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Short communication

Orchestia cavimana Heller, 1865 (Amphipoda: Talitridae) enters freshwater inland habitats in the Vistula River, Poland

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Abstract

Orchestia cavimana, a semiterrestrial amphipod of presumably Mediterranean origin was found for the first time in a freshwater habitat in Poland in October 2009, in the main Vistula channel at Świbno. Most probably the species reached this locality from the nearby Baltic coast by natural spread up the river. Taking into account its high abundance at the site and presence of immature individuals, the species has probably established a permanent population in this new habitat in Poland.

Key words: invasive species, range extension, Vistula River, Europe, freshwaters

Talitrid amphipods are known as very common, semiterrestrial inhabitants of beaches, mostly along the seas and brackishwater lagoons. In Europe around a dozen native species have been recorded (Lincoln 1979; Tafani et al. 2004; SMEBD 2009). Another few exotic species, eg. *Brevitalitrus hortulanus* (Calman, 1912), *B. topitotum* (Burt, 1934), *Talitroides aluaudi* (Chevreux, 1898), have been recorded sporadically from European greenhouses (Lincoln 1979; Jażdżewski and Konopacka 1995). In the Baltic Sea five species are known to occur: *Talorchestia deshayesii* (Audouin, 1826), *Talitrus saltator* (Montagu, 1808), *Orchestia gammarellus* (Pallas, 1766), *Platorchestia platensis* (Krøyer, 1845) and *O. cavimana* Heller 1865 (Spicer and Janas 2006). The two latter species are generally considered as alien in the basin, however neither the reason nor the vectors of their spread is known.

The cosmopolitan *P. platensis* was presumably introduced to NW Europe in the 1860s, subsequently entering the Baltic not later than the1940s, colonizing the western and central parts of its coasts by the 2000s (Persson 2001; Spicer and Janas 2006). *Orchestia cavimana* is a species, originating presumably from Mediterranean/Ponto-Caspian regions or even from Asia (Kinzelbach 1965; 1972). Now it has a rather wide distribution range including the Black Sea, Mediterranean, Red Sea, Atlantic coasts of North Africa and Europe. It reaches north as far as the Southern North Sea (Lincoln 1979). In the Baltic Sea, the species has been previously found only in a few sites on the coasts of Poland, Germany and Estonia (Bracht 1980; Herold 1925; Herkül et al. 2006; Järvekülg 1979; Kotta 2000; Spicer and Janas 2006). In most of its European range the species inhabits saline, brackish-water and freshwater habitats, reaching also far inland localities along the courses and main tributaries of large rivers (e.g. Danube, Dnieper, Rhine) (Rehage 1987; Martens et al. 1999) or even mountain lakes (e.g. Garda, Doirani, Ohrid, Prespa) (Carauşu et al. 1955; Karaman 1993; Grabowski, unpublished data). In the Baltic basin it has been observed mostly on the sea coast and in the brackish parts of large deltaic systems; inland localities are known from north-eastern Germany (Schellenberg 1940; Rudolph 1995a,b; Eggers and Martens 2001). In Poland the species was known only from coastal brackish-water sites in the Szczecin Lagoon, islands of Wolin and Uznam, the Vistula Lagoon and Dead Vistula (Jażdżewski and Konopacka 1995).

During regular monitoring (each site sampled once a year; for sampling details see Grabowski et al. 2006) of alien amphipods in the Vistula River, we found a large population of *O. cavimana* in freshwater conditions, on the water-edge of the Vistula River at Świbno (8th October 2009, 54.333417°N, 18.935980°E, Figures 1-3), some 3 km upstream from its mouth. This section of the river is now its main permanently freshwater channel with a large water discharge (Jażdżewski et al. 2004). The sample was gathered from plant debris and grass roots along the water edge and from among the stones. Altogether we collected 54 adult individuals (22♂♂, 32♀♀) and observed also numerous juveniles. The amphipods were identified according to the combination of morphological features provided by Spicer and Janas (2006). Males: merus of 1st gnathopod with posterior lobe, 2nd gnathopod with enlarged propodus and dactylus, without long curved process on propodus, outer ramus of 1st uropod with a row of spines along the dorsal margin. Females: propodus of gnathopod 1 with small palm, 2nd gnathopod with small propodus and dactylus, its merus with posterior lobe, outer ramus of 1st uropod with a row of spines along the dorsal margin.

Most probably the species has colonised the above freshwater locality by a natural spread up the river, either from the Baltic coast some 3 km away where it has been known to occur for years already (Jażdżewski and Konopacka 1995).

Interestingly, our monitoring carried out at the same time has not detected the presence of the species in any of the sites sampled several kilometers upstream from that point. Also we did not ever find *O. cavimana* in the Vistula River (including the present site) during our previous samplings repeated every year or so since 1998. It is worth to note that potentially appropriate habitats (stones with plant debris and grass roots located on the water edge) are present commonly along the Vistula. Thus, presumably we witnessed the very initial colonisation stage of inland habitats by *O. cavimana* in Poland. It is hard to predict what will be the consequences (if any) of the species spreading to inland waters in Poland. However, taking into account that *O. cavimana* usually forms very abundant populations, this species may significantly change the structure of riparian fauna.

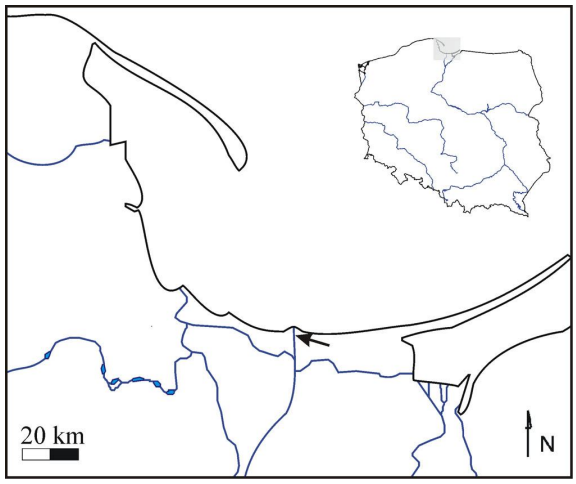

Figure 1. Location of the first record of *Orchestia cavimana* in the Vistula River at Świbno

Figure 2. *Orchestia cavimana* (adult female) from Świbno

Figure 3. Habitat of *Orchestia cavimana* in the Vistula River in Świbno

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