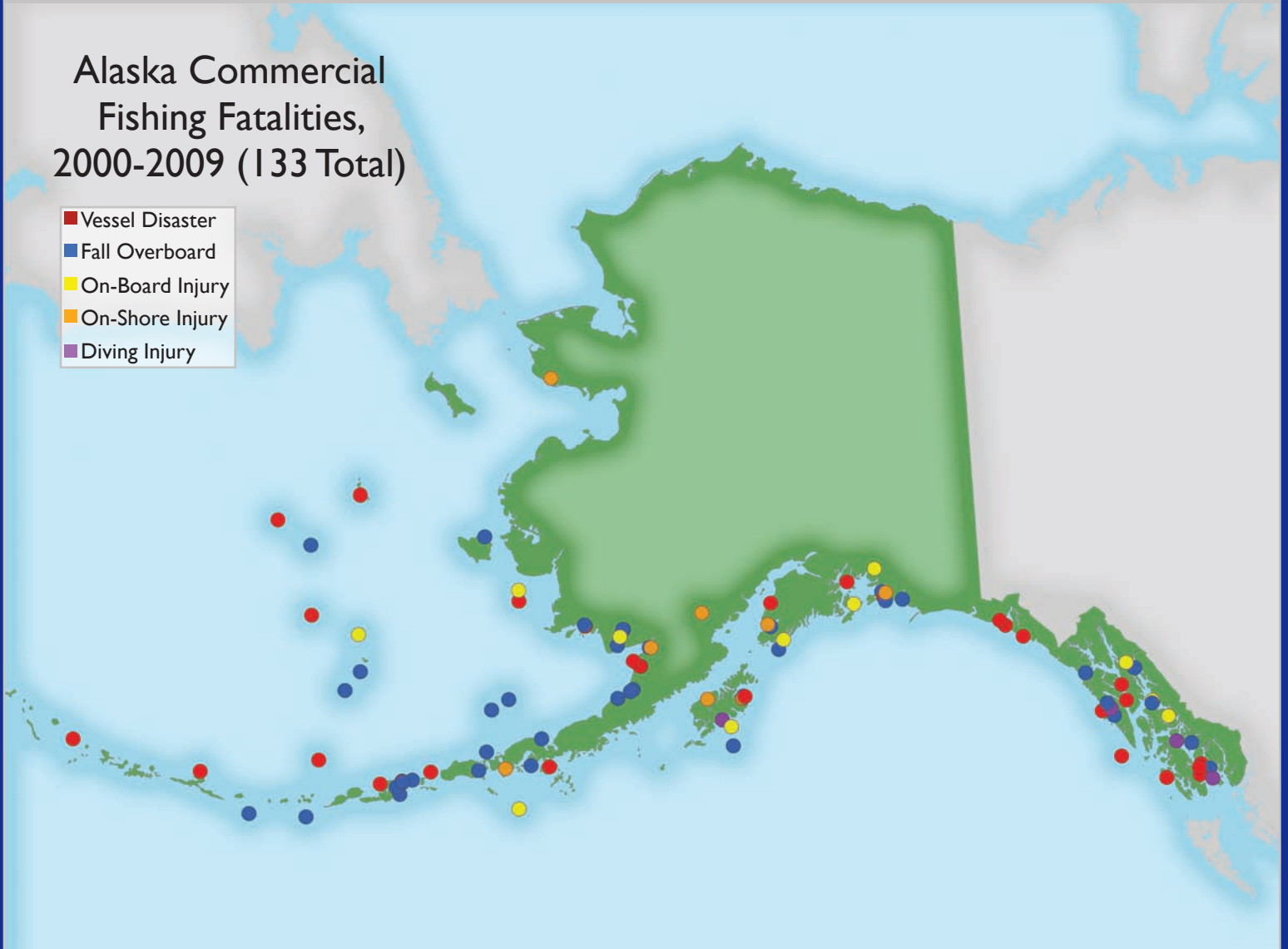


Fatal Occupational Injuries in the U.S. Commercial Fishing Industry: *Risk Factors and Recommendations* Alaska Region

Alaska Commercial
Fishing Fatalities,
2000-2009 (133 Total)

