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## **Location of a biological hotspot in the Gulf Of Maine**

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Rock-framed, macrotidal Cobscook Bay lies nestled in Passamaquoddy Bay, near the heart of the Quoddy Region of the Gulf of Maine. The unusually high biodiversity of macroinvertebrates found in Cobscook Bay has been known since the mid-1800s through the interests of fishery biologists and zoologists. Evidence that Cobscook Bay represents a biological hotspot in the Gulf of Maine for this faunal group was gathered through meta-analysis of macroinvertebrate biodiversity documented for bays in and outside of the Gulf of Maine. Comparisons of this type are constrained by differences in size, habitat, depth, sampling method, and sampling effort to name a few limitations. Given these caveats, the remarkably high biodiversity of Cobscook Bay stands out. Cobscook Bay has the highest species richness of macroinvertebrates among major bays in the Gulf of Maine, e.g., Penobscot, Sheepscot, and Casco Bays. Species richness remains highest among locations as different as eastern seaboard Chesapeake Bay and Gulf of Mexico Perido Bay. Species richness in the Canadian sub-Arctic is lower at several locations. Boreal East Atlantic sites in the UK have approximately the same or lower species richness. Some East Atlantic comparisons show notable resemblance to Cobscook Bay. For example, the macroinvertebrate fauna of Cobscook Bay is particularly similar to northern Norway and Spitsbergen. Over 50% of the species occurring in Cobscook Bay occur somewhere on the Norwegian coast. Glaciation followed by rapid geological events with subsequent hydrographic changes that lead to species invasions is one possible scenario which could account for the origin of this similarity. The Cobscook Bay biological hotspot is likely due to factors like habitat diversity, macrotidal amplitudes, and sea water temperature. The significance of this biological hotspot in the Quoddy Region needs to be recognized in an integrated management /ecosystem approach to management (IM/EAM) in the Gulf Maine.