

## **Eurylophella karelica** Tiensuu, 1935 in the Carpathian Basin (Ephemeroptera: Ephemerellidae)

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ABSTRACT: *Eurylophella karelica* Tiensuu, 1935 is recorded from Hungary and Slovenia. Information about habitats and biology is given. The old and new localities are depicted on a map.

### **Introduction**

The genus and the species were described by TIENSUU (1935) on the basis of nymphs found in Karelia (Russia). *Eurylophella karelica* is also known to occur in Lithuania (KAZLAUSKAS, 1959) and Poland (KEFFERMÜLLER, 1960; SOWA, 1961; JAŽDŽEWSKA, 1971, 1995, 1997). No new records are known from the two Karelian (Sortavala: Ristoja, Kurkijoki) and the two Lithuanian (River Ula at village Zervinaj, Sheshuvis brook by road Erzhvilkas-Skaudvile) localities. Of the Polish sites, there are no new data from Lake Góreckie near Poznań mentioned by KEFFERMÜLLER (1960), while its persistence in the River Grabia near Łódź is confirmed by JAŽDŽEWSKA (1971) who reported it from several localities, although she stated in 1997 that specimens “... have not been found recently”. The last capture of *Eurylophella karelica* in the locality mentioned by SOWA (1961) (tributary of the River Bobrza, neighbourhood of Kielc, in the Swietokrzyskie Mountains) dates back to 1978 (JAŽDŽEWSKA, 1995).

The second European member of the genus, *Eurylophella iberica* Keffermüller et Da Terra, 1978, was described from Portugal and is an endemic species of the Iberian Peninsula (STUDEMANN and TOMKA, 1987).

*Eurylophella karelica* was found for the first time in Hungary in 1997. Since that time, it was collected in further localities of the Carpathian Basin, including Slovenia.

The specimens on which the present paper is based are preserved in 70% ethanol and deposited in the Mátra Museum (Gyöngyös, Hungary).

### **Study area**

The localities fall into the area called “Kerka-vidék” or “Hetés” in Western Hungary and the adjoining Goricko in Slovenia. The Hungarian part of the area is one of the coolest and wettest parts of the country with an annual mean temperature of 9.0 °C and annual precipitation 800 mm. This is a hilly region with the sample sites between 160 and 220 m a. s. l. The main plant associations include acidophilous pine forests, mixed oak forests with pine, Illyrian hornbeam-oak forests, alder groves and peatbogs. Acidophilous pine forests are regarded as relics of preboreal phase of the postglacial (taiga forests) (PÓCS *et al.*, 1958).

## Results

*Faunistical data* – Hungary: Bajánsenye: road to Kercaszomor, Kerka, XM08, 210 m, 09. 10. 1997, 2 nymphs, A. Ambrus; Csöde: Zala, XM18, 190 m, 09. 10. 1997, 1 nymph, A. Ambrus; Kercaszomor: Kerca, XM08, 220 m, 09. 10. 1997, 2 nymphs, A. Ambrus; same locality, 08. 04. 1998, 5 nymphs (4 mature), A. Ambrus, P. Juhász, T. Kovács, P. Sevola, I. Turcsányi; same locality, 10. 03. 1999, 2 nymphs, A. Ambrus, P. Juhász, T. Kovács; same locality, 06. 05. 1999, 1 nymph (mature), 1 exuvium, 11 subimagos (one subimago was deposited as voucher specimens, the rest were released on the spot), A. Ambrus, T. Kovács; same locality, 15. 07. 1999, 2 nymphs, A. Ambrus, T. Kovács; Kerkakutas: road to Alsószenterzsébet, Kerka, XM17, 190 m, 11. 03. 1999, 3 nymphs, A. Ambrus, P. Juhász, T. Kovács; Lenti: road No. 75, Kerka, XM16, 160 m, 08. 04. 1998, 2 nymphs (2 mature), A. Ambrus, P. Juhász, T. Kovács, P. Sevola, I. Turcsányi; Magyarföld: Kerka, XM08, 200 m, 11. 03. 1999, 5 nymphs, A. Ambrus, P. Juhász, T. Kovács; Nemesnép: road to Csesztreg, Szentgyörgyvölgyi-patak, XM17, 180 m, 11. 03. 1999, 7 nymphs, A. Ambrus, P. Juhász, T. Kovács; same locality, 15. 07. 1999, 1 nymph, A. Ambrus, T. Kovács; Resznek: minor road to Zalaszombatfa, Kebele, XM16, 170 m, 11. 03. 1999, 2 nymphs, A. Ambrus, P. Juhász, T. Kovács; Szentgyörgyvölgy: road to Magyarföld, Szentgyörgyvölgyi-patak, XM07, 190 m, 08. 09. 1997, 3 nymphs, A. Ambrus; same locality, 25. 08. 1999, 16 nymphs, A. Ambrus, P. Juhász, T. Kovács; Velemér: Szentgyörgyvölgyi-patak, XM07, 200 m, 08. 04. 1998, 6 nymphs (3 mature), A. Ambrus, P. Juhász, T. Kovács, P. Sevola, I. Turcsányi; same locality, 11. 03. 1999, 1 nymph, A. Ambrus, P. Juhász, T. Kovács; 15. 07. 1999, 1 larva, A. Ambrus, T. Kovács. – Slovenia: Domanjševci: Mala Krka, (Domonkosfalva: Kerca), WM98, 240 m, 10. 03. 1999, 3 nymphs, A. Ambrus, P. Juhász, T. Kovács.