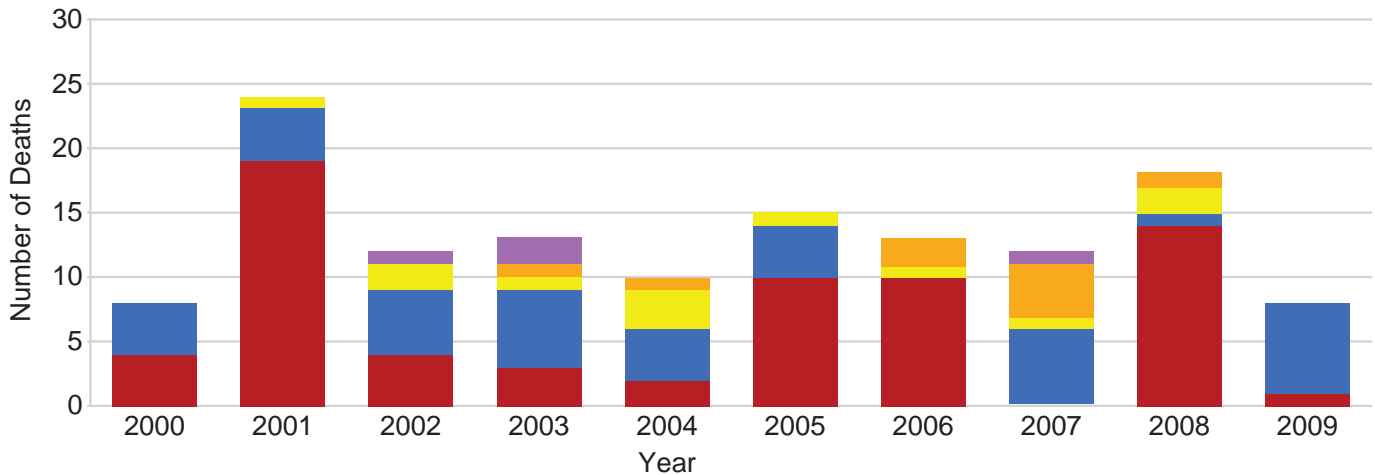
- Vessel Disaster
- Fall Overboard
- On-Board Injury
- On-Shore Injury
- Diving Injury



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. NIOSH recently completed an in-depth study of commercial fishing fatalities in the United States during 2000-2009. The purpose of the study was to identify the most hazardous fisheries around the country and to describe the unique safety issues in each. For this study the US was divided into four fishing regions: Alaska, West Coast, East Coast, and the Gulf of Mexico. This document is one in a set of four reports summarizing fatality data for US fishing regions.

Alaska Commercial Fishing Fatalities by Year and Incident Type (133 Total) *Figure 1*



During the decade of 2000-2009, 133 commercial fishermen died while working in Alaskan waters. The fewest fatalities occurred in 2000 and 2009, with eight occupational deaths in each of those years. In 2001, 24 fishermen died on the job, including 15 in a single vessel disaster (Fig. 1). On average for the decade, 13 fishermen were killed per year. Half of the deaths were caused by drowning following vessel disasters (e.g. sinking, capsizing, fire, etc) in which the crew was forced to abandon ship (Fig. 2). Another 31% of fatalities were the result of falls overboard. The 12 fatal injuries sustained on-board were the result of being struck by gear (4, 33%), falling from height (3, 25%), getting caught in a deck winch (2, 17%), asphyxiation in a confined space (2, 17%), and a drug overdose (1, 8%).

Although vessel disasters contributed to the most fatalities during the decade as a whole, the incidents types varied from year to year. For example, in 2001 79% of fatalities resulted from vessel disasters, but in 2007 there were none related to a vessel disaster. In 2006 there were no fatal falls overboard, but in 2009 88% of deaths were caused by falls overboard.

Five fisheries contributed to 80% of fatalities in Alaska during 2000-2009 (Fig. 3). Fisheries with fewer than five deaths included black cod (Sablefish), sea cucumber, shrimp, herring, pollock, and others. The salmon fishery experienced the most occupational deaths with 39 fatalities. Falls overboard caused the most deaths among salmon fishermen (17, 44%). Almost all (13, 76%) occurred on drift-gillnet vessels and were usually the result of a trip or slip. Most (13, 76%) were not witnessed. Vessel disasters contributed to 33% of deaths in the salmon fishery. Most of these vessel disasters (8, 62%) occurred on set-net skiffs and were almost always (6, 75%) swamped and capsized in poor sea conditions. The cod and sole fisheries experienced the next highest number of fatalities during this time period (26 and 21 respectively). These fatalities occurred most often after a vessel disaster with multiple lives lost in each event.



