

## **Diversity and spatial distribution of ostracods in the surface sediments of Lake Constance, Germany: Potential use as groundwater inflow indicators?**

Lake Constance is the second largest lake in Central Europe with a catchment area of 11,500 km<sup>2</sup>, a mean depth of 90 m and surface of 536 km<sup>2</sup>. It has high ecological, social and economic value, and belongs to the largest and one of the most important drinking water reservoirs in Europe, supplying water for around 5 Million people. It has undergone a process of eutrophication until the late 90's, which triggered several impacts, including loss of biodiversity. Nowadays the lake is oligotrophic but recently, structures at the bottom were found that may indicate groundwater inflows into the lake. In order to identify biological indicators of these inflows and to assess their effect on biological communities and water quality we use the diversity and spatial distribution of ostracods. Thirty-two surface sediment samples were taken in June 2015 using a van Veen grab in water depths ranging between 10 and 115 meters. We identified fifteen ostracods taxa belonging to 6 families and 13 genera (*Candona*, *Fabaeformiscandona*, *Pseudocandona*, *Leucocythere*, *Limnocythere*, *Limnocytherina*, *Cytherissa*, *Potamocypris*, *Herpetocypris*, *Isocypris*, *Prionocypris*, *Darwinula* and *Ilyocypris*) were identified. Limnocytheridae was the most abundant group. *Limnocytherina sanctipatricii* was the most abundant species with a relative abundance of 36%, followed by *Leucocythere mirabilis* (34%) and *Limnocythere inopinata* (24%). The spatial distribution of ostracods was assessed by principal component analysis (PCA) and 3 groups were identified, showing a longitudinal distribution. The association of *L. sanctipatricii* with deep sites is confirmed, while *L. mirabilis*, usually recorded as deep cold water species, was the most abundant species in shallow sites (5,7 m). Potential groundwater inflow indicators, such as *Prionocypris zenkeri* and *Darwinula stevensonii*, were found in sites with suggested groundwater inflows, but their abundances are low (6% and 1%, respectively). Further investigation in combination with other tracers is being performed. This study is part of the "ReWaM Joint Project - Using tracers to identify groundwater and surface water input to lakes and the importance for water quantity and quality: Case study from Lake Constance (SEEZEICHEN)" supported by the German Federal Ministry of Education and Research (BMBF).

Key words: Ostracods diversity; Lake Constance; groundwater inflows indicators.