

First record of *Eurytemora velox* (Lilljeborg, 1853) (Crustacea: Copepoda: Calanoida) in Iceland with morphological notes

Ivan PANDOURSKI, Vesela EVTIMOVA

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Abstract. The calanoid copepod *Eurytemora velox* is reported for the first time in Iceland from the Bessastaðatjörn Lake. This is the dominant crustacean species in the littoral zooplankton. The morphological features in the specimens concerning the shape and ornamentation with spines and fine short setae of leg 5 in females and males vary. Asymmetry in the spine ornamentation on the ultimate segment of leg 5 in two females was observed.

Key words: *Eurytemora velox*, Copepoda, Iceland, Morphology

Introduction

In the summer of 2004 (June – July) we conducted faunistic studies on the zooplankton in shallow coastal water bodies on the Reykjanes Peninsula and the surroundings of the city of Reykjavik. Despite the considerable inflow of fresh water from the numerous streams and rivers, a greater part of these water bodies are brackish and directly influenced by the ocean tides. In one of these lakes, Bessastaðatjörn, we found a dense population of *Eurytemora velox* (Lilljeborg, 1853).

Freshwater and brackish calanoids are still not very well studied in Iceland. Up to date there are records of only four species of the family Diaptomidae (SCHER et al., 2000). Previously the genus *Eurytemora* Giesbrecht, 1881 has been reported from Iceland with only one species, *Eurytemora americana* Williams, 1906, found in typical marine biotopes on the north coast of Iceland (JESPERSEN, 1940).

Eurytemora velox is widely distributed in the brackish waters from the Arctic Ocean and the Baltic Sea shore to South-eastern Europe, the Sea of Azov and the Caspian Sea (VRANOVSKÝ, 1994). In this paper we present data concerning an isolated population of this species, 1400 km away from the Scandinavian Peninsula and about 1100 km away from the British Isles.

Study site

The zooplankton samples were collected from Bessastaðatjörn Lake (64°7'N 22°0'W), situated on the Álftanes Peninsula, 6 km south of Reykjavik, SW Iceland. Bessastaðatjörn Lake is a brackish coastal shallow lake, with coarse volcanic sand bottom and pH of 8.5. The small depth of the lake and the frequent strong winds determine its holomictic character. The ocean coast proximity and the

tide cycles influence the water salinity. Macrovegetations partially occupy the littoral zone of the lake. A probable reason for the higher degree of eutrophication of this shallow lake is the presence of a great number of migrating birds breeding in the region during the summer period.

Material and methods

Three quantitative zooplankton samples have been collected with hand held net of mesh size 0.09 mm. Specimens treated were fixed in 70% ethanol for long-term storage. For taxonomic determination and description the specimens were dissected and mounted in a mixture of ethanol and glycerol.

The coefficient of variance (V) of measured metrical data (body length; length and width of the furcal rami) was calculated using the following formula: $V = y/x_m \cdot 100\%$, y - standard deviation (SD), x_m - mean value of the feature. Pearson Correlation (r) was established using SPSS 10.0 for Windows.

The following results concerning the morphology of *Eurytemora velox* are based on the measurement of 12 male and 12 female specimens.

Results

For Iceland we report the calanoid copepod *Eurytemora velox* for the first time from Bessastaðatjörn Lake. This copepod is the dominant species in the littoral zooplankton. Other established species and groups in the faunistic samples are the predominantly benthic amphipods and harpacticoid copepods, and the only euplankton rotifer *Notholca acuminata extensa* Olafson, 1918.

The range of the body length of the males of *E. velox* is between 1,248 and 1,430 mm, and the furcal rami ratio is from 5.42/1 to 6.60/1. The variability (V) of the measured features is relatively low: $V_{\text{body length}} = 4,38\%$; $V_{\text{furcal length}} = 8,82\%$; $V_{\text{furcal width}} = 7,78\%$.

The body length of the females varies more than that of the males and it is between 1,235 and 1,742 mm ($V_{\text{body length}} = 9,15\%$). The ratio of length and width of the furcal rami is from 4.00 to 5.29. The dimensions of the furcal rami have relatively low variability ($V_{\text{furcal length}} = 5,56\%$; $V_{\text{furcal width}} = 7,50\%$).

The correlation between the body and furcal lengths is considerable for both the males and females. Its value is higher in the females than in males ($r_{\text{females}} = 0,530$; $r_{\text{males}} = 0,503$).

The ornamentation with spines and fine short setae (including their number and insertion) of leg 5 in the females varies. In two specimens we observed asymmetry in the armature with spines on the ultimate segment of leg 5. The large in its basis inner lateral process of the penultimate segment is toothed to a different extent on its outer margin, and can vary from slightly to notably toothed (Figs 1A, B).

Discussion

Eurytemora velox distinctly differs from *E. americana* in the shape and setae and spines ornamentation on leg 5 for both females and males. In the females of *E. americana* the second article of leg 5 is armed with two setae and the distal article bears two relatively long feathery setae (see Fig. 6 in JESPERSEN, 1940). The exopod 1 of leg 5 of the females of *E. velox* is armed with only one spine; the exopod 2 - with a short spine and one seta (Fig. 1a).

