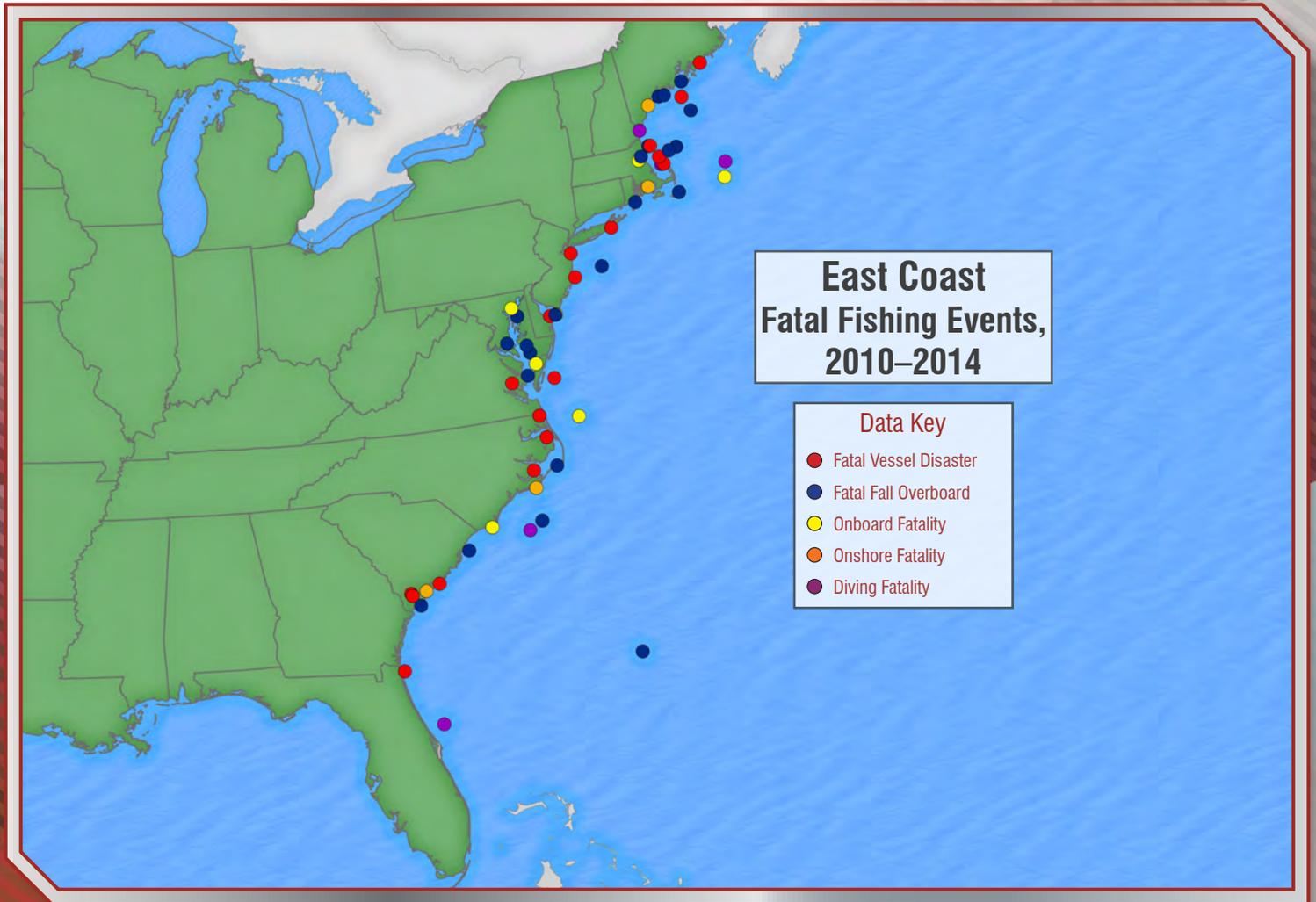


Commercial Fishing Fatality Summary

■ East Coast Region ■

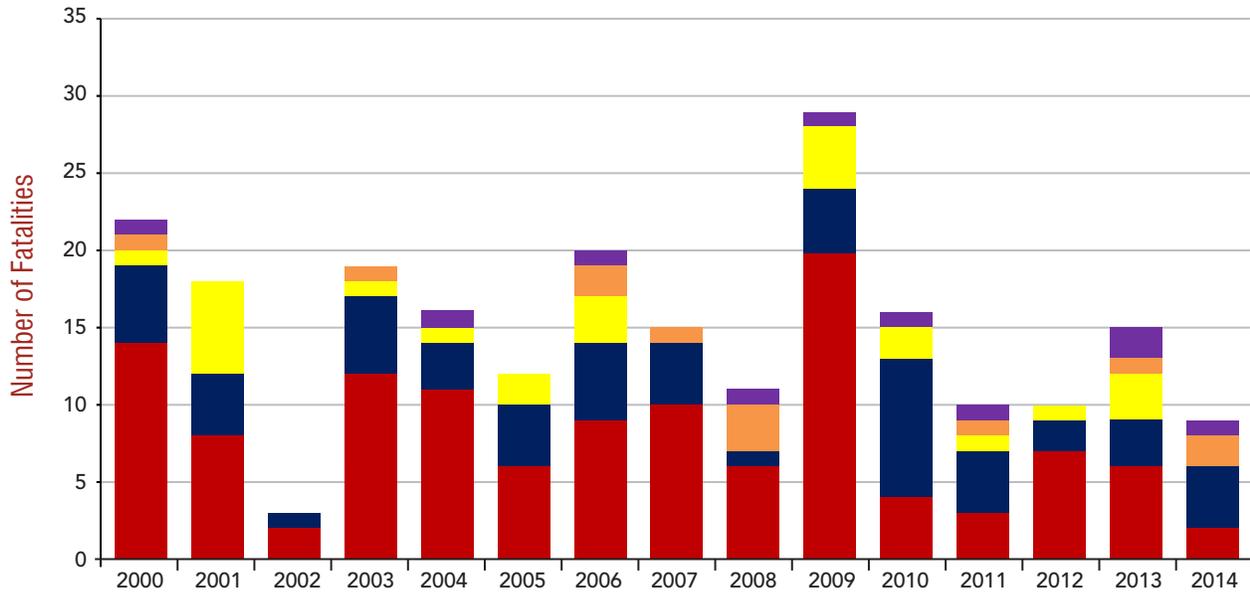


About this Report

The National Institute for Occupational Safety and Health (NIOSH) is the federal government agency responsible for conducting research and making recommendations for the prevention of work-related injury and illness. In 2010, NIOSH published an in-depth study of commercial fishing fatalities due to traumatic injury that occurred in the United States during 2000–2009. NIOSH recently completed a five-year update (2010–2014) to the previous study in order to identify current hazards among fisheries in different regions of the country: Alaska, West Coast, East Coast, and the Gulf of Mexico. This document is one in a set of four reports summarizing the most recent fatality and vessel disaster data for US fishing regions.

Data Key	
■	Fatal Vessel Disaster
■	Fatal Fall Overboard
■	Onboard Fatality
■	Onshore Fatality
■	Diving Fatality

Figure 1 Commercial Fishing Fatalities by Year and Incident Type, East Coast, 2000–2014 (225 Total)



During the 15-year period 2000–2014, 225 commercial fishing deaths occurred in East Coast fisheries, averaging 15 fatalities annually (Figure 1). During the first decade (2000–2009), 165 fatalities occurred, for an average of nearly 17 deaths per year. For the most recent five year period (2010–2014), 60 fatalities were recorded, averaging 12 fatalities annually. During 2000–2009, the majority of fatalities in the region were caused by vessel disasters; however, during 2010–2014, vessel disasters and falls overboard resulted in the same number of deaths on the East Coast.

Vessel disasters accounted for 37% of all deaths during 2010–2014 (Figure 2). Vessel disasters are sinkings, capsizings, groundings, fires, or other events that force crews to abandon ship. Drowning following a fall overboard caused the same number of fatalities as vessel disasters (22). Of the seven crewmembers who died from injuries sustained onboard vessels, two were due to unintentional drug overdoses and one was a suicide. The remaining onboard fatalities involved two crewmembers becoming entangled in equipment, one being struck by equipment, and one who suffered multiple fatal injuries after his vessel collided with a channel marker. Five crewmembers died from injuries sustained while diving. Lastly, four fishing fatalities resulted from onshore injuries, including two falls from docks and two drownings while hand harvesting.

