

## Biogeography of Ordovician Ostracods: Progress and Problems

Tõnu MEIDLA, Oive TINN, Maria José SALAS, David SIVETER & Mark WILLIAMS

Our current knowledge on global biogeography of Ordovician ostracod faunas is based on data that are unequally distributed over different palaeocontinents. Most Ordovician ostracod genera have been described from Baltica and Laurentia, and some other areas have revealed a rather continuous record of lower diversity faunas (e.g. Bohemia, Kazakhstan, Siberian Platform and adjacent areas). Many potentially important regions for ostracod studies are characterized by sparse and discontinuous records (e.g., China, Australia, several terranes from Peri-Gondwana).

Our current reconstruction (MEIDLA et al. 2012, in press) is based on the record of genera from different areas within two time slabs, which are thought to reflect different climate states, comprising the earliest Late Ordovician (*N. gracilis* graptolite Biozone) and the latest Ordovician (Hirnantian). Cluster and correspondence analyses of the datasets from the *N. gracilis* interval reveal a subdivision into five distinct biogeographical provinces, namely Baltican, Laurentian, Gondwanan, Siberian and Kazakhstanian. The results show that the distribution of genera is mainly controlled by palaeocontinental affinities and less affected by a latitudinal gradient.

This pilot study was based on a limited number of the most important monographic papers published within the last sixty years. Such data have several limitations:

(1) Use of old published data means that some ostracod-bearing strata from immediately below and immediately above the chosen stratigraphical intervals may have been incorporated into the dataset. In some cases, the correlation problems may be even more difficult to solve. In the pilot study, some records of possibly Hirnantian age (Himalayas, Anticosti) were disregarded because of the uncertainty of the age records.

(2) Several taxonomic problems were encountered, but they are difficult to solve without thorough revision of original collections. Because of taxonomic uncertainty, about ten percent of the records of genera in each area were tentative.

The pilot study was originally expected to reveal changing biogeographical patterns of ostracods in the Late Ordovician, but the results are difficult to interpret, mainly because of the restricted geographic range of the Hirnantian data. Better resolution could become available if the number of analysed time slices with good geographic coverage could be increased. More promising intervals could be the Middle Darriwilian (equivalent of the *D. artus* graptolite biozone in Britain) and early Katian (equivalent of the *D. clingani* graptolite biozone).

## Reference

MEIDLA, T., TINN, O., SALAS, M.J., WILLIAMS, M., SIVETER, D., VANDENBROUCKE, T.R.A. & SABBE, K. (2012, in press): Biogeographical patterns of Ordovician ostracods. – In: HARPER, D.A.T. & SERVAIS, T. (eds.): Early Palaeozoic Biogeography and Geography. – The Geological Society, Memoir, London.

### Authors addresses:

Tõnu Meidla & Oive Tinn

Department of Geology, Institute of Ecology and Earth Sciences, University of Tartu,  
Ravila 14A, Tartu 51003, Estonia

tonu.meidla@ut.ee

Maria José Salas

Centro de Investigaciones Paleobiológicas (CIPAL) FCEFyN, Universidad Nacional de  
Córdoba Vélez Sársfield 299, 5000 Córdoba, Argentina

David Siveter & Mark Williams

Department of Geology, University of Leicester, Leicester LE1 7RH, UK