Brief report

*Potamanthus luteus* L. (Ephemeroptera, Ephemeroidea) found for the first time in Finland: notes on the morphology and habitats of the nymphs

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Five nymphs of *Potamanthus luteus* L. were found in kick-net samples collected at two riffle sites of the Kymijoki river, Southern Finland. This is the first record of the species in Finland. The Kymijoki river is currently recovering from gross pollution by industrial and municipal effluents. The sediments of the river at some localities are heavily polluted by dioxins and furans originating from the past manufacture of Ky-5 wood preservative in Kauanisko, located in the upper reach of the river. The nymphs collected from the badly contaminated site had generally darkened gills, possibly indicating impacts of pollution. The habitats were characterized by abundant vegetation, relatively slow current speed and gravel and sand bottoms.

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1. Introduction

The Ephemeropteran fauna of Finland includes 53 species (Saaristo & Savolainen 1980; Savolainen 1984; Savolainen & Puikinnen 1987, Saaristo et al. 1994; Savolainen & Saara 1996, Nummi & Savolainen 1997). One of the most recent records is *Ephemera inornata* collected from the Kyömmijoki river, Southern Finland (Nummi & Savolainen 1997). This species was earlier known to occur in Russian Karelia (Teresova 1979; Saaristo 1980). Another ephemerid species occurring in western Russia, but not recorded earlier in Finland, is *Potamanthus horai* (Hilses 1978, Klijnse 1997). The wide distribution of this species covers 21 of the 27 European palaearchic regions listed by Hilses (1978) and it lives in large as well as small streams (Schornikow 1959, Hilses 1978). The species was recently discovered in the Kymijoki river. This paper reports the finding locations and gives notes on the morphology and habitat characteristics of the nymphs.

2. Study area and finding locations

The study was conducted in the Kymijoki river, Southern Finland (province of Karelia auroralis). With a length of 204 km, an average discharge of 307 m² s⁻¹ (MÖ) and a drainage basin of 0.5 (10) km², the Kymijoki river is the fourth largest river basin in Finland. The river is currently recovering from gross pollution by industrial and municipal effluents. Industrialization began in the downstream reaches of the Kymijoki river in the 18th century. By the beginning of the 18th century industrial and municipal effluents and the note-
3. Notes on the morphology and habitats of the nymphs

The nymphs collected from the Kelli riffle had darkened gilt when compared to the normal, transparent gill of the nymph from the Alvokönoki reef (Fig. 2). Similar kinds of darkened and even melanized gills have been reported earlier in the hydrophyt食 cellulofloric larvae collected from the Kymi- joki river by Vapna & Pappo (1996). These gill abnormali- ties have been suggested to imply that despite the improved water quality of the Kymi-joki river, the pollution, most likely from cellulofloric compounds, still adversely affects the wellbeing of the invertebrate species.

In the Kymi-joki river, toxic loads of absorbable p-dioxins (PCDDs) and other p-dioxin-like compounds (PCDFs) (TCDD-equivalents) are so high in some sediments that they should be treated as hazardous waste (Kristinsson et al. 1995). The highest measured dioxin and furan concentrations in- clude results from sediments collected from the reported vicinities of the Kelli-riide (Kristinsson et al. 1995, V thel et al. 1997).

The habitat characteristics of the two sites were some- what different. In the Kelli riffle the current speed was approxi- mately 20 cm/s and the bottom mostly predominantly gravel, sand and pebbles covered by plant material consisting mainly of Myriophylle spp., although large stones with dense mats of Polonatis aoriana were also com- mon. Serving occurred mainly at the Myriophylle cover- ed gravel beds. In the Alvokönoki riffle the habitat stru- cture is more diverse and the serving occurred both on sand and gravel beds covered with Myriophylle and at more rap- idly flowing current speed ranged approximately from 30 to 150 cm/s at one location with dense Polonatis Aorana vegetation. Since recent Potamais nymphs were found from the Kelli riffle, it is probable that the species prefers rela- tively slowcurrent speed and fine bottom materials. This is in agreement with Hietam (1994), who found the species from a side- pool flooded with silt and sand in the River Ukk. According to Schooneman et al. (1930) the nymphs dwell underneath the snags and live on organic material. Overall, the anteciology of Potamais nymphs is not well known. The occurrence of species at a site heavily polluted by organic substances indicates that it is not particularly sensi- tive to pollution. This is also shown by the findings made in other moderately or heavily polluted rivers in Europe. In Great Britain, old observations were made in large polluted rivers, e.g. the River Thames, the River Wye and the River Wye in the River Usk (MacLennan 1977). In France several observations have been made in the upper Rhine impinged by sewage effluents and pollutants (Flanet & Corbill 1943, Delecroix et al. 1996). However, the German sewage system characterising the degree of pollution by biodegradable organic matter classi- fies Potamais nymphs as an indicator of only mild, b-ae-

References


Kristinsson, J., Kristinsson, D., Joensen, R., & Huydamin 1995: Contamination of pigs and sediment from the Kymi- river by PCBs, PCDFs and PCDDs — Contamination and pa- tients compared in pigs and sediment from the Botnian Bay and sediments from Lake Saimaa. — Environ. Sci. Tech- nol. 29: 2541-2547.

Fig. 1. The habitus (a) and close up of the gills (b) of Potamanthus fulvus L., nymphs collected from the Krinczki river. The specimen collected from the Końki River has deformed gills (the lower one in the photograph) when compared to the normal, transparent gills of the specimen collected from the Afionaske River (upper in the photograph).
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