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Deep-sea Ostracoda from the Eastern Equatorial Pacific (ODP Site 1238) over the last 460 ka

Anna Stepanova & Mitchell Lyle

Almost no ostracod data are available from the Eastern Equatorial Pacific. Scattered data on deep sea ostracods are available from the Central and Western Equatorial regions (DSDP/ODP Legs 85 and 143, 144; Steineck et al. 1988; Steineck & Yozzo 1988; Boomer & Whatley 1995; Boomer 1999), southwestern Pacific (Whatley et al. 1986), the Tasman Sea and the Southern Ocean (Jellinek & Swanson 2003) and from a few sites from the Eastern Equatorial Pacific (Maddocks 1969; Benson 1972). Thus, a lack of knowledge of deep-water ostracods and their oceanographic distribution exists in the Pacific. Previous studies of ostracods from the North Atlantic and other climate-sensitive areas have shown their potential for palaeoceanographic reconstructions and linkage to particular deep water masses (Dingle & Lord 1990; Didie & Bauch 2000; Alvarez Zarikian et al. 2009).

Site 1238 is located at 1°52.310´S, 82°46.934´W (water depth 2203 m) ~200 km off Ecuador. Today it is situated under the eastern reaches of the equatorial cool tongue in an open-ocean upwelling system near the equator. It is likely to record changes in upwelling and biological production along with change in upper-ocean temperature and pycnocline depth (Shipboard Scientific Party 2003).

Site 1238 was sampled at 1 sample per meter providing a temporal resolution of about 5 to 25 ky (based on age model by Alvarez et al. 2010) for the upper 460 ky (Marine Isotope Stages 1–12). In general, deep-water ostracods are not as abundant in the Pacific compared to other regions (i.e. North Atlantic) and in order to obtain sufficient material for the study, the sample size was increased to 50 cc, and ostracod abundance was calculated per 100 gram dry bulk sediment. Although ostracod abundance was low, preservation remained fine throughout the studied interval. Rates of juveniles average 20–30 % for the upper 100 ka and increase up to 40–60 % for the rest of the record, implying their in situ burial for the most part of the interval.

We distinguished 13 genera, of which we identified 9 species and the rest remained identified to generic level only. In general, the ostracod assemblage is similar to the one described by I. Boomer (1999) and identified as a typical modern globally distributed pandemic fauna with 30–40 % of it represented by *Krithe*. At Site 1238 *Krithe* is the most abundant and diverse genus (preliminary estimated as 6 species).

It is mainly associated with cold water masses and is known from areas of coastal upwelling (Rodriguez-Lázaro & Cronin 1999). At Site 1238 the highest peaks of *Krithe* abundance are recorded during interglacials MIS 7, 9 and 11. It roughly corresponds to the results obtained by Alvarez et al. (2010) on coccolithophore assemblages. They distinguished intervals of 450–220 and 220–0 ka, where the older interval is characterized by intense upwelling and enhanced Trade Winds and the younger interval corresponds to weak upwelling and weak Trade Winds. In our record the highest abundance of *Krithe* falls on 220 ka, and starts to decline after 170 ka, which may be caused by delayed response of the benthic fauna *vs* planktic. *Legitimocythere castanea* is the second most abundant taxon with peaks coinciding with those of *Krithe*. This species was described from the Challenger Plateau (Jellinek & Swanson 2003) and is typical for depths around 1500 m, compared to 2200 m at Site 1238. The other abundant taxa include *Bradleya normani* and *Ambocythere recta*. Abundance of these species does not vary significantly along the record, but these taxa are absent in the interval 120–170 ka, this interval on the contrary is the only one where we find valves of the genus *Cytheropteron*. Both facts may be associated with transition from the glacial to MIS5e. The genus *Cytheropteron* was previously reported as associated with climatic transitions from North Atlantic records (Alvarez Zarikian et al. 2009).

Glacial-interglacial cycles are reflected in changing abundance and species diversity. Generally abundance is much lower in the upper 170 ka averaging 30–50 valves/100 grams, in the rest of the record abundance fluctuates with peaks falling on transitions and the highest peak of 140 valves/100 gram recorded in MIS 7. Diversity is generally low, 11–13 species. Peaks in diversity correlate well with abundance, but don't show significant changes in the upper 170 ka.

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Authors address:
Anna Stepanova
Paleontological Institute of the Russian Academy of Sciences, 123 Profsoyuznaya Street, 117997 Moscow, Russia
a.yu.stepanova@gmail.com

Mitchell Lyle
Department of Oceanography
Texas A&M University, College Station, Texas, USA