

Design and Implementation of a Platform for Offshore Rope-less Fishing Research in the Gulf of Maine

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We describe the design and construction of a rope-less system for offshore fishing in the Gulf of Maine, as a starting point for carrying out future research to make a system that may be practical for fishermen while reducing whale-rope interactions. Design specifications were derived from the Gulf of Maine offshore lobster fishery.

Rope-less fishing, in which the vertical lines used in fixed fishing gear are secured on the sea bottom until released for hauling, has long-been discussed within the Atlantic Large Whale Take Reduction Team (ALWTRT) as a potential approach for reducing NA Right whale entanglements.

Offshore lobster fishing in New England waters is a particular challenge for several reasons: heavy line is used to haul trawls of 20-50 traps, and deep water (up to 300 meters or more at the edge of continental shelf) with strong surface currents (around 1-2 knots, requiring typical scope of 2:1 or more near the Gulf Stream) require the system to have significant line capacity and buoyancy. Additional design considerations for a rope-less fishing system are that the gear handling be manageable and compatible with existing handling equipment typically found on offshore fishing vessels (pot haulers, winches, davits, etc.). Lastly, a rope-less fishing system cannot drastically impact the onsite time required to deploy and recover typical offshore trawls. Additional challenges frequently voiced by fishermen include high initial costs and the need to avoid more gear conflicts within and between fisheries in areas where they co-occur.

Several research prototypes were built to enable future research evaluations and deployments. The system is modular to allow for a quick reconfiguration of the at sea, or for testing different configurations. Each prototype platform consists a "line pack" flotation spool suitable for offshore fishing in 300 meters of water with 1-2 knots surface currents, a mechanical release, and release electronics. The electronics initially will use a timer-based release, but design provisions have been incorporated to allow future use of a low-power acoustic release trigger.