

Inventory of Invertebrate Fossils from the Holocene Deposits of the Bering Glacier, Alaska

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The number and diversity of fossil invertebrates collected from the Holocene glacial deposits of the Bering Glacier has increased with each field season. They are now known to occur in 12 localities spread across a 30 kilometer transect from Weeping Peat on the east to the Ancient Forest site on the west. They are probably ubiquitous in the Holocene glacial deposits of the Bering Glacier and were derived from an ecosystem that thrived along a shoreline that existed between 7,190 and 10,490 years BP (Measured Radiocarbon Age). As the invertebrate remains were picked up and transported by the ice that flows south toward the Gulf of Alaska, this fossil assemblage must represent a shoreline that existed to the north, most likely at the base of the mountain front. Therefore, the forelands formed between the present and 7,000 years BP.

Seven major groups of invertebrates are represented by the 78 species identified to date: gastropods (33 sp. = 42%); bivalves (30 sp. = 38%); bryozoans (6 sp. = 8%); arthropods (4 sp. = 5%); echinoderms (2 sp. = 3%); polychaete worms (2 sp. = 3%); and chitons (1 sp. = 1%). These organisms lived in a variety of water depths, but the majority are intertidal to shallow subtidal, strongly suggestive of shoreline conditions. A few preferred depths of greater than 100 meters and all are marine. They had a variety of substrate preferences including mud/silt; mud/sand; sand; a mixture of mud/sand/gravel; and rock. Therefore different sedimentary and topographic conditions existed along the ancient shoreline.

The outburst flood deposits provide the best collecting sites, both in number and condition. Of the 4100 specimens, 48% were found near the Ancient Forest and 31% were found at Weeping Peat. Complete valves of bivalves, delicate gastropods, and bryozoans were not uncommon. They were found on the surface of the out-wash. The remaining 21% was recovered from the other 10 localities with a distribution ranging from 1% to 8%. Most of these specimens were scattered in stratified outwash, always fragmented, and rarely greater than 10 mm in length.



Isotope analysis of the bivalve specimens which contain 4 - 5 annual growth rings has the potential to provide water temperature and productivity data in the "fossil" ocean. This technique has been used on other much younger bivalves from the coast of southern Alaska. The Bering Glacier collection is the only Holocene site known with an age greater than 3,000 years.