

A checklist of Latvian mosquitoes (Diptera, Culicidae)

Voldemars Spungis

Department of Zoology and Genetics, Faculty of Biology, University of Latvia, 4 Kronvalda Blvd., Riga, LV-1842,
Latvia. e-mail: adalia@lanet.lv

Abstract

The checklist presented here is the first ever made of the mosquitoes of Latvia. A total of 25 species have been identified as occurring in the country but further investigations are necessary, especially as very few distributional data are, as yet, available.

Introduction

Latvia is rich in wetlands, and mosquitoes of many species are abundant. Mosquitoes were involved in malaria transmission until the 1950s and are still a major nuisance in some places.

The first information about Latvian mosquitoes dates from the first half of the 19th century, when Gimmerthal (1832, 1842, 1845) published lists of species collected in the surroundings of Riga. However, he gave little additional information about them. A total of 23 specimens collected by him, are housed in the Museum of Systematic Zoology at the University of Latvia (MSZ), and are in good condition. However, his collections are in need of revision and only those species recorded in his 1842 and 1845 papers which are mentioned in other, later, publications are included in this checklist.

The data of Sintenis (1899) are not included in this article because he worked in Tartu (Dorpat) in Estonia and attributed his study to "Ostseeprovinzen" generally, which until recently included the joint territory of the Baltic States and the sources of his collections are not precisely stated. Eight specimens collected by him, all in poor condition, are lodged in the MSZ.

Extensive studies of mosquitoes in the surroundings of Riga and Sigulda (about 50 km distant) were carried out in the 1960s and 1970s (Spuris, 1965; 1977) and an identification key was also prepared (Spuris, 1955). This included several species not recorded from Latvia at that time. Of these, *Anopheles algeriensis*, *An. plumbeus*, *Aedes geniculatus*, *Ae. nigritus*, *Ae. pullatus*, *Culiseta fumipennis*, *Cs. morsitans* and *Cs. ochroptera* occur in neighbouring countries but not in Latvia. He also listed *Ae. detritus*; the eastern Baltic may be just outside its normal distribution, although this species occurs in southern Norway and southern Sweden. Also listed was *Culiseta glaphyoptera*, which is a central European highland mosquito not found in the Baltic area, and records from some eastern Baltic areas really refer to *Cs. bergrothi*.

Later, Danilov (1979) identified 384 larval specimens collected by M.F. Shlenova in 1956 from Riga and Sigulda and, at the same time, re-examined species previously described by Peus (1934) and Spuris (1965, 1977). This collection is lodged in the Institute of Medical Parasitology and Tropical Medicine in Moscow (IMPTM).

Malaria vector mosquitoes were studied from the 1930s to the 1960s. No further investigations were made apart from those of Redliha (1968) who studied the distribution of four species of *Anopheles* in some 70 localities in Latvia.

Anopheles phenology was monitored by the then Latvian Sanitary Epidemiological Station (now the National Public Health Centre) between the end of 1940s and the end of 1960s, when monitoring ceased. The accumulated data, mostly collected from fixed observation sites, were sent to Institute of Medical Parasitology and Tropical Medicine in Moscow, and were published piecemeal in various journals and conference theses. No record of this work is available in Latvia.

Fragmentary data related to mosquitoes are scattered in many publications on hydrobiology and other fields, but do not add anything to the species list. References to mosquitoes in articles in the popular press have been ignored.

Countries bordering Latvia harbour around 40 or more mosquito species (Dahl, 1997). The limited nature of the old studies, which covered parts of Latvia only, and lack of recent studies, preclude compilation of a comprehensive list of Latvian Culicidae. It is considered that about 15 additional mosquito species await discovery in Latvia.

The checklist

A number of taxa recorded by Gimmerthal have been excluded from the list. These include *Culex ornatus* Hffgg. = *equinus*, not listed in Knight & Stone, (1977). However both *Cx. ornatus* Meigen, 1818 and *Cx. equinus* Meigen, 1804 are synonyms of *Aedes geniculatus*, which has not been found in Latvia (*Cx. equinus* Linnaeus, 1792 was removed to the Family Simuliidae). The presence of *Ae. flavescens*, recorded under the name of its synonym, *Culex lutescens* Fabricius, has not been confirmed.

Subfamily Anophelinae

Genus *Anopheles*

Subgenus *Anopheles*

- atroparvus* van Thiel, 1927. Recorded by Polikarpova, 1953 (as *An. labranchiae atroparvus* Thiel); Judelovich & Polikarpova, 1957; Redliha, 1968 (as *An. maculipennis atroparvus* Thiel).
- claviger* (Meigen, 1804). Recorded by Gimmerthal, 1832; Spuris, 1955; 1974; Judelovich & Polikarpova, 1957; Redliha, 1968; Bušs & Grinbergs, 1970: (in early records as *An. bifurcatus* Linnaeus or, erroneously, Meigen).
- maculipennis* Meigen, 1818. Recorded by Gimmerthal, 1842; 1845; Spuris, 1955; 1974; Redliha, 1968; Polikarpova, 1953; Judelovich & Polikarpova, 1957; Bušs & Grinbergs, 1970 (all as *An. maculipennis maculipennis* Mg. or *An. maculipennis* Mg. s. str.).
- messeae* Falleroni, 1926. Recorded by Polikarpova, 1953; Judelovich & Polikarpova, 1957; Redliha, 1968 (as *An. maculipennis messeae* Fall.).