Figure 2 Commercial Fishing Fatalities by Incident Type, East Coast, 2010–2014 (60 Total)

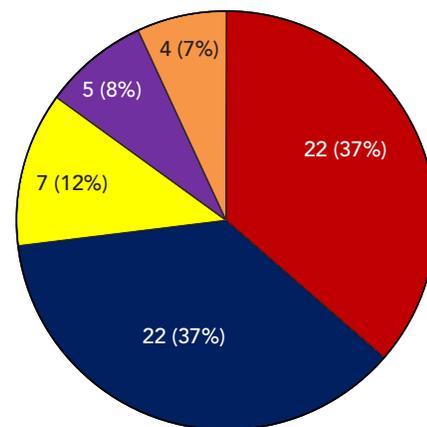
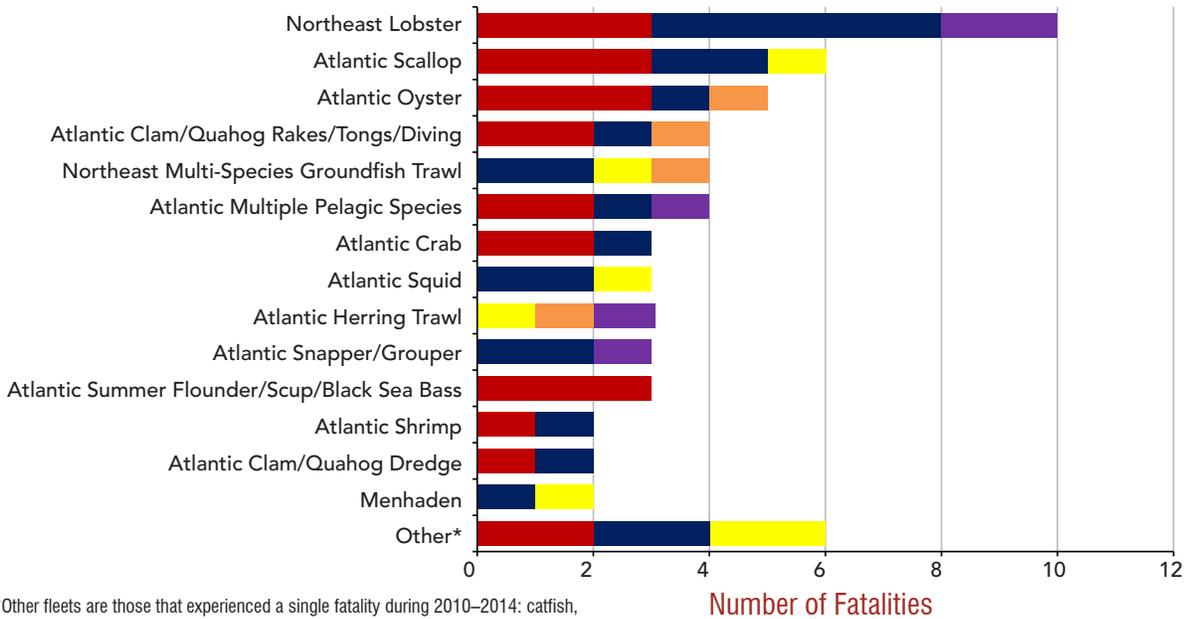


Figure 3

Commercial Fishing Fatalities by Fleet, East Coast, 2010–2014 (60 Total)

