

## Upper Sinemurian (Lower Jurassic) ostracods of the Lusitanian Basin (Portugal): new data

Isabel M. LOUREIRO, M. Cristina CABRAL, Luís V. DUARTE, Ana C. AZERÊDO & Jean-Paul COLIN

In the Lusitanian Basin, West-Central Portugal, the Sinemurian deposits are well developed, with the most complete succession cropping out along the cliffs of S. Pedro de Moel region. These deposits comprise the Coimbra and the Água de Madeiros formations (DUARTE & SOARES 2002) and are essentially represented, in the lower part (Lower Sinemurian; most of the Coimbra Formation), by fossiliferous, marly or dolomitic limestones intercalated by a few marls and shales; in the upper part of the succession (top-most Coimbra and Água de Madeiros formations), marl-limestone alternations with black shales (particularly in the Água de Madeiros Fm.) occur (DUARTE et al. 2010). The palaeoenvironment evolution of these units is marked by shallow restricted to slightly more open marine (Coimbra Fm.) and to deeper marine (Água de Madeiros Fm.) conditions. Ostracods from those levels are poorly known, with only two recently published works (CABRAL et al. 2009; AZERÊDO et al. 2010).

In this work we present the study of the ostracods from 37 marl samples, collected in the Upper Sinemurian succession (from upper part of Obtusum to the top of Raricostatum ammonite zones). All ostracods, valves and carapaces of both adults and juveniles, were picked up from the 0.150 mm fraction of the washing residues of a sediment sample with around 300 g.

The ostracod assemblages are similar to those of the same age found in NW Europe, with stronger similarities with those from the Fastnet Basin, offshore Southwest Ireland (AINSWORTH 1989) and the Paris Basin (APOSTOLESCU 1959). They differ from the bottom of the sequence towards the top. Three main assemblages can be considered (Fig. 1):

- The bottom of the sequence (Obtusum zone – samples PCR and PFR) is characterized by a very abundant, essentially brackish assemblage, largely dominated by *Lutkevichinella hortonae* AINSWORTH, 1989.
- In the middle of the sequence (Oxynotum zone – samples PO and OU), the ostracod assemblages are moderately abundant, with medium diversity. The most common species are *Ogmoconchella celticensis* AINSWORTH, 1989, *Ruchholzella frequens* AINSWORTH, 1989, *Polycope* cf. *cerasia* BLAKE, 1876 and *Pseudomacrocypris* cf. *subtriangularis* MICHELSEN, 1975 *sensu* AINSWORTH et al. 1989.

A boom in diversity and quantity occurs in level OU 66 T, where 24 taxa were identified and around 3.000 specimens counted. Besides the quoted species, *Ogmoconchella* cf. *michelseni* AINSWORTH, 1989, *Ektyphocythere vitiosa* (APOSTOLESCU, 1959), *Lophodentina* sp. A BOOMER, 1991 are also well represented.

