

Can we save Prince Edward Island's coast? Regional erosion regimes and the controversial effectiveness of coastal armouring

By: Mitch Maracle

Coastal erosion is a continuous process that has long had an impact on human habitation and activities. Protection against erosion involves coastal armouring, a controversial practice that may provide shoreline protection. Yet, studies have shown that coastal armouring may be a short-term solution in protecting shoreline infrastructure. However, protective responses to shoreline erosion have shifted over the decades, with the question being left, is coastal armouring effective or is it better to have a planned retreat approach? Prince Edward Island (PEI) is the province in Canada that is most vulnerable to extreme coastal erosion with rates of erosion and retreat of coastlines on PEI averaging 0.3 m annually. The erosional processes that impact PEI are controlled by regional coastal regimes that are, in turn, influenced by climate change, current patterns, isostatic rebound, geology, and increasing anthropogenic activities. Because coastal erosion on PEI is so significant, hard shoreline armouring has historically been the most common strategy used to protect land, buildings, and infrastructure, but it has met with varying degrees of success. Armouring structures and strategies can be separated into five major categories: hard structures (e.g., seawalls, groynes, etc.), soft methods (e.g., beach nourishment, ecosystem management), hybrid approaches (mixture of hard structures and soft methods), environmentally hard (ecological engineering) and planned retreat (policy and acceptance of erosion). Debate still continues on which strategy to use, its design, and its scale, all of which are location dependent. Key challenges arise as to the choice of which protective shoreline strategy is effective, and whether or not the implementation of any short-term protective measures is beneficial. Long term erosion prevention on PEI is likely not to be met by any armouring technique, but rather planned retreat and the landward retreat of the shoreline.