

“Recent” macrofossil remains from the Lomonosov Ridge, central Arctic Ocean

Cynthia Le Duc (1), Anne de Vernal (1), Philippe Archambault (2), Camille Brice (1), and Philippe Roberge (1)
(1) GEOTOP, Université du Québec à Montréal, Canada, (2) ISMER, Université du Québec à Rimouski, Canada

The examination of surface sediment samples collected from 17 sites along the Lomonosov Ridge at water depths ranging from 737 to 3339 meters during Polarstern Expedition PS87 in 2014 (Stein, 2015), indicates a rich biogenic content almost exclusively dominated by calcareous remains. Amongst biogenic remains, microfossils (planktic and benthic foraminifers, pteropods, ostracods, etc.) dominate but millimetric to centrimetric macrofossils occurred frequently at the surface of the sediment. The macrofossil remains consist of a large variety of taxa, including gastropods, bivalvia, polychaete tubes, scaphopods, echinoderm plates and spines, and fish otoliths. Among the Bivalvia, the most abundant taxa are *Portlandia arctica*, *Hyalopecten frigidus*, *Cuspidaria glacialis*, *Policordia densicostata*, *Bathyarca* spp., and *Yoldiella* spp. Whereas a few specimens are well preserved and apparently pristine, most mollusk shells displayed extensive alteration features. Moreover, most shells were covered by millimeter scale tubes of the serpulid polychaete *Spirorbis* sp. suggesting transport from low intertidal or subtidal zone. Both the ecological affinity and known geographic distribution of identified bivalvia as named above support the hypothesis of transportation rather than local development. In addition to mollusk shells, more than a hundred fish otoliths were recovered in surface sediments. The otoliths mostly belong to the Gadidae family. Most of them are well preserved and without serpulid tubes attached to their surface, suggesting a local/regional origin, unlike the shell remains. Although recovered at the surface, the macrofaunal assemblages of the Lomonosov Ridge do not necessarily represent the “modern” environments as they may result from reworking and because their occurrence at the surface of the sediment may also be due to winnowing of finer particles. Although the shells were not dated, we suspect that their actual ages may range from modern to several thousands of years as suggested by the radiocarbon dating of the upper centimeter of the sediment in PS87/030-2 (7792 ± 59 14C years BP), PS87/055-1 (3897 ± 41 14C years BP), and PS87/099-4 (1421 ± 66 14C years BP).

Reference

Stein, R. (Ed.), 2015. The Expedition PS87 of the Research Vessel Polarstern to the Arctic Ocean in 2014, Reports on Polar and Marine Research 688, Bremerhaven, Alfred Wegener Institute for Polar and Marine Research, 273 pp (http://epic.awi.de/37728/1/BzPM_0688_2015.pdf).