GSA Connects 2022 meeting in Denver, Colorado

Paper No. 228-3
Presentation Time: 8:35 AM

QUANTIFYING THE RELATIVE CONTRIBUTIONS OF MICROBIALITES AND METAZOANS TO REEF FRAMEWORKS IN THE LOWER–MIDDLE ORDOVICIAN IBEX SUCCESSION, WESTERN UTAH, USA (Invited Presentation)

MARENCO, Katherine, N'DIAYE, Leila and MARENCO, Pedro, Department of Geology, Bryn Mawr College, 101 N Merion Avenue, Bryn Mawr, PA 19010

Reef builders are quintessential ecosystem engineers due to the tangible, enduring ways in which they alter marine habitats and the strong evidence that biogenic reef structures have fostered metazoan diversification throughout Earth history. The ecological role played by biogenic reef frameworks is relatively well understood for most Middle Paleozoic and younger reefs, in which the prominent metazoan constituents are well-calcified stromatoporoids and/or corals that built structures in concert with calcifying microbial communities. In contrast, Early Paleozoic reefs remain somewhat enigmatic because most of their biogenic framework components are lightly mineralized, diminutive, and/or heterogeneously distributed, and microbial contributions to these reef frameworks can equal or exceed those of metazoans. Mapping and quantifying the proportion of microbial to metazoan framework area in Early Paleozoic reefs via grid-based analysis is one approach that can help to elucidate the relative importance and ecological impacts of these framework constituents.

The Lower–Middle Ordovician Ibex Succession in western Utah contains multiple reef-bearing intervals that showcase the sizeable role that microbial communities continued to play in post-Cambrian reef construction and the growing contributions of sponges to reef frameworks during this time. Reefs mounds in this succession coincide with the waning stages of the longest metazoan reef gap in Earth history and the onset of the Great Ordovician Biodiversification Event (GOBE). We used a 25cm x 25cm grid to record the presence/absence and spatial distribution of *in situ* sponges, microbialite textures, transported grains, and other fabric constituents in five reef-mound intervals within the Lower–Middle Ordovician Ibex Succession. Our results indicate that the relative proportion of sponges in reef mounds increased significantly over a period of ~8 million years, but sponge areal coverage rarely exceeded 40% in any of the studied grids. In contrast, microbialite and suspected microbialite textures were identified across >75% of the grid area in all but one of the studied mound intervals. These patterns suggest that microbial communities persisted as dominant reef-framework engineers even as metazoan contributors were gaining prominence.

Session No. 228

T118. Ecosystem Engineering through Earth History
Wednesday, 12 October 2022: 8:00 AM-12:00 PM

Mile High Ballroom 3C (Colorado Convention Center)

Geological Society of America *Abstracts with Programs.* Vol 54, No. 5
doi: 10.1130/abs/2022AM-378024

Back to: T118. Ecosystem Engineering through Earth History

<< Previous Abstract | Next Abstract >>