Genetic Differentiation of Capelin (Mallotus villosus) in the Bering Strait and Southeast Alaska

Ward, Raven

The purpose of this study was to determine if there is a genetic difference in the two populations of Capelin (Mallotus villosus). The null hypothesis was that the two populations are not genetically different. Microsatellite DNA was extracted from each fish and analyzed on an ABI Genetic Analyzer. These data were read in Gene Mapper and input into Genepop so a Hardy-Weinberg and a G-test could be used to determine how different the two populations are. Given a significance threshold of p=0.05, the data suggested that the populations are indeed different since three of the four loci had a significant p-value. Capelin are a small, silvery species of fish that only breed in temperatures ranging from 5.5 °C to 8.5 °C and migrate elsewhere if the temperature is not in that range. Capelin are vital to the diet of many commonly eaten fish, certain whales, and sea birds that are the focus of many tours in Southeast Alaska. With climate change and the prospect of changing water temperatures in the future, it is possible that Capelin will migrate and their predators will follow. This would affect fishermen, tour companies, and citizens who enjoy the fish and whales. If my research was extended and two genetically distinct populations were found and identified, Capelin movement or loss of populations could be better detected in the future. Further research should focus on identifying the population structure of Capelin throughout Alaskan waters. This would be beneficial in understanding ocean dynamics in a changing environment.

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