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Assessing Prey Distribution: A Collaborative Acoustic Survey

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Pelagic forage fish species such as Atlantic herring are both ecologically and economically important in the Gulf of Maine. They are the keystone of the Maine lobster industry and are thought to have a strong effect on the distribution of predators such seabirds, mammals, and groundfish. Landings of herring in the Gulf of Maine from 1964-2011 have varied from roughly 45,000 to 450,000 metric tons and there are few consistent patterns in their offshore distribution. Little is known about the movement of individual stocks as there is evidence of mixing during all phases of their annual life cycle, except spawning. While the Northeast Fisheries Science Center (NEFSC) conducts an annual trawl and acoustic survey of the offshore herring complex, no survey consistently samples inshore spawning aggregations. In 2012, with the assistance of coastal fishermen, we designed parallel acoustics transects targeting likely spawning sites. Data was collected using hull-mounted transducers on 10 lobster boats sampling the entire coast of Maine. Having completed our fourth year of data collection, we present our survey design and discuss results reflecting the spatial distribution and relative biomass of the inshore herring spawning complex from 2012-2015. Following the success of this survey, we have expanded our efforts to a pilot study of Northern shrimp and will discuss potential future applications of this model to the study of prey species.

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