Alien freshwater polychaetes *Hypania invalida* (Grube 1860) and *Laonome calida* Capa 2007 in the Upper Odra River (Baltic Sea catchment area)

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**Abstract** – Two polychaete species, *Hypania invalida* and *Laonome calida*, were found in the Upper Odra River in 2016. Both species were recorded close to a natural river bank down to 1 m depths. They inhabited sandy-gravelly and sandy-muddy sediments. *H. invalida* is an alien invasive Ponto-Caspian species, previously known in Poland from the Odra River estuary only. Our results may indicate a further rapid dispersal of *H. invalida* upstream the Odra River or an accidental introduction. This study is the first record of *L. calida* in the Baltic Sea catchment. This Australian species has been recently introduced into Europe. Prior to this study, it had been reported from Dutch rivers only. The present data suggest accidental introduction of the species to European rivers; however, our findings show an urgent need for a close monitoring of the polychaete in Europe.

**Keywords**: polychaete / invasive species / Ponto-Caspian region / Central Europe

Freshwater ecosystems support as few as about 2% (<200 species) of currently known polychaetes (Glasby and Timm, 2008). Although some of them have been recently introduced into various new areas, invasive polychaetes make up a very small proportion of the total number of species (Cinar, 2013). *Hypania invalida* is such an invasive species of the Ponto-Caspian origin which, until now, has been the only polychaete inhabiting inland waters of Central Europe (Norf et al., 2010). Over the last 35 years, it spread widely and rapidly in Europe through the Volga, Dnieper, and Danube catchments (Woźniczka et al., 2011 and references therein). The species has been recently recorded in Great Britain (Gallardo and Aldrige, 2015). *Laonome calida* is a freshwater Australian sabellid described only 10 years ago (Capa, 2007). It has been recently recorded in the Netherlands, at numerous freshwater and brackish sites located in the delta region of the rivers Rhine, Scheldt and Meuse (Capa et al., 2014). The currently known distribution of the species in Europe has been restricted to this single area in the Netherlands.

Our study was carried out in the upper course of the Odra River (southern Poland), one of major European waterways and the second largest river in Poland. Qualitative samples were collected in July 2016 (Dobrzeń Mały: 50°44.60′N; 15°20.40′E).
was brackish (conductivity range of 1581–2350 µS cm⁻¹) from sandy-muddy sediment. The water at the sampling sites was brackish due to saline water discharges from active and abandoned coal mines in the Odra River basin (Lach et al., 2006). Increased salinity might have locally created conditions suitable for the species’ establishment following a small scale accidental introduction, particularly in the case of *L. calida*.

The true migration and/or introduction routes of the two species should be revealed by molecular studies, and there is an urgent need for this type of research. It is also important to monitor the possible further spread of the alien polychaetes as well as changes in their abundance at both Zdziezowice and other neighbouring, but currently non-invaded sites. The *L. calida* specimens collected in the Odra, with their 8 thoracic segments, 40–45 abdominal ones, a radiolar crown with transverse pigmented lines, and a ventral anal depression in the last 10–15 chaetigers match the description provided by Capa (2007) and Capa et al. (2014). Previous comparisons with the Australian material (Capa et al., 2014) demonstrated morphological similarity with the European specimens, although the Dutch population was found in areas with very low winter temperatures, which might suggest the presence of cryptic species characterized by different environmental requirements; hence the need for molecular analyses. Nevertheless, it is rather unlikely that the species invaded the Odra River directly from Western Europe. In Dutch rivers, *L. calida* also appeared rapidly post-2009 at numerous sampling sites, most probably as a result of unintentional introductions. Another, currently still undescribed, non-indigenous species of *Laonome* has been recently found at the Estonian coast of the Baltic Sea (Kotta et al., 2015).

Further studies should address the problem of possible effects of the two species on native biodiversity and ecosystem functioning. At present, however, we cannot speculate about a potential impact of the polychaetes on benthic communities in Central European rivers.

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References


