Cascade of events led to entanglement death

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From the fall of 1999 through the spring of 2000, a team of us from the Harvard School of Public Health interviewed over 100 Maine commercial lobstermen from Kittery to Spruce Head. We asked lobstermen if they had ever been caught in trap rope and we asked what strategies they used to prevent their sternmen and themselves from getting caught.

Our analysis showed that a significant number – 70% of those interviewed – had been seriously entangled to the point of losing a glove or a boot or of having an ankle, hand, or wrist caught in trap rope or of being pulled overboard.

The results of this study were developed into a poster that was mailed to all licensed lobstermen in Maine, given to the Coast Guard to distribute and discuss at dockside exams, and provided to a number of lobster co-ops along the coast.

Through discussions with lobstermen at the Maine Fishermen's Forum, the Rockland Lobster Festival, and at the Stonington Fishermen's Fun Day, it is clear that lobstermen are paying more attention to rope.

Some have installed rope lockers or bins. Many carry knives upside down on their oilskins now. And many have placed knives under the rail and at the transom where they can reach them in the event of an entanglement.

August fatality

It was with great sadness that we received word that James Tippett aboard the Virginia Ann out of Portsmouth, NH drowned on Aug. 9 after becoming entangled in trap rope during trap setting.

The vessel owner had warned Tippett to stay away from the rope. But after seven of 10 traps had been launched, the rope of the eighth trap caught his leg and pulled him out the open transom of the vessel and into the water.

In many incidents, it's not a single problem but a cascade of events that results in the injury, fatality, or other loss or damage.

Mark Haddon, an occupational health hazards expert, developed a matrix to use as a tool to study accidents, to pin-point vulnerable times and factors within a cascade of events leading to an accident, and to develop strategies for reducing the risk of similar accidents in the future.

The death of a fisherman results in great anguish for his family and for the vessel owner and his family. It is in the spirit of learning from the death of one fisherman in hopes of preventing the death of another that I present Haddon's matrix containing some of the factors that played a role in the cascade of events on the Virginia Ann (see figure at left).

Two major concepts surface here.

First, safety training and associated routine drills for both the owner and the sternman, as well as a dockside exam, would likely have made a major difference in the outcome of this event.

After training and the exam, the sternman and owner would probably have had a greater appreciation for the importance of wearing a personal flotation device (PFD), although, admittedly, it is well known in the industry that fishermen do not like wearing PFDs. Also, the owner would probably have responded quickly with the life ring.

Additionally, a method of reboarding the vessel – either a rope ladder, a built-in ladder, or large scuppers – could have been available.

Second, safe work practices would have called for knives to be taped on oilskins and mounted in various locations on the vessel, especially in this open-transom vessel.

The sternman might have better understood the need to stay out of the way of the running traps. Had a rope locker been a feature of the vessel, the opportunity for this type of incident would have been considerably reduced.

Haddon's Matrix: An Analysis of an Entanglement

Time Course	Agent	Human Factors	Environmental Factors
Pre-Event	Trap rope can entangle fishermen during setting of lobster traps.	Owner: no formal safety training, on-vessel emergency drills, or dockside exam; no PFD or knife worn. Owner warned sternman to stay away from rope. Sternman: no safety training or drills; little experience; no PFD or knife worn	10-trap trawl (lots of rope); open transom vessel; no USCG dockside exam requested; no re-boarding ladder (rope or metal) available; no knife available at transom.

FISH SAFE:

- Owners and sternmen: take a safety training course and hold drills.
- Schedule a dockside exam by the Coast Guard.
- Buy a Coast Guard–approved inflatable PFD and wear it.

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Event	Rope entangles sternman.	Sternman is pulled into the water, resurfaces, and calls for help.	Seven traps weigh-down the sternman; forward movement of the boat keeps the rope taut.
Post-Event (Response)		Owner cuts engine and pulls on rope; does not throw or is too busy to throw life ring. Owner is unable to affect a rescue. Sternman has no PFD or knife for self-rescue.	Cold water; vessel has no knives mounted near the transom and no reboarding ladder.

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