The general morphology of the studied specimens does not differ from the diagnosis of EINSLE (1993).

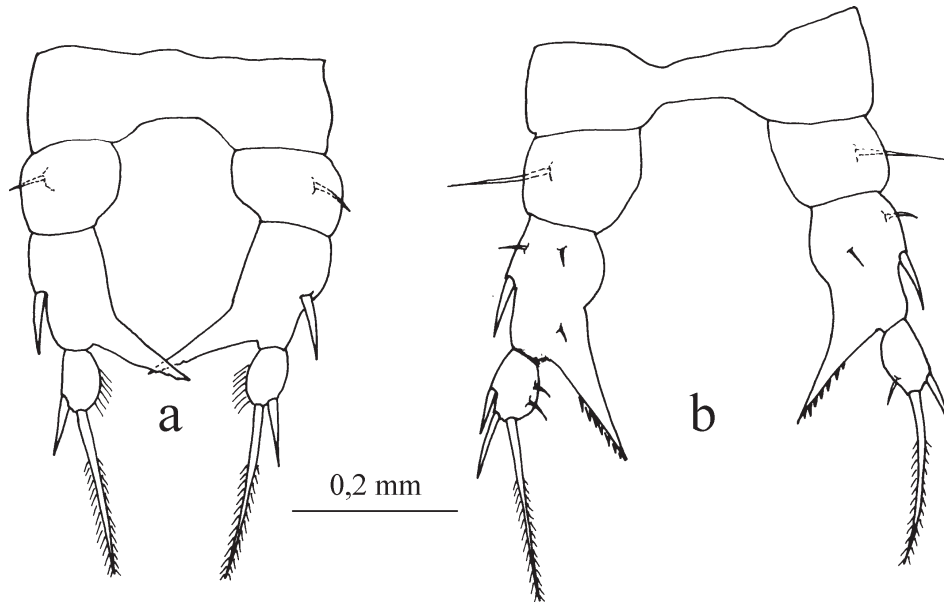


Fig. 1. *Eurytemora velox* (Lilljeborg, 1853) from Bessastaðatjörn Lake: A – female leg 5; B – asymmetric female leg 5. Scale bar: 0.2 mm.

The armature with fine short setae on the articles of leg 5 of the males (Fig. 2) from Bessastaðatjörn Lake is significantly reduced in comparison to the specimens described from Middle Danube (VRANOVSKÝ, 1994). The observed shape and ornamentation of leg 5 bears greater resemblance to the one described by EINSLE (1993).

E. velox is believed to be a generalist species, which constantly broadens its area of distribution and occupies new ecological niches. This species has colonised not only the saline and brackish water bodies, but freshwater habitats away from the marine coasts as well, for instance, in Central and Eastern Europe. Evidence for the eurytopic characteristics of the *E. velox* is its occurrence in the littoral interstitial waters separating the freshwater lake system Shabla-Ezerets from the Black Sea, Bulgaria (PANDOURSKI & STOICHEV, 1999).

We may presume that the occurrence of the species in the coastal shallow lakes of Iceland is due to the passive transport of resting eggs through migrating birds, as Bessastaðatjörn Lake is an important bird area. Other authors have similar suppositions for the passive distribution of *E. velox* (e.g. VRANOVSKÝ, 1994).

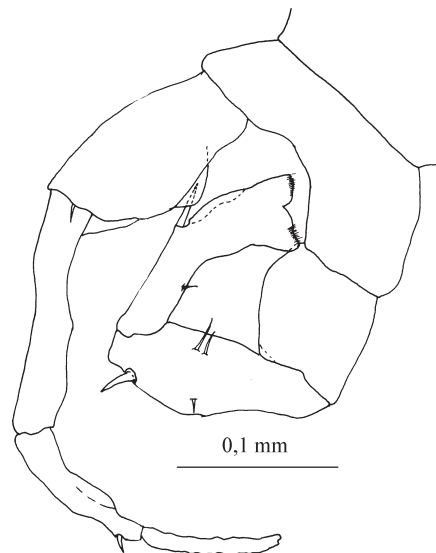


Fig. 2. *Eurytemora velox* (Lilljeborg, 1853) from Bessastaðatjörn Lake: male leg 5. Scale bar: 0.1 mm.

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Authors' addresses:

Dr. Ivan Pandourski, Vesela Evtimova

Institute of Zoology

Tsar Osvoboditel Blvd. 1

1000 Sofia, Bulgaria

E-mails: stygologia@gmail.com, evtimova@zoology.bas.bg

Първо съобщение на *Eurytemora velox* (Lilljeborg, 1853) (Crustacea: Copepoda: Calanoida) от Исландия с бележки върху морфологията на вида

Иван ПАНДУРСКИ, Весела ЕВТИМОВА

(Р е з ю м е)

Каланцидата *Eurytemora velox* се съобщава за първи път от езерото Бесастагатъорн в Исландия. Тя е доминантното ракообразно в литоралния зоопланктон. Морфологичните характеристики на индивидите, отнасящи се до формата и въоръжението с шипчета и фини четинки на петия чифт крачка при женските и мъжките са вариабилни. Наблюдавана е асиметрия на орнаментацията с шипчета върху последния сегмент на петия чифт крачка при женските.