Characterization of sound velocity structure of the Penobscot River in Spring and Fall 2017

Anthropogenic noise sources have been shown to cause damage in various trophic levels through stress and physical scarring on inner ear structures. The Penobscot River has been a major shipping channel for decades and is an important ecosystem for commercially harvested organisms. Average sound velocity was calculated based off of two sampling dates in the spring and fall of 2017 to display seasonal changes. Ray traces for each station in each season were created to show how the physical characteristics can alter the amplification of sound waves at the surface or benthos. In the spring, the sound waves tended to amplify at the surface, whereas the fall was split between being amplified at the surface and along the mixed layer. Eastern oyster larvae and the American lobster are two commercially important species that react negatively to anthropogenic noise. Habitat health is impacted by the success of these two populations and should be monitored on a long term basis to evaluate changes from the increasing vessel traffic.

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