

Using the bivalve *Portlandia arctica* as an indicator of environmental variations within fjords (Labrador, Canada)

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The Arctic is intensely affected by global warming as average temperatures in this region are rising twice as fast as they are elsewhere in the world. Under the influence of such natural changes, the Arctic region is becoming more accessible to industrial and commercial activities. In order to manage effectively the development of this region, there is a strategic importance of being able to understand and predict Arctic marine communities' dynamics, particularly by providing a framework of past marine climate variability. Bivalves can be used as marine archive records to assess the variability of marine ecosystems over decades to centuries and therefore estimate the potential joint effects of climatic change and increasing anthropogenic activities on Arctic populations. In this study, we investigated the impacts of environmental variations on fjordic bivalves' annual growth dynamic using sclerochronology. We hypothesized that bivalves inhabiting northernmost fjord on the coast of Labrador provide evidence of greater environmental variability than those from southernmost fjord as a consequence of important hydrologic changes inferred by the proximity of a glacier in this region. To test this hypothesis, growth profiles of bivalve shells (*Portlandia arctica*) were determined from samples collected during the 2010 Amundsen expedition in the Canadian Arctic and geochemical analyses were performed to characterize the recorded disturbances. The importance of understanding historical impacts to anticipate climate change effects on ecosystems will be discussed.

Keywords: Bivalves, marine archive, environmental variations, sclerochronology

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