

A synonymic list of the mosquitoes hitherto recorded from Sweden, with keys for determining the genera and species.

By

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In connection with a revision of the palaeartic Culicidæ, which the writer has in preparation, Prof. YNGVE SJÖSTEDT was so kind as to send to the British Museum for re-determination the greater part of the collection of mosquitoes in the Stockholm museum. The examination of this material showed, as was expected, that in the case of some of the more difficult groups there were a number of species confused. At Prof. SJÖSTEDT's request I have prepared a revised list of the known Swedish species, together with tables for their identification, which may be of use to Swedish collectors. The species will be more fully dealt with in the forthcoming revision of the palaeartic species referred to above; good descriptions of most of the species (often however under other names) together with their larvæ are given in MARTINI's recent work, »Über Stechmücken» (Archiv für Schiffs- und Tropenhygiene. Bd. 24, Beiheft 1, August 1920), where a fairly full bibliography will also be found. All recent work on mosquitoes has tended to show that the larvæ offer better characters for generic classification than do the adults, and the rather unsatisfactory table of genera given below is about the best that can be made for adults only. For discrimination of species the best characters are to be found in the male hypopygium; but if sufficient latitude is allowed the tables given below based chiefly on colouration will probably be found to work fairly well. Some species are only dis-

tinguishable by characters of male hypopygium or larvæ, for diagnosis of these reference must be made to published figures.

The subjoined list gives the synonymy (according to the writers present opinion) so far as it affects North European species. The reasons for all changes and innovations will be explained subsequently. Species which have been found in adjoining countries (Finland, Denmark or North Germany) are inserted in square brackets both in the list and in the keys, since they are likely sooner or later to be found in Sweden. South European species have not been included.

Anopheles MG.

maculipennis MG.

bifurcatus L.

plumbeus STEPH. (*nigripes* STAEG.).

Culex L.

pipiens L. (*ciliaris* ZETT.).

[*apicalis* ADAMS (*territans* H. D. K.).]

Theobaldia N.-L. (*Culiseta* FELT).

annulata SCHRANK.

[*subochrea* EDW. MS.]

siberiensis LUDLOW (*arctica* EDW.; *alaskaensis* LUDLOW).

bergrothi EDW. MS.

morsitans THEO.

fumipennis STEPH. (*ficabii* NOÉ; *theobaldi* MEIJ.).

Taeniorhynchus ARRIB.

richiardii TIC. (*annulipes* GOETGHEBUER; *flavivirostris* MG.).

Aedes, subgenus **Ochlerotatus** ARRIB.

vexans MG.

maculatus MG. (*cantans* MG.; *waterhousei* THEO.).

- semicantans MARTINI.
 annulipes MG. (*quartus* MARTINI).
 excrucians WALK. (*abfitchii* FELT, MARTINI; *annulipes*
 auct. partim).
 [freyi EDW. MS.]
 lutescens FAB. (*fletcheri* COQ.; *flavescens* THEO.; *arcanus*
 BLANCH.; *annulipes* ZETT., MARTINI, ?FICALBI; ?*bi-*
punctatus R.-D.).
 caspius PALLAS (*dorsalis* THEOBALD, AUSTEN; *puncta-*
tus MG.).
 dorsalis MG. (*currici* COQ).
 [rusticus ROSSI (*pungens* R.-D.; *quadraticulatus* MACQ.;
diversus THEO.)].
 alpinus L. (*nigripes* ZETT.; ?*innuitus* W. & K.; ?*in-*
earcticus DYAR).
 cataphylla DYAR (*prodotes* DYAR; *rostochiensis* MARTINI).
 [salinellus nom. n. (*terriei* MARTINI nec THEO.)].
 [detritus HAL. (*salinus* FIC.; *terriei* THEO.)].
 [diantaeus H. D. & K. (*serus* MARTINI)].
 [intrudens DYAR (*impiger* H. D. & K.)].
 [pullatus COQ. (*metalepticus* DYAR; ?*jugorum* VILLEN.;
gallii MARTINI)].
 communis DEG. (*nemorosus* MG.; *lazarensis* FELT).
 [palmeni EDW. MS]
 [parvulus EDW. MS.]
 punctor (KIRBY) DYAR (*nemorosus* THEOB., AUSTEN, DE
 MEIJ.; *sylvae* MARTINI nec THEO.).
 [sticticus MG. (?*lateralis* MG., ECKSTEIN; *concinus* STEPH.;
sylvae THEO.; *dorsovittatus* VILLEN., *nigrinus* ECK-
 STEIN)].
 geniculatus OLIV. (*ornatus* MG., ECKSTEIN, MARTINI;
lateralis THEO., ?MG.; *albopunctatus* ROND.; ?*fuscus*
lulus ZETT.).

Aëdes MG. (restricted).

- cinereus MG. (?*ciliaris* L. nec ZETT.; *nigritulus* ZETT.).

Key to genera (adults).

(This key will not necessarily apply to other species than those of North Europe.)

1. Abdomen without scales; female palpi as long as proboscis *Anopheles*.
- Abdomen covered with broad flat scales; female palpi much shorter than the proboscis 2.
2. Hind metatarsi as long as the tibiae *Culex*.
- Hind metatarsi distinctly shorter than the tibiae 3.
3. Female abdomen blunt-ended; female claws simple, as are also the hind claws of the male 4.
- Female abdomen pointed; front and middle claws, and usually also the hind pair, toothed in both sexes 5.
4. Wing-scales (of the longer set) almost linear *Theobaldia*.
- Wing-scales (of the longer set) considerably broader
Taeniorhynchus.
5. Proboscis longer than front femora; male palpi long
Aedes, subg. *Ochlerotatus*.
- Proboscis not longer than front femora; male palpi short
Aedes, restricted.

