

*Culex erikae* sp. n. (Diptera, Culicidae) from the Baltic amber

*Culex erikae* sp. n. (Diptera, Culicidae) z bursztynu bałtyckiego

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ABSTRACT. Female of *Culex* (s. str.) *erikae* sp. n. from the Upper Eocene Baltic amber is described and figured. The species is very close to recent *Culex pipiens*. This is the first named mosquito species known from the Baltic amber.

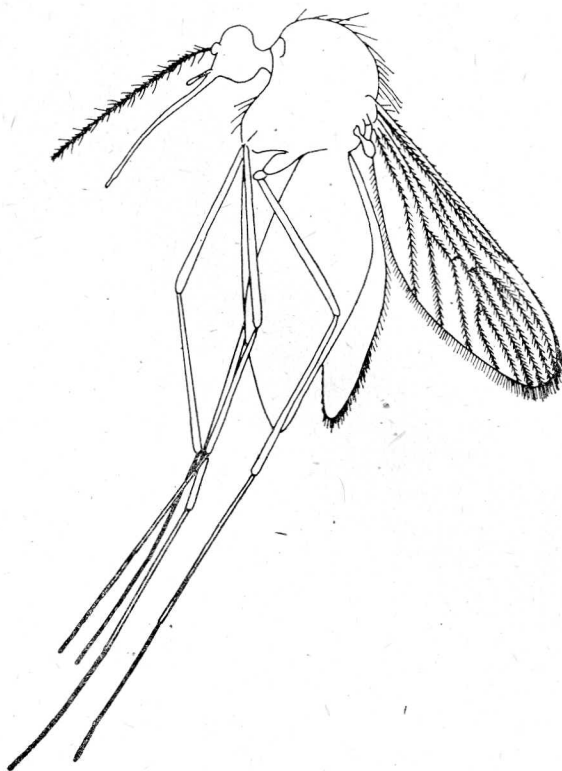
The superfamily *Culicoidea* including *Dixidae*, *Chaoboridae* and *Culicidae* probably originated in Triassic (KALUGINA, 1977). Archaic ancestor of *Dixidae* has been described from Jurassic by RODENDORF (1964). The origin and phylogenetic history of the *Culicidae* must go back to the Mesozoic Era but the oldest findings of the mosquitoes are Tertiary. Fourteen fossil mosquito species belonging to the recent genera have been described till now (KNIGHT and STONE, 1977). In Europe the oldest undescribed *Culicidae* are known from the Lower Eocene Mo-clay of Denmark (LARSSON, 1975), and *Anopheles* sp. was mentioned by KRUMBIEGIEL (1959) from the Middle Eocene brown coal of Geiseltal in East Germany.

The existence of mosquitoes in the Baltic amber (Upper Eocene, ca. 40 million years ago) has been mentioned by SCHLOTHEIM — 1820, MOTCHULSKY — 1845, HELM — 1896, MEUNIER — 1902 (after EDWARDS, 1923). LOEW (1850) mentioned a species belonging to the genus *Culex* L. from the Baltic amber which was hard to distinguish from *Culex pipiens* L. and its recent relatives. HELM'S statement that he possessed both sexes of *Culex pipiens* from this

fossil resin was the reason why KEILBACH (1982) placed this recent species on a list of species recorded from the Baltic amber. These old records, usually called in question by modern authors were not confirmed till now.

The senior author during his visit to Berlin has found a well preserved female of mosquito in the collection of Baltic amber inclusions of the Museum für Naturkunde der Humboldt-Universität. This female is in Kühl collection which was deposited in the Museum at 1888 (personal information of Dr. E. Pietrzeniuk). Unfortunately, second extremely badly preserved female mosquito which was found in Berendt collection was destroyed by mounting it in a synthetic resin.

Morphological nomenclature of thorax follows CLARK-GIL and DARSIE (1983).



1. *Culex erikae* sp. s., female — general view

*Culex (s. str.) erikae* sp. n.

## DIAGNOSIS

Female of the new species is very close to *Culex pipiens*, but the proportion of the combined length of third and fourth flagellomeres to the proboscis length is 0.20. This index for *C. pipiens* is 0.14–0.17.

## DESCRIPTION

♀. The female is embedded in a rectangular piece of rather dark amber. Left side of thorax and abdomen is covered with milky fog. One middle, one hind leg, and three last tarsomeres of other hind leg are absent. Body uniformly dark, wing scales pale, hairs of scutum brownish. General view of the type specimen as on fig. 1.

Head typical of *Culex* (fig. 2). Eyes narrowly separated, frons equal in diameter to a facet or slightly smaller. Occiput with long erect scales with emarginated tips (fig. 5). Flagellum 2.24 mm long, lengths of 13 flagellomeres as follows (in  $\mu\text{m}$ ): 186–156–186–186–178–171–163–171–163–171–163–156–193. First flagellomere with long setae on distal half, flagellomeres II–XIII with long basal setae (fig. 3). Flagellum 1.21 times longer than proboscis. Palpus with three distinct segments (fig. 4); total length ca. 346  $\mu\text{m}$ , last segment 186  $\mu\text{m}$  long. Proboscis (fig. 2) about 1.85 mm long. Relationship of the length of the palp to the length of the proboscis Pa/Pr — 0.19. Proportion of the length of the last palpal segment to the combined length of third and fourth flagellomeres Pa/A — 0.50. Proportion of the combined length of third and fourth flagellomeres to the length of proboscis A/Pr — 0.20:

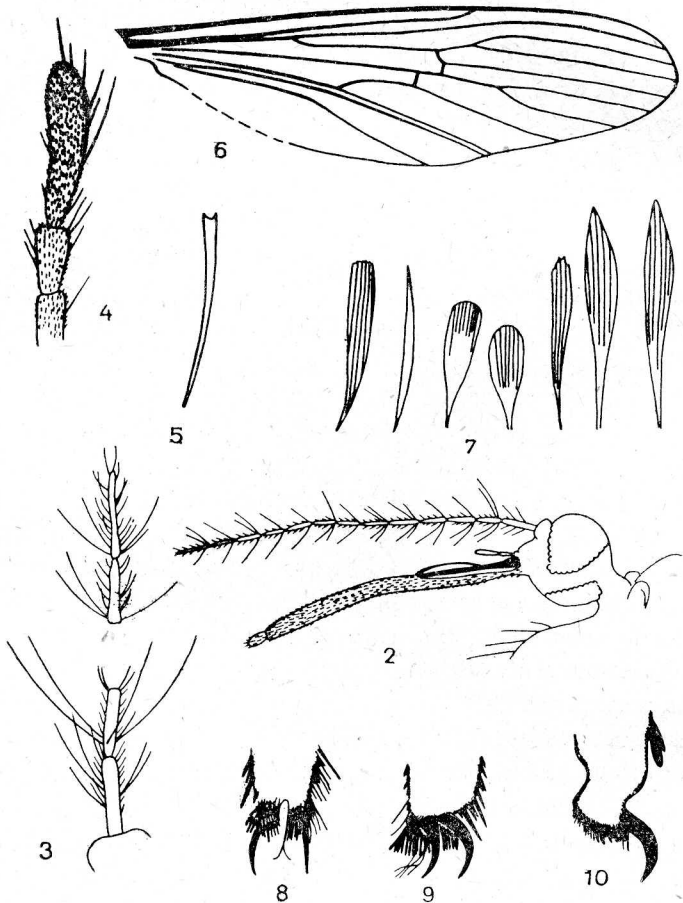
Anteprenotal lobes distinct but not reaching middorsal line. Scutum covered with narrow scales, long prescutellar setae present, acrostichals well developed. Scutellum trilobed. Postnotum presumably bare. Prespiracular and postspiracular setae absent; postspiracular without scales. At least 3 upper mesanepimeral small setae and 1 lower mesanepimeral long seta present. Mesokatepisternum with distinct scales; lower and upper mesokatepisternal long setae present.

Wing length measured from humeral crossvein 3.3 mm. Alula with narrow, long, erect fringe scales. Membrane with distinct microtrichia. Protruding scales on outer half of wing field narrow with convex tips (fig. 7), emarginated scales absent. Base of subcosta without row of setae on ventral side. Anal vein reaching wing margin beyond base of transverse vein m-cu (fig. 6). Cell  $R_2$  5.3 times longer than vein  $R_{2+3}$ .

Base of hind coxa rather ventral to mesomeron. Claws of all legs inconspicuous and simple, pulvilli well developed (figs. 8–10). First tarsomere longer

than tarsomeres 2-5 together. Hind basitarsus 1.1 times longer than hind tibia. Lengths of legs as follows (in  $\mu\text{m}$ ):

	fore leg	middle leg	hind leg
femur	1579	—	1656
tibia	1887	—	1964
ta <sub>1</sub>	1425	1810	2156
ta <sub>2</sub>	539	732	1078
ta <sub>3</sub>	308	424	—
ta <sub>4</sub>	154	} 385	—
ta <sub>5</sub>	193		—



2-10. *Culex erikae* sp. n., female; 2 - lateral view of head, 3 - two first and two last flagellomeres, 4 - palpus, 5 - head scale, 6 - wing venation, 7 - wing scales, 8, 9 - claws and pulvilli of fore legs, 10 - distal tip of fifth tarsomere of middle leg

Abdomen with scales. Cerci wide and short. Total length of abdomen and thorax 4.3 mm.

Male unknown.

#### MATERIAL EXAMINED

Holotype — ♀, MBI No. 130, Slg. Kühl, Museum für Naturkunde, Paläontologisches Museum, Berlin, GDR.

#### ETYMOLOGY

The species is named for Dr. Erika Pietrzeniuk, a curator of amber inclusions of Museum für Naturkunde der Humboldt-Universität in Berlin.

#### DISCUSSION

Characters of the new species visible in the amber allow to include it to the subgenus *Culex s. str.*, the largest subgenus including more than 200 extant species i.e. 1/3 of all the genus. Despite the fact that the colouration characters of *Culex erikae* sp. n. are destroyed in the resin, a comparison with the recent species is possible using quantitative indices of the female head (GUČEVIČ, 1973). We can conclude that this fossil species is not a cosmopolitan recent *C. pipiens*. It has lower Pa/A and higher A/Pr index. Indices of the head of compared species are as follows (abbreviations are explained at description):

	<i>C. erikae</i> sp. n.	<i>C. pipiens</i>	
		GUČEVIČ (1973)	Own data
		<i>n</i> = 14	<i>n</i> = 8
Pa/Pr	0.19	0.16–0.20	0.15–0.19
Pa/A	0.50	0.5–0.75	0.59–0.65
A/Pr	0.20	0.14–0.17	0.15–0.17

Six fossil species of the genus *Culex* have been described. These are: *C. ceyx* HEYDEN, 1870 — Upper Oligocene, West Germany; *C. damnatorum* SCUDDER, 1890 — Eocene, USA; *C. flavus* GISTEL, 1931 — Quaternary copal, Brazil; *C. protorhinus* COCKERELL, 1916 — Middle Oligocene, England; *C. vectensis* EDWARDS, 1923 — Middle Oligocene, England; *C. winchesteri* COCKERELL, 1919 — Eocene, USA (EDWARDS, 1923; KNIGHT and STONE, 1977). Unfortunately comparison of the new species with the other fossils is not possible, since preservations are different.

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