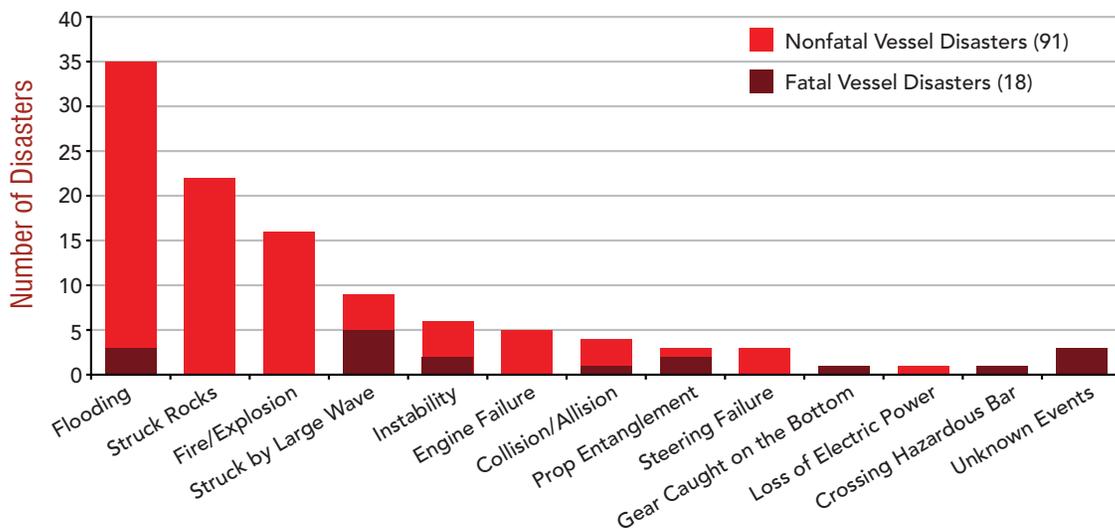


*Other fleets are those that experienced a single fatality during 2010–2014: catfish, other groundfish, striped bass, swordfish, yellow perch, and an unknown fleet.

Fatalities occurred in 19 different known fisheries along the East Coast, with five contributing to almost half (48%) of the deaths (Figure 3). The lobster fishery had the highest number of fatalities with more deaths caused by falls overboard (5, 50%) than vessel disasters (3, 30%). There were also two deaths that occurred when divers were checking traps and lines. The second highest number of fatalities occurred in the scallop fishery, with three deaths caused by two vessel disasters, two deaths caused by falls overboard, and one death caused by an onboard injury.

Figure 4

Causes of Vessel Disasters, East Coast, 2010–2014 (109 Total)



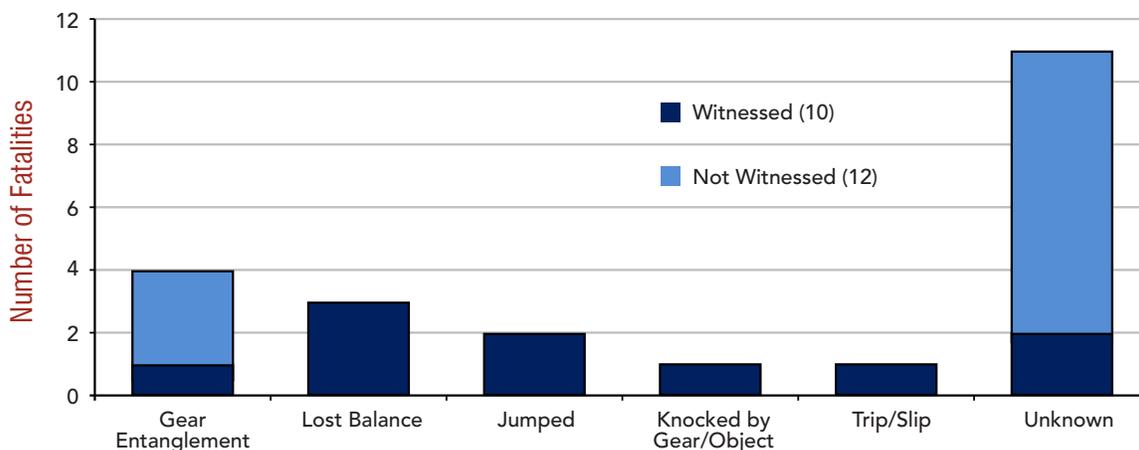
Vessel disasters were a leading cause of commercial fishing fatalities during 2010–2014. A total of 109 vessel disasters occurred on the East Coast during this time period (Figure 4), placing 242 crewmembers at risk of immersion and death. While 91% of the crewmembers involved in vessel disasters survived, 18 disasters resulted in 22 fatalities. The leading causes of fatal events were being struck by large waves and flooding, while the leading causes for nonfatal events were flooding and striking rocks.

Vessel disasters and falls overboard resulted in the same number of fatalities on the East Coast during 2010–2014



Figure 5

Causes of Fatal Falls Overboard, East Coast, 2010–2014 (22 Total)



During 2010–2014, 22 crewmembers died from drowning after falling overboard, contributing to 37% of fatalities in the region (Figure 5). None of the fishermen were wearing a personal flotation device (PFD) when they drowned. In 12 (55%) of these cases, the falls overboard were not witnessed, either because the fishermen were alone on the vessel (7) or alone on deck (5). Of the falls overboard for which causes were known, four (36%) were caused by gear entanglements.

Conclusions

Compared to 2000–2009, fishing fleets operating on the East Coast during 2010–2014 had a lower percentage of fatalities caused by vessel disasters. However, many crewmembers were at serious risk of injury, immersion, and death. While there are regulations in place that mandate survival equipment to be carried onboard commercial fishing vessels such as life rafts, EPIRBS, and immersion suits, fishermen should practice using the equipment by attending marine safety training and conducting regular emergency drills. Efforts to prevent hazards leading to vessel disasters such as vessel instability, collisions, flooding, and snagging gear on the ocean floor should be continued.