*Habitat* – The species was encountered in 11 localities of six UTM quadrates: nine in Hetés, one in the upper valley of the Zala River (Hungary) and one in Goricko (Slovenia). Its populations are the strongest in the Szentgyörgyvölgyi-patak (brook) and the Kerca, followed by the Kerka, the Kebele and the Zala. Besides the last one all of them rise in Slovenia.

Nymphs live in steep-sided, widened, slow-running parts and small bays of fast-flowing streams with a gravel bottom. The specimens were found mostly in open stretches of the streams, rarely in places shaded by forest. Most specimens were collected from overhanging and partly submerged blades of Cyperaceae and Gramineae or from submerged roots and branches.

Typical species with which *Eurylophella karelica* shares its habitat include the bivalve *Unio crassus* (Kebele, Kerca, Kerka, Szentgyörgyvölgyi-patak, Zala), the crayfish *Astacus astacus* (Kerca, Kerka, Szentgyörgyvölgyi-patak, Zala) and the fish *Phoxinus phoxinus* (Kerca, Kerka, Zala). Complete species assemblages of Ephemeroptera, Odonata and Plecoptera found in the habitats will be discussed in a separate paper.

*Data on life history* – Of 18 nymphs collected in 3th March 1999, none was mature. Of 13 nymphs collected in 8th April 1998, nine were already mature. In 6th May 1999 we found one mature nymph and 11 subimagos which suggests that adults appear in May. The life cycle lasts for one year.

Three mature nymphs, collected in 8th April 1999, were kept in the laboratory, in conditions similar to nature but in still water. The nymphs stayed on submerged roots, branches and grass blades and were not very active. They fed on decaying vegetable matter as indi-

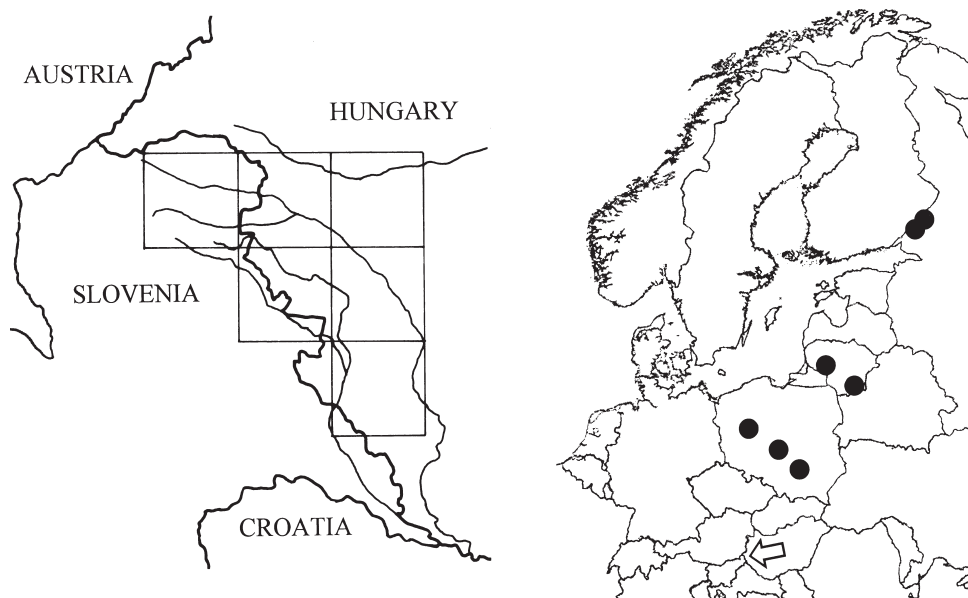


Fig. 1. Distribution of *Eurylophella karelica*

cated by traces of chewing and small grains of faeces accumulated below them. Metamorphosis took place as follows:

One male: 13.45, 17th April: subimago; 24.00, 18th April: adult; 19.00, 23th April: died. Duration of subimaginal life: one day, ten hours and 15 minutes. Duration of adult life: four days, 19 hours.

One female: 13.50, 18th April: submago; 20.00, 19th April: adult; 20.00, 22th April: died. Duration of subimaginal life: one day, six hours, ten minutes. Duration of adult life: three days.

One female: 13.55, 18th April: emergence failed, the specimen died in the larval skin.

Average length of female nymphs 14,83 mm (four specimens, 13,5–15,9 mm); average length of male nymphs 13,15 mm (four specimens, 12,2–13,6 mm). Average length of first nymphs emerged from eggs deposited in May (captured 15th July) 4,45 mm (four specimens, 3,6–5,4 mm).

### Discussion

All the localities where *Eurylophella karelica* was collected are situated in hilly areas or plains. Taking into consideration the range of the species as well as the climate and vegetation history of the area, *Eurylophella karelica* should be regarded as a boreal element. Such elements in the Carpathian Basin are relicts of the last Ice Age and the subsequent cold phases. At present *Eurylophella karelica* shows a remarkably disjunct distribution, being confined to small refugial areas. It has become extinct in several localities and is one of the European mayflies which are most threatened with extinction. Nature conservation measures should be taken immediately in all sites where this species is still found.

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