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Aedes geminus Peus, 1970, a new member of the Hungarian fauna (Diptera: Culicidae)

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Abstract – Larvae and adults of *Aedes geminus* PEUS, 1970 were collected on 22 April 2011 and 26 April 2012 at four sites of the Pilis Mts, Hungary. Larvae were bred, and altogether 14 adults were identified by male genitalia. This is the first record of this species in Hungary. With 2 figures.

Key words – *Aedes geminus*, first record, Pilis Mts, Hungary.

INTRODUCTION

The culicid fauna of Hungary has, according to TÓTH & KENYERES (2011), 49 species and one subspecies (*Culex pipiens molestus* FORSKÅL, 1775). The genus *Aedes* was represented by three previously recorded species, *Aedes* (*Aedes*) *cinereus* MEIGEN, 1818, *Aedes* (*Aedes*) *rossicus* DOLBESHKIN, GORITZKAJA et MITROFANOVA, 1930, and *Aedes* (*Aedimorphus*) *vexans* (MEIGEN, 1830). The present paper provides the record of *Aedes geminus* PEUS, 1970, the fourth species of the genus occurring in Hungary.

MATERIALS AND METHODS

The specimens of *Ae. geminus* were found by the author at four sites: (1) 22nd April 2011, Pilisszentlászló, Hegy-tető, in a pond with a surface of approx. 100 m^2 and depth of 10–20 cm, 47.71772° N, 19.00207° E, 453 m; (2) 22nd April 2011, Pilisszentlászló, Szarvas-szérű, in a pond with a surface of approx. 20 m^2 and depth of 10–20 cm, 47.72671° N,

19.01581° E, 532 m; (3) 26th April 2012, Pilisszentlélek, Schuller-hegy, in a pond with surface approx. 10 m^2 and depth 10–20 cm, 47.73655° N, 18.85658° E, 345 m; (4) 26th April 2012, Pilisszentkereszt, Hármas-forrás-völgy, in a pond with a surface of approx. 10 m^2 and depth of 10–20 cm, 47.70025° N, 18.88627° E, 398 m. Adults and larvae have been collected at the same time; the larvae were bred according to the protocol of MIHÁLYI & GULYÁS (1963).

The identity of the species was determined by study of the genitalia of the adults. Fourteen male specimens were dissected following basically the protocol of PAPP (2008). The dissected part of the abdomen was immersed in hot sodium-hydroxide (ca. 10% dilution) for five minutes, then incubated in concentrated lactic acid for five minutes, thereafter the genitalia were dehydrated in ethanol series, and preserved in Euparal on a microscope slide.

The genital apparatus was photographed with a Nikon D200 camera with Olympus 10× Plan objective. The genitalia structures were captured on a large series of pictures (appr. 120 consecutive images with different focal depths), then the series of photos were combined with Zerene Stacker software.

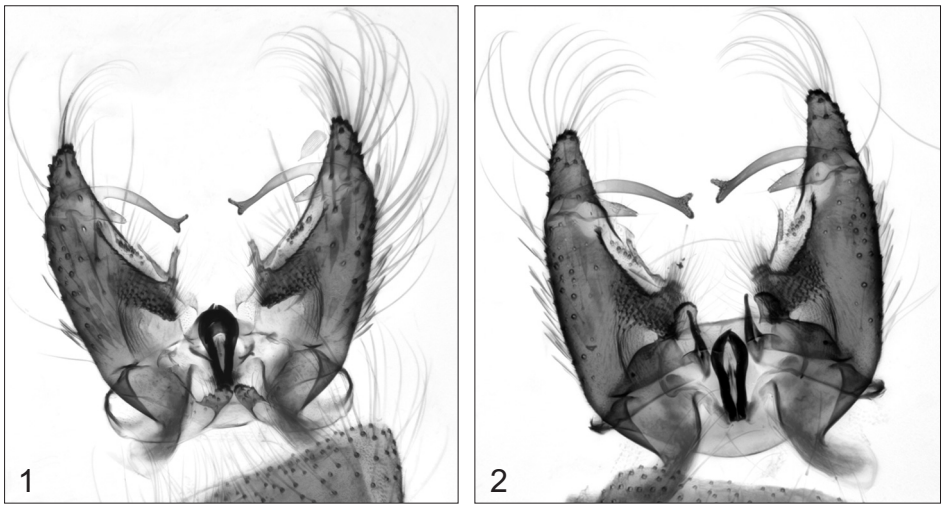
Six specimens and their genitalia slides are deposited in the Diptera collection of the Hungarian Natural History Museum, Budapest, the other eight specimens are preserved in author's collection.

RESULTS

Altogether fourteen male specimens of *Aedes geminus* were collected. Eleven male imagoes were bred from larvae (three males from site 1; one male from site 2; four males from site 3; three males from site 4), and further three male adults were collected at site 2. The larvae of *Ae. geminus* were found together with the larvae of *Ochlerotatus annulipes* (MEIGEN, 1830), *O. communis* (DE GEER, 1776), and *O. nigrinus* (ECKSTEIN, 1918).

DISCUSSION

Aedes geminus is likely widespread in Europe (SNOW & RAMSDALE 1999) but it is difficult to assess its proper range of distribution due to its high similarity to *Ae. cinereus*. Records of *Ae. cinereus* published before 1970 or based only on females and/or larvae are not reliable because the specific difference between the two taxa can be found only in the male genitalia. The most conspicuous difference between *Ae. geminus* and *Ae. cinereus* is the shape of apical fork of the gonostylus. It is bifurcated in both species, but in *Ae. geminus* the outer branch is longer than the inner one (Fig. 1) while in *Ae. cinereus* the outer branch never exceeds the length of the inner branch (Fig. 2).



Figs 1–2. Hypopygium, 1 = *Aedes geminus* PEUS, 1970, 2 = *Aedes cinereus* MEIGEN, 1818

The gonostyli are regularly thinner and much more slender in *Ae. geminus* and are more or less cylindrical, whereas in *Ae. cinereus* the terminal section is often flattened. In *Ae. geminus* the basal lobe is less developed than in *Ae. cinereus* and the covering of long setae is less dense than in the other species.

The two species, *Ae. geminus* and *Ae. cinereus*, are very often found together in the same water bodies. PEUS (1972) reported that *Ae. geminus* displayed a lower tolerance against acidic habitats as he had not found the species in mesotropic and higher acido-oligotropic swamps, where *Ae. cinereus* was abundant. Both species have at least two generations per year and the females are anthropophilic and can cause great annoyance, when present in large numbers (BECKER *et al.* 2010).

TÓTH (2007) published *Ae. geminus* as an expected species for the Hungarian fauna. Confirmed records of *Ae. geminus* are available from England, northwestern France, Germany, Italy, Lithuania, Poland, Romania, Slovakia and southern Sweden (BERNOTIENĖ & LUČIŪNAITĖ 2011, NICOLESCU *et al.* 2003, ORSZÁGH *et al.* 2009, SNOW & RAMSDALE 1999, ZAMBURLINI & CARGNUS 1998).

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