Conversely, the proportion of deaths due to falls overboard increased during 2010–2014. Since none of the fishermen were wearing a PFD when they fell overboard and drowned, increasing their use when on deck should be a priority. Gear entanglements are still a concern and prevention strategies, such as the use of line bins and rope lockers, should be more widely adopted and evaluated for effectiveness. Man-overboard alarms and reboarding ladders should be used to help in the event a fall overboard occurs, particularly when fishermen are working alone.



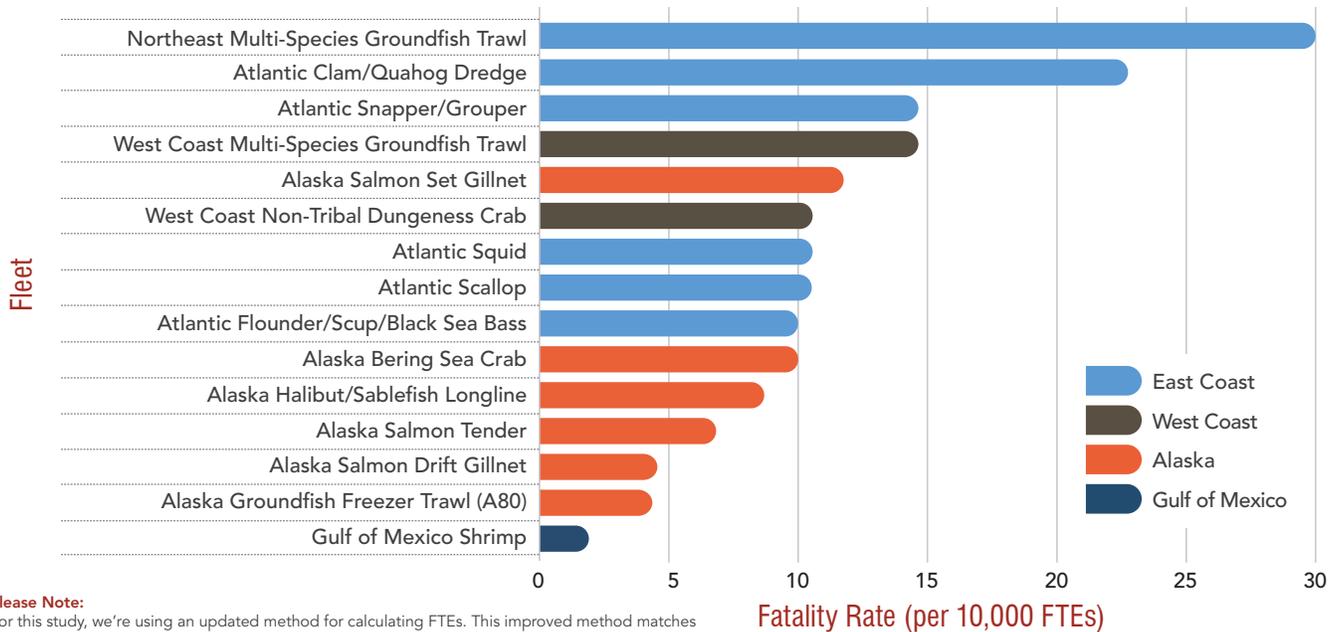
**Safety training for fishermen
is available, affordable,
and saves lives**

Comparing risk between fleets

Commercial fishing fleets have different numbers of vessels, fishermen, and season lengths. Because of these operating differences, we cannot simply use the number of fatalities in each fleet to compare their risk for fatalities. Instead, we calculate fatality rates to measure risk. Risk is the probability of a fatality occurring.

Figure 6

US Fatality Rates by Fleet, 2005–2014



Please Note:

For this study, we're using an updated method for calculating FTEs. This improved method matches what is used by other agencies and academic institutions, and allows the fatality rates to be compared to other occupations. As a result of the change in our calculation methods, the fishing fatality rates published in this report cannot be compared to rates published in previous NIOSH studies.

Fatality rates were calculated for fleets that experienced five or more fatalities during a 10-year period (2005–2014) and where workforce estimates were available (Figure 6). During this period, the highest fatality rate on the East Coast – and nationally – was found in the Northeast multi-species groundfish trawl fleet (among fleets where fatality rates were calculated). During 2005–2014, no overall trends in rates were observed in most East Coast fleets; however, the Atlantic scallop fleet did experience a significant decrease in both the number and rate of crewmember fatalities.