Subfamily Culicinae

Genus *Aedes*

Subgenus *Aedes*

- cinereus* Meigen, 1818. Recorded by Gimmerthal, 1842 (as *Culex rufus* De Geer = *Cx. rufus* Hoffmannsegg); 1845 (as *Aedes rufus* Gimmerthal); Spuris, 1955; 1965; 1977; Bušs & Grinbergs, 1970; Danilov, 1979.

Subgenus *Aedimorphus*

- vexans* (Meigen, 1830). Recorded by Spuris, 1955; Bušs & Grinbergs, 1970; Danilov, 1979.

Subgenus *Ochlerotatus*

- annulipes* (Meigen, 1830). Recorded by Gimmerthal, 1845; Spuris 1955, 1965; Danilov, 1979.
- cantans* (Meigen, 1818). Recorded by Gimmerthal, 1842 (as *Culex cantans* Hgg.); Spuris, 1955; 1965; 1977; Bušs & Grinbergs, 1970.
- caspius* (Pallas, 1771). Recorded by Bušs & Grinbergs, 1970.
- cataphylla* Dyar, 1916. Recorded by Peus, 1934 (as *Ae. rostochiensis* Mart.); Spuris, 1955; 1965; 1977; Bušs & Grinbergs, 1970; Danilov, 1979.

communis (De Geer, 1776) Recorded by Gimmerthal, 1942 (as *Culex nemorosus* and *Cx. nemorosus* var. *sylvaticus*); 1845 (as *Cx. nemorosus* = *reptans* and *Cx. nemorosus* var. *sylvaticus* = *fasciatus*); Spuris 1955; 1965; 1977; Bušs & Grinbergs 1970; Danilov 1979.

cyprius Ludlow, 1919. Recorded by Gimmerthal, 1842 (as *Culex punctatus*); Spuris, 1955; *diantaeus* Howard, Dyar & Knab, 1912. Recorded by Spuris, 1955; 1965; 1977; Bušs & Grinbergs, 1970 (as *Ae. diantaeus*); Danilov, 1979.

dorsalis (Meigen, 1830). Recorded by Spuris, 1955 (as *Ae. caspius* Mg.); Danilov, 1979.

euedes Howard, Dyar & Knab, 1912. Recorded by Danilov, 1979.

excrucians (Walker, 1856). Recorded by Spuris, 1955; 1965; 1977; Bušs & Grinbergs, 1970; Danilov, 1979.

flavescens (Müller, 1764). Recorded by Spuris, 1955; 1965; Bušs & Grinbergs, 1970; Danilov, 1979.

intrudens Dyar, 1919. Recorded by Spuris, 1955; 1965; 1977; Bušs & Grinbergs, 1970; Danilov, 1979.

leucomelas (Meigen, 1804) Recorded by Spuris, 1955; 1965; Bušs & Grinbergs, 1970; Danilov, 1979.

punctor (Kirby, 1837). Recorded by Spuris, 1955; 1965; 1977; Bušs, Grinbergs, 1970; Danilov 1979.

riparius Dyar & Knab, 1907. Recorded by Peus, 1934 (as *Ae. semicantans* Mart.); Spuris, 1955, 1965; Bušs & Grinbergs, 1970; Danilov, 1979.

Subgenus *Rusticoidus*

rusticus (Rossi, 1790). Recorded by Gimmerthal, 1845 (as *Ae. maculatus*); Danilov, 1979 (as *Ae. (Och.) maculatus*).

Genus *Coquillettidia*

Subgenus *Coquillettidia*

richiardii (Ficalbi, 1889). Recorded by Spuris, 1955; Bušs & Grinbergs, 1970 (as *Mansonia richiardii*).

Genus *Culex*

Subgenus *Culex*

pipiens Linneus, 1758. Recorded by Gimmerthal, 1842 (as *Culex domesticus*; *Culex bicolor* Mgn; and *Culex pallipes* Mgn.); Spuris, 1955; Bušs & Grinbergs, 1970 (as *Cx. pipiens* and *Cx. pipiens molestus* Forskål).

Genus *Culiseta*

Subgenus *Culiseta*

alaskaensis (Ludlow, 1906). Recorded by Bušs & Grinbergs, 1970.

annulata (Schränk, 1776). Recorded by Gimmerthal, 1942; (as *Cx. annulatus* Fabr.); Bušs & Grinbergs, 1970.

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Ekoloji Anabilim Dalı
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Türkiye (Turkey)

Fax: +90 (312) 229 20 28
Tel: +90 (312) 297 80 62
email: soveMASTER@hacettepe.edu.tr
website: <http://www.sove.hacettepe.edu.tr>