Keys to species (adults).**Anopheles.**

1. Wings with dark spots caused by accumulation of scales on the cross-veins and bases of fork-cells *maculipennis* MG.
- Wings unspotted 2.
2. Larger, brown species, mesonotum browner in middle, without distinct patch of white scales in front
bifurcatus L.
- Smaller, black species, mesonotum greyer in middle, with patch of narrow pure white scales in front
plumbeus, STEPH.

Culex.

- Pale abdominal bands at the bases of the tergites *pipiens* L.
 Pale abdominal bands at the apices of the tergites
 [*apicalis* ADAMS.]

Theobaldia.

1. Wings spotted, by dense accumulation of scales on the cross-veins and bases of fork-cells; tarsal joints white-ringed at the base..... 2.
- Wings unspotted (unless indistinctly at base of vein R_{4+5}) 4.
2. Femora before the tip, and hind metatarsi in the middle, with white rings 3.
- No white rings in these positions... *siberiensis* LUDLOW.
3. Abdomen dark brown banded with white
annulata SCHRANK.
- Abdomen nearly uniform ochreous [*subochrea* EDW. MS.]
4. Tarsi entirely dark *bergrothi* sp. n.
- Tarsi with narrow pale rings 5.
5. Front metatarsus of male distinctly longer than the remaining joints together; proboscis of female almost entirely black..... *morsitans* THEO.
- Front metatarsus of male not longer than the remaining joints together; proboscis of female largely pale at the sides and beneath..... *fumipennis* STEPH.

Ochlerotatus.

1. Joints of tarsi with white rings at the base..... 2.
- » » » with pale rings embracing both ends ... 8.
- » » » without pale rings..... 9.
2. Rings of middle joints of hind tarsi less than half as long as the joints; dark species; outer side of hind femora with numerous scattered dark scales 3.
- Rings on middle joints of hind tarsi more than half as long as the joints; lighter species; outer side of hind femora pale except towards tip 4.
3. Hind tarsal rings very narrow; smaller species; abdomen with distinct pale abdominal bands constricted in the middle and at the sides *vexans* MG.
- Hind tarsal rings broader, nearly half as long as the joints; larger species; pale abdominal bands less distinct & not constricted in the middle *maculatus* MG.

4. Costa pale-scaled on anterior edge, at least on basal half scales of mesonotum unicolorous; abdominal scales mainly or all yellow 5.
- Costa at most with scattered pale scales; scales of mesonotum not unicolorous; abdomen largely dark 6.
5. Very yellow species; proboscis yellow with a black tip
lutescens 7.
- Darker species, especially on proboscis and wings
[*freyi* EDW. MS.]
6. Abdomen dark, tergites with well defined basal white bands narrowed in the middle..... *semicantans* MARTINI.
- Abdomen paler, with ill-defined yellowish bands and scattered yellowish scales 7.
7. Mesonotum with a distinct broad median band of dark brown scales; sides yellowish *annulipes* MG.
- Mesonotum without distinct median dark band
excruciens WLK.
8. Scales of mesonotum fawn-coloured, with two narrow white longitudinal stripes, wing scales evenly mixed, dark and light..... [*caspius* PALL.]
- Scales of mesonotum darker brown in the middle and at the edges in front, with two broad creamy stripes; costa and veins R_1 and R_4+5 with the scales mainly black, rest of wing paler *dorsalis* MG.
9. Abdomen and legs mainly bluish-black; the abdomen without complete white bands dorsally; outer side of hind femora blue-black on the apical third; knees conspicuously silvery-white *geniculatus* OL.
- Abdomen and legs dull black or lighter; the abdomen with complete white bands dorsally, except sometimes in *O. diantaeus* and *O. sticticus*; outer side of hind femora pale nearly to the tip 10.
10. Abdomen of female with a median longitudinal line of yellow scales, at least on the terminal segments; in the male this line is indicated on the second segment only
[*rusticus* ROSSI].
- Abdomen without median yellow line 11.
11. Front and middle femora conspicuously mottled in front with dark and light scales..... 12.

11. Front and middle femora with only a few light scales in front 14.
12. Head and thorax with very dense bristles; integument deep black *alpinus* L.
- Head and thorax not usually bristly; integument of legs paler 13.
13. The dark parts of the abdominal tergites with scattered pale scales; male palpi all black [*detritus* HAL.]
- Abdomen with sharply marked black and white bands, no pale scales scattered over the dark areas; male palpi with a whitish ring or numerous whitish scales on the long basal joint *cataphylla* DYAR
[*salinellus* nom. n. (*terriei* MARTINI nec THEO.).]
14. Hind femora pale, with a sharply defined black-scaled area at the tip [*diantaeus* H. D. & K.]
- Dark area at tip of hind femora much less sharply defined 15.
15. Hind tibia on the outer side with a distinct whitish stripe running nearly the whole length (at least in the female); mesonotum with white scales at the side, black in the middle [*sticticus* MG.]
- Hind tibia without whitish stripe on outer side 16.
16. Scales of head and mesonotum ochreous brown, the mesonotum usually with one broad dark median stripe, more rarely with two ill-defined stripes or more
[*palmeni* EDW. MS.] *punctor* KIRBY.
- Scales of head and mesonotum darker brown, often mixed with white at the sides, the mesonotum usually without distinct stripes *communis* DY.
[*parvulus* EDW. MS.; *pullatus* COQ.; *impiger* WALK.]