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HIGH VARIABILITY OF SUBANNUAL GROWTH BANDS IN THE ANTARCTIC SCALLOP *ADAMUSIUM COLBECKI*

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The Antarctic scallop *Adamussium colbecki* may be a crucial paleoenvironmental proxy for Antarctic sea ice during the Holocene. Sea ice can melt annually or persist for multiple years, with implications for the diet and growth of this ecosystem engineer. Subtle growth variations under each sea ice regime could be analyzed using striae (surficial concentric ridges) that putatively form fortnightly in juveniles. Previous work described alternating groups of widely spaced striae (summer) and narrowly spaced striae (winter). Each group may have 12 striae, or a pair of wide and narrow groups (cycle) may have ~ 28; both scenarios suggests approximate tidal (lunar) periodicity in striae formation. However, consistency of striae formation (total striae per valve and group) must be assessed in different environments, as factors such as sea ice or temperature could affect striae growth.

We examined striae number, groups, and cycles in juvenile growth (< 50 mm) using scallops collected from two sites in western McMurdo Sound, Antarctica, that differ by sea-ice cover: Explorers Cove (EC) and Bay of Sails (BOS). Both sites have similar summer temperatures (-1.97°C), but EC has multi-annual sea ice whereas BOS has annual sea ice. We predict that annual melt and subsequent phytoplankton blooms likely induce a stronger environmental control than lunar periodicity. Thus, BOS scallops should have equal striae in wide and narrow groups, whereas EC should have fewer striae per wide group and fewer total striae as summer food availability would be greater at BOS and EC valves may cease growth in lower nutrient conditions.

Median striae per wide or narrow group was similar at both sites (~12) and median total striae did not differ significantly between sites (EC: 188.5; BOS:183), suggesting striae formation is unaffected by sea ice. Similar median cycles per valve (~5), corroborate previous work that *A. colbecki* are ~ 5 years old at 50 mm shell height, and ~ 12 striae per group supports lunar periodicity of formation. However, striae per group varied widely (EC: 3–41; BOS 3–38) and 55% of valves had > 182 total striae and 30% had > 208, indicating ages of 7+ and 8+ yrs assuming fortnightly striae formation. Individual striae and group/cycle data contradict each other, calling into question consistent fortnightly striae formation in juvenile *A. colbecki*.

Session No. 38--Booth# 236

D22. Paleontology, Paleoecology and Taphonomy (Posters)
Sunday, 4 November 2018: 9:00 AM-5:30 PM

Halls J-K (Indiana Convention Center)

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