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Ostracodes as a tool for palaeogeographic reconstructions in the Ordovician

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For palaeogeographic reconstructions it is of utmost importance to combine faunal data with palaeomagnetic data as demonstrated, e.g. by COCKS & TORSVIK (2002) since fossils may deliver not only information of the palaeolatitude but also of the relative palaeolongitude. Because of their different lifestyles ostracodes serve as an excellent tool for the recognition of palaeobiogeographic connections. Most Ordovician ostracodes are benthic, only few species are known to have had a pelagic lifestyle (SCHALLREUTER & KOCH 1999, GABBOTT *et al.* 2003). Investigations during the last decades on Ordovician ostracodes from different parts of Gondwana and Perigondwana allowed to reconstruct several faunal provinces and their relations to faunal provinces outside these regions.

Although comparisons between ostracode faunas from different parts of Gondwana and Perigondwana are difficult and only preliminary due to the very different and often rather restrictive state of knowledge in the respective areas, three faunal provinces can be distinguished on the basis of ostracodes:

(1) Thuringian province. This province comprises Thuringia, Central Iran (Yazd Block), and SW Sardinia. This province includes also the yet unknown region, from which the *Bairdiocypridella* clasts of the Thuringian Lederschiefer originated. The latter is a late Ordovician diamictite. Most important species of the regions are *Postceratia posterocerata*, *Baltonotella angustovelata*, *Bairdiocypridella bairdiaformis*, *Conodomyra conocerata*, *Baldiscella ? anterobulbosa*, *Brevicornina brevis*, and *Tricornina haehneli* (all established by BLUMENSTENGEL 1965). Of these species only *Postceratia posterocerata* occurs outside of the Thuringian province.

(2) Armorican province. Armorica, Iberia, North Africa, Perunica, east Central Iran (Tabas Block) and questionably also the Carnic Alps constitute this province. The knowledge of the respective ostracode faunas is very variable and comparisons, therefore, only preliminary. Presently, there is no taxon common to all regions. Only one genus (*Quadridigitalis*) occurs in the three main regions. Contrary to most other areas of the province, Perunica and Armorica can be compared in more detail.

(3) Australian province. The regions constituting this province (at least in the Upper Ordovician), Australia, Argentina (Precordillera terrane, Cordillera Oriental), and the Spiti region of Himalaya, are characterized mainly by members of the binodicope subfamily Pillinae. As is documented by the two non-dimorphic palaeocopes of the family Soanellidae, *Eopilla* (Australia) and *Saltite* (Argentina), relations between Australia and the Northwestern basin (Cordillera Oriental) existed already in the Upper Tremadoc/Lower Arenig (SCHALLREUTER & HINZ-SCHALLREUTER 2007).

The relative positions of these provinces to each other could be extrapolated from their respective relations to Baltica. Fig. 1 shows, that the Thuringian province has most genera in common with Baltica, but it is not Thuringia itself that exhibits the closest relations. In the first place it is the Yazd Block (!) with 20 common genera, followed by Sardinia and the *Bairdiocypridella* clasts from the Thuringian Lederschiefer. Thuringia itself has the least correspondence with Baltica (Fig. 2).

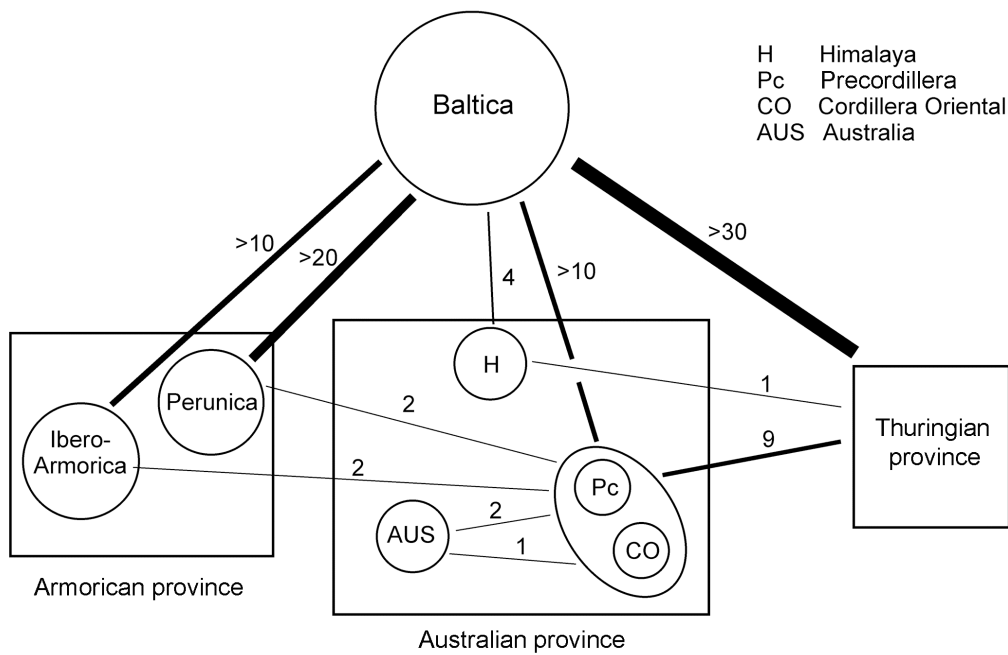


Fig. 1: Relations between the ostracode faunas of the Armorican, Australian and Thuringian provinces as well as between them and Baltica. Figures indicate number of common genera.

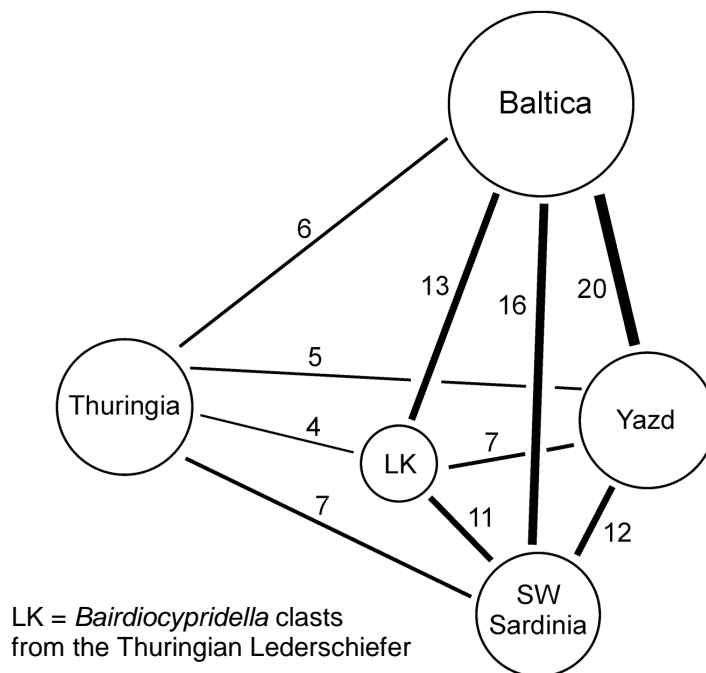


Fig. 2: Relations between the ostracode faunas of the different regions of the Thuringian province and Baltica. Figures indicate number of common taxa (mostly on the generic level).

References

- HINZ-SCHALLREUTER, I. & SCHALLREUTER, R. (2007): Ostrakoden-Faunenprovinzen und Paläogeographie Gondwanas und Perigondwanas im Ordovizium. – Freiburger Forschungshefte (Reihe C), 524 [psf – Paläontologie, Stratigraphie, Fazies 15]: 47-83. [see further references]