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2023 AFSC Seminar Series

Susanne McDermott, AFSC Groundfish Assessment Program

Julie Nielsen, Kingfisher Marine Research

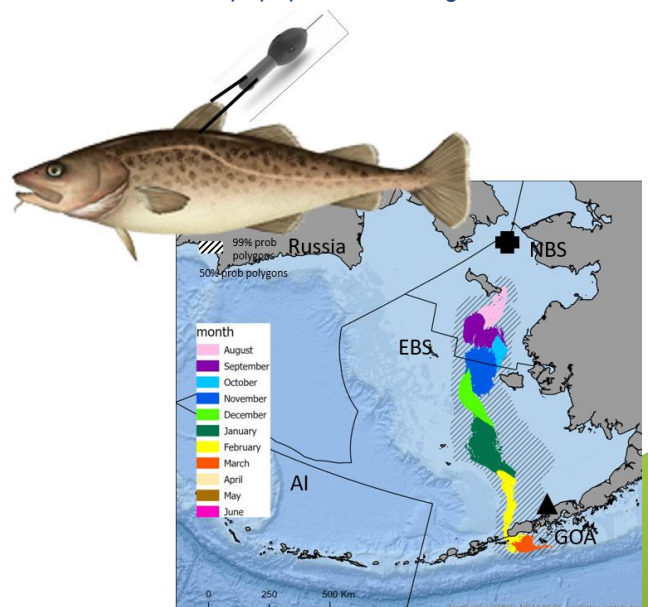
Tuesday, May 2nd @ 10 am Pacific

Examining distributional shifts of spawning and feeding migrations of Pacific cod in Alaska with Satellite popup tags



Pacific cod (*Gadus macrocephalus*) is a key component of the Eastern Bering Sea ecosystem. Warming in recent years has resulted in dramatic shifts in the distribution of Pacific cod in Alaskan waters. This research represents a collaborative effort between the Alaska Fisheries Science Center groundfish assessment program, Aleutian East Borough, Pacific cod harvesters, Norton Sound Economic Development Corporation and tribal partners. Particular concerns include a northward shift in distribution of Pacific cod from the Eastern Bering Sea to the Northern Bering Sea and seasonal movement between the Gulf of Alaska and Bering Sea management areas.

This study examines the changes in seasonal distribution patterns, specifically spawning and feeding migrations, with Satellite popup tags. These tags provide information on the location of the fish at time of popup as well as light, temperature, and depth data. We estimate movement paths with a hidden Markov model (HMM) that enables us to reconstruct the travel paths of individual fish and produce monthly maps of tagged cod distributions. Results from tags released in the summer in the Northern Bering Sea show that fish migrated south to spawn in previously observed spawning locations of the Eastern Bering Sea, suggesting that the Northern Bering Sea summer population is a northward expansion of Eastern Bering Sea and Gulf of Alaska Pacific cod stocks. Results from tags released in the winter in the Western Gulf of Alaska indicate that a high percentage may move north into the Bering Sea for the summer, with tagged fish migrating into the Northern Bering sea, Russia, and the Chukchi Sea during the summer months. These northward shifts in Pacific cod distribution and the seasonal movement across management boundaries pose challenges for stock assessment and results from this study have provided valuable information for spatial management of Pacific cod stocks.



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