

Analysis of Trace Metals in *Semibalanus balanoides* and *Amphibalanus eburneus* Plates From Long Island Sound

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Minimal research has been conducted on the geochemistry of acorn barnacles, yet recent studies suggest these sessile crustaceans have the potential to act as paleo-environment indicators, biomonitors of anthropogenic pollution, and tracers of marine megafauna movement. As there are nearly 900 species of acorn barnacles, it is necessary to investigate variations among species to determine their efficacy as proxies. The primary objective of this study is to compare the trace metal contents of two extant barnacle species - *Amphibalanus eburneus* (common name: ivory barnacle) and *Semibalanus balanoides* (common name: northern rock barnacle) - to better understand their unique applications in the ocean sciences. Samples were collected from Manursing Island Club in Rye, New York, along the western shoreline of Long Island Sound. Barnacle samples were measured, photographed, and cleaned to aid with identification. Element/Ca ratios measured via Q-ICP-MS indicate that there may be species-specific variations within the plates of *A. eburneus* and *S. balanoides*. The former species had higher Na/Ca, Li/Ca, and Sr/Ca values than the latter despite being exposed to the same environmental conditions. A comparison of the K/Ca values was inconclusive; additional data may be necessary to constrain results concerning interspecies differences. Notably, *S. balanoides* samples collected downshore exhibited lower Mg/Ca ratios than samples collected further upshore. This finding is not surprising as Mg/Ca values in barnacles have been known to be impacted by shore level. While the extent of barnacle geochemistry is still undergoing exploration, we are beginning to determine which potential proxies require species-specific investigations.