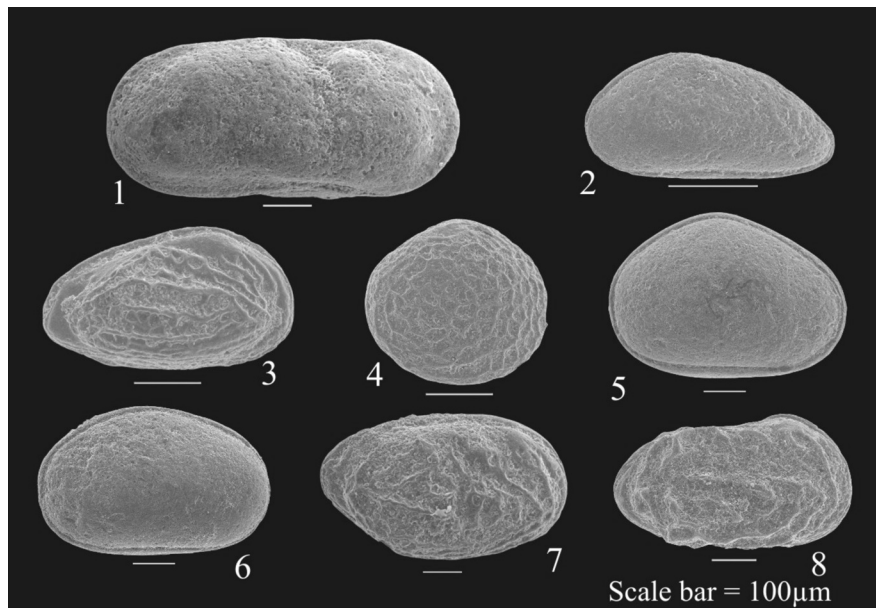


Fig. 1: Some of the most representative ostracods in the studied sequence. 1 – *Lutkevichinella hortoniae* AINSWORTH, RLV, PCR 318; 2 – *Pseudomacrocypris* cf. *subtriangularis* MICHELSEN, LLV, OU 76; 3 – *Ruchholzella frequens* AINSWORTH, RLV, OU 76; 4 – *Polycope* cf. *cerasia* BLAKE, LLV, OU 66 T; 5 – *Ogmoconchella celticensis* AINSWORTH, RLV, OU 66 T; 6 – *Ogmoconchella* cf. *michelseni* AINSWORTH, RLV, OU 66 T; 7 – *Ektyphocythere vitiosa* (APOSTOLESCU), RLV, OU 66 T; 8 – *Lophodentina* sp. A BOOMER, RLV, OU 66 T.

- In the top of the sequence (Raricostatum zone – samples OU and GP) the ostracod assemblages are very poor, with low diversity and abundance. Only 3 species were identified, 2 of them new to science and *Paracypris redcaensis* (BLAKE, 1876). On the top, associated to most organic-rich facies, the ostracods completely disappear. Only echinoid fragments are very abundant in the residues from these levels.

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## References

- AINSWORTH, N.R. (1989): Rhaetian, Hettangian and Sinemurian Ostracoda from the Fastnet Basin, offshore Southwest Ireland. – *Geological Survey Ireland Bulletin*, 4(2): 107-150, Dublin.
- APOSTOLESCU, V. (1959): Ostracodes du Lias du Bassin de Paris. – *Revue de l'Institut Français du Pétrole et Annales des Combustibles Liquides*, 15(6): 795-826, Paris.
- AZERÉDO, A.C., SILVA, R.L., DUARTE, L.V. & CABRAL, M.C. (2010): Subtidal stromatolites from the Sinemurian of the Lusitanian Basin (Portugal). – *Facies*, 56: 211–230, Erlangen.
- CABRAL, M.C., AZERÉDO, A.C., COLIN, J.P., SILVA, R.L. & DUARTE, L.V. (2009): An unexpected oligohaline ostracod assemblage from the restricted-marine Sinemurian of W Portugal. – *Program and Abstracts, 16<sup>th</sup> International Symposium on Ostracoda*: 50, Brasília.
- DUARTE, L.V., SILVA, R.L., OLIVEIRA, L.C.V., COMAS-RENGIFO, M.J. & SILVA, F. (2010): Organic-rich facies in the Sinemurian and Pliensbachian of the Lusitanian Basin, Portugal: Total Organic Carbon and relation to transgressive-regressive facies cycles. – *Geologica Acta*, 8(3): 325-340, Barcelona.
- DUARTE, L.V. & SOARES, A.F. (2002): Litostratigrafia das séries margo-calcárias do Jurássico Inferior da Bacia Lusitânica (Portugal). – *Comunicações do Instituto Geológico e Mineiro*, 89: 135-154, Lisboa.

### Authors addresses:

Isabel M. Loureiro, M. Cristina Cabral, Ana C. Azerêdo & Jean-Paul Colin  
Universidade de Lisboa, Faculdade de Ciências, Centro de Geologia, Campo Grande,  
C-6, 4º, 1749-016 Lisboa, Portugal  
imloureiro@fc.ul.pt

### Luís V. Duarte

Universidade de Coimbra, Departamento de Ciências da Terra, IMAR - Centro Interdisciplinar de Coimbra, 3000-272 Coimbra, Portugal