald, 1910b (type ♀).
Culex lividocostalis Graham, 1910 (type ♀; type ♂).
Culex microannulatus Theobald, 1901a (lectotype ♂, selected by Bram 1967:243; 4 syntypes - 3♀, one specimen missing from pin).
Culex par Newstead, 1907, in Newstead et al. 1907 (type ♀).
Culex quasigelidus Theobald, 1903b (type ♀, left wing on slide; type ♂; syntype ♀).
Culex taeniorhynchoides Giles, 1904 (type ♀).
Culex tipuliformis Theobald, 1901b (type ♀).

- Culex virgatipes* Edwards, 1914b (only holotype ♂ examined).
Culicelsa accraensis Theobald, 1909 (type ♀, right wing on slide; type ♂; syntype ♀).
Culicelsa accraensis var. *fuscus* Theobald, 1909 (type ♀).
Heptaphlebomyia simplex Theobald, 1903b (type ♀).
Taeniorhynchus tenax var. *maculipes* Theobald, 1904 (type ♀).

In the MNHP -

- Culex cartroni* Ventrillon, 1905b (9 syntypes - 2♀, 7♂).
Pseudoheptaphlebomyia madagascariensis Ventrillon, 1905b (syntypes - 11♀).

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