GSA Connects 2022 meeting in Denver, Colorado

Paper No. 63-18
Presentation Time: 2:00 PM-6:00 PM

"FROZEN DINNERS" IN SEA ICE AS GUIDES TO ANTARCTIC SCALLOP POPULATIONS AND THEIR FOSSIL RECORD

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The Antarctic scallop, *Adamussium colbecki*, flourishes in one of the southernmost marine habitats on Earth. To understand how it fossilizes, we must account for anchor ice that forms on the seafloor and periodically floats upward, laden with trapped sediment and organisms, and adheres to the underside of sea ice. Over time, trapped biota and sediments are exposed at the sea-ice surface through ablation. Ideally, the death assemblage of scallops on the sea-ice surface would have high fidelity (1:1 correspondence) with the living assemblage below the ice. If confirmed, this would indicate that the Antarctic fossil record would reliably provide information about the scallop's relative abundance and paleoecology. Therefore, we hypothesize that there is no difference in population structure between *A. colbecki* in the sea-ice death assemblage (herein as sea-ice scallops) and the living population beneath the ice. We examined this hypothesis at an annual sea ice site, Herbertson Glacier, located in the Ferrar Glacier embayment of western McMurdo Sound, Ross Sea, Antarctica.

Scallop abundance and size class distributions were used to examine the potential biases for its Antarctic fossil record. A 10-m transect was deployed on the sea ice parallel to the dive hole. All scallops within 1 m of the transect were collected, counted and measured. Similarly, underwater videos along a 10-m transect were analyzed to document living scallop populations. Results indicate high fidelity both in the abundance of scallops and in their size-class distributions: Sea-ice scallop abundance was 134 compared to 148 living individuals and medium-sized scallops (50–89 mm) were the most common in the sea ice (frequency 0.97) and living assemblage (0.57). Small (<49 mm) scallops had a low frequency in both assemblages (~0.04), but very large scallops (>90 mm) were missing from the sea-ice assemblage compared to the living assemblage (0.39). Because of the high fidelity between the living assemblage and the assemblage entombed in sea-ice, anchor ice does not appear to bias the potential fossil record of the Antarctic scallop living in annual sea-ice sites.

Session No. 63--Booth# 101

D25. Paleontology: Recent Developments in Paleoecology and Taphonomy (Posters)
Sunday, 9 October 2022: 2:00 PM-6:00 PM

Exhibit Hall F (Colorado Convention Center)

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