

First survey of Recent ostracods from the continental shelf of Western Algarve, South Portugal

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No ostracods have ever been reported from the Portuguese continental shelf of Algarve, South Portugal. The main objective of this research has been to study the composition of the ostracod assemblages, their bathymetric distribution and to assess their relationship with the regional circulation and upwelling events.

The sampling zone was the continental shelf of Western Algarve, between Sagres and Faro (Fig. 1). It is a narrow shelf, about 10 km wide, indented by the Portimão submarine canyon, and influenced by the frequent coastal upwelling off S. Vicente Cape, mainly from May to September. The sediment and energy inputs from land are very weak. Nine sites were selected (Sites 1, 3, 5, 6, 8, 9, 12, 13 and 14, from east to west), ranging from -58 m to -125 m, and 18 samples collected during 2008 (9 in January and 9 in June, respectively in Winter and Summer conditions), in the oceanographic campaigns POP 0108 (IH) and Crustáceos 2008 (INIAP/IPIMAR).

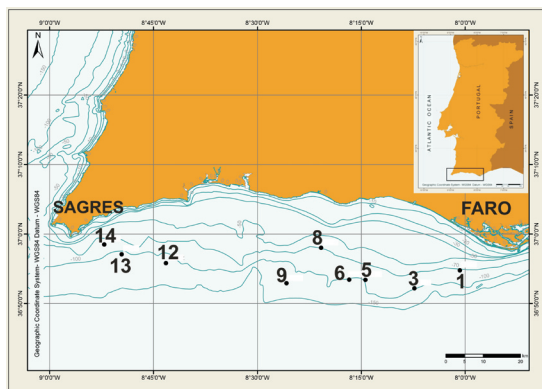


Fig. 1: Location of selected sites on western shelf of Algarve.

The samples were collected with a Smith-McIntyre (SMT) grab, in fine sediment patches (sand fraction is generally < 50%), following MOITA (1986). In the laboratory, each sample, with a volume varying from 23 to 40 cm³, was washed through a 63 μm sieve, immersed for 1 hour in a Rose Bengal solution (1 g/l), washed again, dried below

50°C and splitted when very rich in ostracods. All ostracods were picked, both adults and juveniles (1 individual = 1 valve or 1 carapace). Always more than 100 ostracods were picked per sample, except for Site 3, with 23 individuals in the whole winter sample.

More than 70 species and 48 genera have been identified from a total of 3500 collected ostracods – almost all only valves. Live individuals are almost absent (7) and in all samples, juveniles are generally much more abundant than adults (52 to 95% per sample). The most abundant and widespread species (Fig. 2) are *Costa runcinata* (BAIRD), *Pterygocythereis jonesi* (BAIRD), *Krithe* cf. *aquilonia* COLES, WHATLEY & MOGUILEVSKY and *Palmoconcha guttata* (NORMAN), which appear regularly in most of the samples. Three main assemblages can be considered.

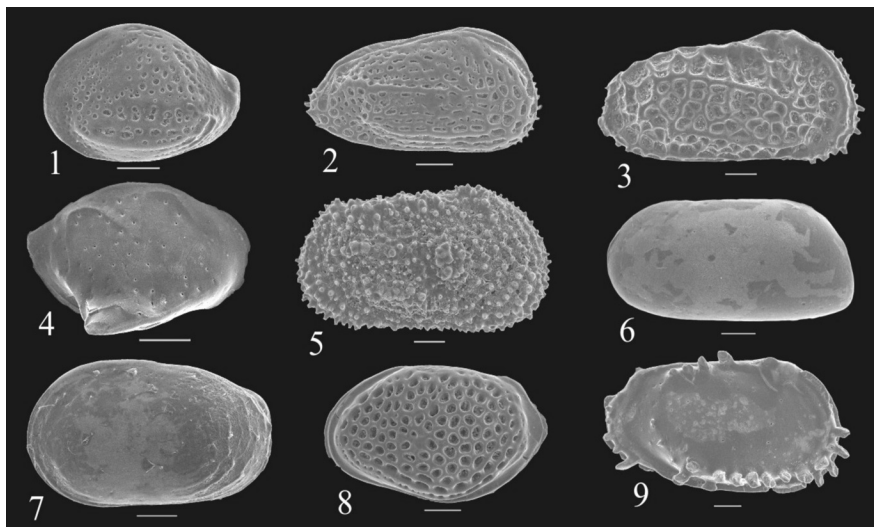


Fig. 2: Some of the most representative species in western Algarve shelf. 1: *Buntonia sublatissima* (NEVIANI), LVLV; 2: *Celtia quadridentata* (BAIRD), RLV; 3: *Costa runcinata* (BAIRD), RVLV; 4: *Cytheropteron* aff. *ruggierii* Pucci, RVLV; 5: *Henryhowella sarsi* (G.W. MÜLLER), RVLV; 6: *Krithe* cf. *aquilonia* COLES, WHATLEY & MOGUILEVSKY, LVLV; 7: *Rectobuntonia rectangularis* (RUGGIERI), LVLV; 8: *Palmoconcha guttata* (NORMAN), LVLV; 9: *Pterygocythereis jonesi* (BAIRD), RVLV. Scale bar = 100µm.

Assemblage 1 – in the eastern part of the shelf (Sites 1, 3, 5, 6 and 8; depth between -58 and -100 m). The diversity is generally low to moderate (6 to 15 species/sample), higher in winter, and *C. runcinata* is largely dominant (45 to 73% of the whole sample). All the species present are typical from this type of environment. Site 1 is slightly different, with high diversity given by species such as *Aurila convexa* (BAIRD), *Urocythereis britannica* ATHERSUCH, *Loxoconcha elliptica* BRADY, related to the proximity to the continent, particularly to the barrier system of Faro.

Assemblage 2 – (Site 9, close to the Portimão canyon; depth -125 m). It stands up by the presence and abundance of the deep water species *Henryhowella sarsi* (G.W. MÜLLER), almost absent in all of the other samples. *Cytherella alvearium* BONADUCE, CIAMPO & MASOLI, *Cytheropteron monoceros* BONADUCE, CIAMPO & MASOLI and *C. latum* G.W. MÜLLER also appear, reinforcing the difference and suggesting that it is related to the greater depth of the site. Diversity is moderate to high (13 to 18 species/sample).

Assemblage 3 – in the western part of the shelf (Sites 12, 13 and 14; depth between -79 and -108 m). The diversity is high (22 to 33 species/sample) and among the dominating classical deep species, several littoral juvenile valves of *Hemicytherura videns* (G.W. MÜLLER), *H. hoskini* HORNE, *Heterocythereis albomaculata* (BAIRD), *Caudites calceolatus* (O.G. COSTA), *Xestoleberis* spp. occur. This diversity results from the accumulation of juvenile valves of a broad range of depth. This suggests that there is an important reworking of the fine fractions of the bottom sediments, that include the small juvenile valves, evidencing the complexity of the circulation pattern around the S. Vicente Cape.

The absence of live and articulated ostracods and the dominance of juvenile valves, suggest that in spite of the presence of coastal upwelling and resulting productivity, the main feature in the studied area seems to be the remobilization of the deposits due to the interference of the S. Vicente Cape with the bottom circulation across the western continental shelf of Algarve.

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Reference

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