Why use a fatality rate?

To determine the risk of fatalities in different fleets, we need to consider the number of vessels in the fleet, number of fishermen, and the length of time that they spend working and exposed to potential hazards. By calculating rates, we can take into account the total number of hours worked in each fleet. The results of these rate calculations answer the question: *“How many fatalities would have occurred in these fleets if they all had 10,000 fishermen working regular 40-hour weeks throughout the year?”* Fleets with higher fatality rates are more dangerous than fleets with lower fatality rates.

How do we calculate a fatality rate?

We know how many fatalities occurred in each fleet, based on our data collection from US Coast Guard investigation reports and documents from various agencies. For many of the fleets around the US, we also know how many vessels, crewmembers, and operating days are in the fleet each year. This information is used to estimate “full-time equivalent” fishermen (FTEs).

Here’s how we calculate FTEs:

$$\frac{\# \text{ Vessels} \times \# \text{ Crew per Vessel} \times \# \text{ Operating Days} \times 24 \text{ Hours}}{2,000 \text{ Hours (standard 40-hour work week for the year)}} = \# \text{ of FTEs}$$

Here’s how we use FTEs to calculate a fatality rate:

$$\frac{\# \text{ Fatalities}}{\# \text{ of FTEs}} \times 10,000 = \# \text{ of Fatalities per 10,000 FTEs}$$

Recommendations

Vessel Disasters

- **Take a marine safety class at least every five years.** Safety training for fishermen is available, affordable, and saves lives. All fishermen should learn and know how to use basic lifesaving equipment like immersion suits, life rafts, EPIRBs, and fire extinguishers to improve their chances of survival in an emergency.
- **Conduct monthly drills for abandon ship, fire, and flooding.** The practical knowledge learned in safety training should be applied each month during drills, allowing fishermen to reinforce the skills needed in an emergency.
- **Ensure watertight integrity of the vessel.** The hull and through-hull penetrations should be regularly inspected and maintained. Doors and hatches should remain closed while underway, especially in rough seas. Maintain and test high water alarms before each trip.
- **Maintain proper watch.** Vessel owners and operators should create fatigue management policies and use watch alarms to prevent groundings and collisions.
- **Conduct man-overboard drills monthly.** Recovery procedures should be practiced regularly to ensure all crewmembers are prepared to respond to a fall overboard.
- **Use engineering controls to prevent gear entanglement.** Install fairleads, line bins, and/or line lockers to ensure the deck is free of loose lines that could potentially ensnare a crewmember and drag him overboard. More information regarding entanglement in the lobster fishery can be found at: cdc.gov/niosh/docs/wp-solutions/2005-137/default.html

Onboard Fatalities

- **Install safety devices on deck machinery.** Emergency-stop buttons have been developed specifically for deck machinery on fishing vessels and can be adapted and retrofitted onto winches or other machinery. Stationary guarding and auxiliary-stops are also being tested. More information about engineering solutions for fishing vessels can be found at: cdc.gov/niosh/topics/fishing/engineering/

Falls Overboard

- **Wear a PFD on deck.** Nationwide, none of the fishermen who died from falling overboard were wearing a PFD when they drowned. PFDs can keep fishermen afloat, giving the crew time for rescue.
- **Use a man-overboard alarm system.** Many falls overboard are not witnessed, delaying recovery time and reducing chances of survival. A man-overboard system will alert the crew that a fall overboard occurred, and a device with GPS capabilities can signal the fisherman's location to assist in search and recovery efforts.
- **Add effective recovery devices and re-boarding ladders.** A rescue sling or similar device is more effective than a life ring for bringing a crewmember back on the vessel. If someone fishes alone, a plan should be in place for them to re-board their vessel unassisted after a fall.

Diving Fatalities

- **Dive with an experienced, alert tender.** Be familiar with vessel operations, safety equipment, and procedures for both vessel and dive emergencies. Be alert and focused while the diver is in the water.
- **Be prepared for a dive emergency.** Be prepared to administer first aid, including the use of an oxygen delivery system.
- **Maintain diving equipment.** Ensure that compressors and other equipment used in diving operations are in good working condition.

National Institute for Occupational Safety and Health Commercial Fishing Safety Research and Design Program

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