Barnacle plates form a principal component in the carbonate production of the polar setting in the Ross Sea, Antarctica. In particular Bathylasma corolliforme is highly abundant in 400 m depth near the ice-shelf. They are often deposited on shore, due to the entrainment in grounding shelf-ice and the subsequent melting of stranded icebergs. These deposits get uplifted during glacio-eustatic rebound. The several cm-size calcite plates are incrementally banded and the high number of these presumably annual bands suggests a multi-decadal lifespan. Burgess et al. (2010) demonstrated that B. corolliforme precipitates δ¹⁸Occ in isotopic equilibrium with ambient temperature and seawater δ¹⁸Osw composition. Bottom water temperatures show minimal seasonal variations and δ¹⁸Occ is thus predominantly a function of salinity. Subglacial meltwater discharge results in salinities as low as 33 PSU (Burgess et al. 2010). Beyond these encouraging results, the crucial question of the timing of increment formation remains unresolved. The δ¹⁸Occ rhythms are often in phase with the bands, but not always. We thus apply ¹⁴C bomb-spike dating as independent age control in life-collected specimens with known collection date. Microstructure and mineralogy has been investigated by thin sections, x-ray diffraction and SEM. Etched plates displayed high amounts of a complex organic filament meshwork. Elemental compositions of the low-Magnesium calcite (avg. Mg/Ca = 15 mmol/mol) have been analyzed using electron-microprobe and LA-ICP-MS.