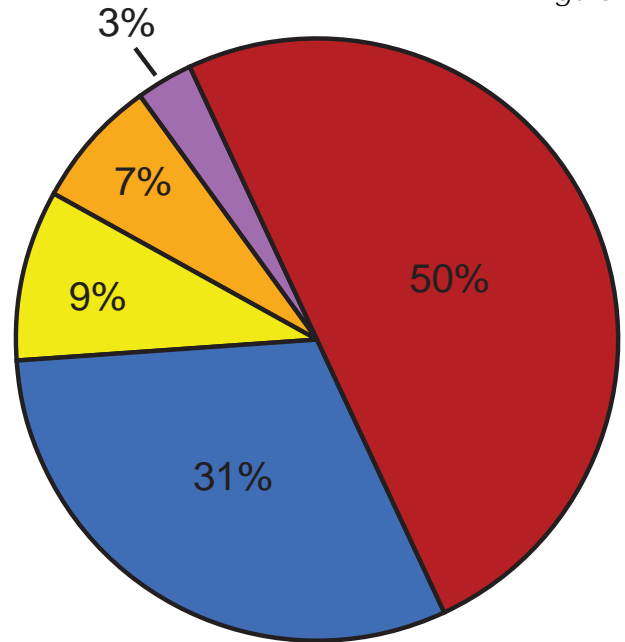
Although the salmon fishery experienced the highest number of fatalities, it was not the highest risk fishery in terms of the fatality rate. The fatality rate accounts for the number of workers and exposure time on the water, and provides a way to compare risk using a common denominator (Table 1). While the Bering Sea crab fishery has seen major safety improvements since 1999, during 2000-2009 it was still a high risk fishery in Alaska.

Vessel disasters often result in multiple fatalities. The 67 deaths due to vessel disasters during 2000-2009 took place in 30 separate incidents (Fig. 4). Vessel disasters were usually caused by a sequence of events, starting with an initiating event. The most common initiating events were: being struck by a large wave, operating with compromised vessel stability, and flooding. Severe weather conditions contributed to 67% of vessel disasters.

Falls overboard accounted for 31% of all fatalities in the Alaska commercial fishing industry during 2000-2009. Falls overboard were caused most often by tripping or slipping on deck (29%), losing balance (22%), and gear entanglement (15%) (Fig. 5). Factors that contributed to falls overboard were: working alone on deck (61%), using alcohol (24%), and poor weather conditions (15%). None of the victims of falls overboard were wearing a Personal Flotation Device (PFD).

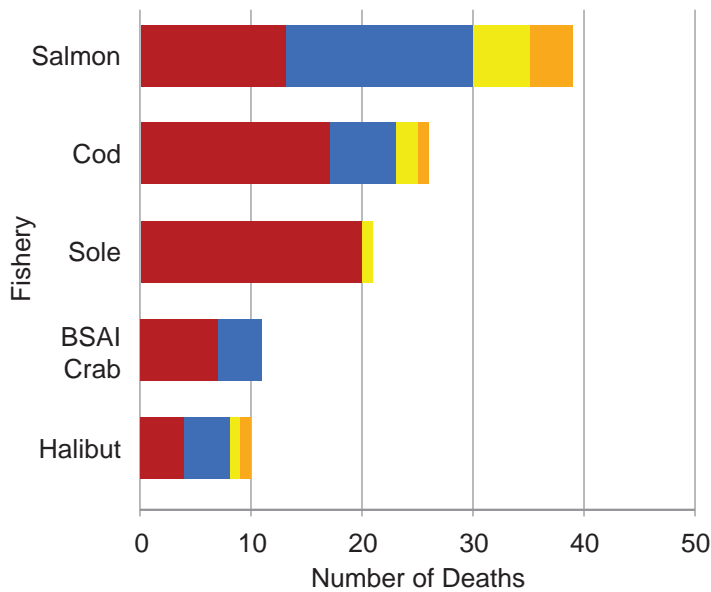
Alaska Commercial Fishing Fatalities by Incident Type (133 Total)

Figure 2



Alaska Fisheries with Five or More Fatalities During 2000-2009 (107 Total)

Figure 3



Commercial Fishing Fatality Rates for Full-time Equivalent (FTE) Workers, Alaska, 2000-2009

Table 1

Fishery	Fatalities	FTEs	Annual rate per 100,000 FTEs*
Bering Sea Aleutian Island Freezer Trawl	22	6,489	340
Bering Sea Crab	12	4,658	260
Alaska Halibut	10	7,519	130
Alaska Salmon	39	34,287	115

* Rates were calculated by dividing the total number of fatalities for the 10 year period by the total annual FTE.

Conclusions

The Coast Guard has developed tailored prevention programs for specific fisheries in Alaska that mitigate hazards found in high risk fisheries such as the Bering Sea crab fleet, as well as the Bering Sea Aleutian Island trawl fleet that fishes for sole and cod. As a result of these efforts, the fatality rate in the Bering Sea crab fisheries declined by 60% during 1990-2009. This improvement was due to the implementation of a preseason dockside enforcement effort developed by the Coast Guard in concert with vessel operators. Additionally, in 2005 the largest crab fisheries underwent changes in the way they were executed. The previous "race to fish" was "rationalized" meaning that each vessel was awarded the rights to catch a certain amount of crab. This change resulted in a slower paced fishery and a consolidation of the fleet. A different Coast Guard program known

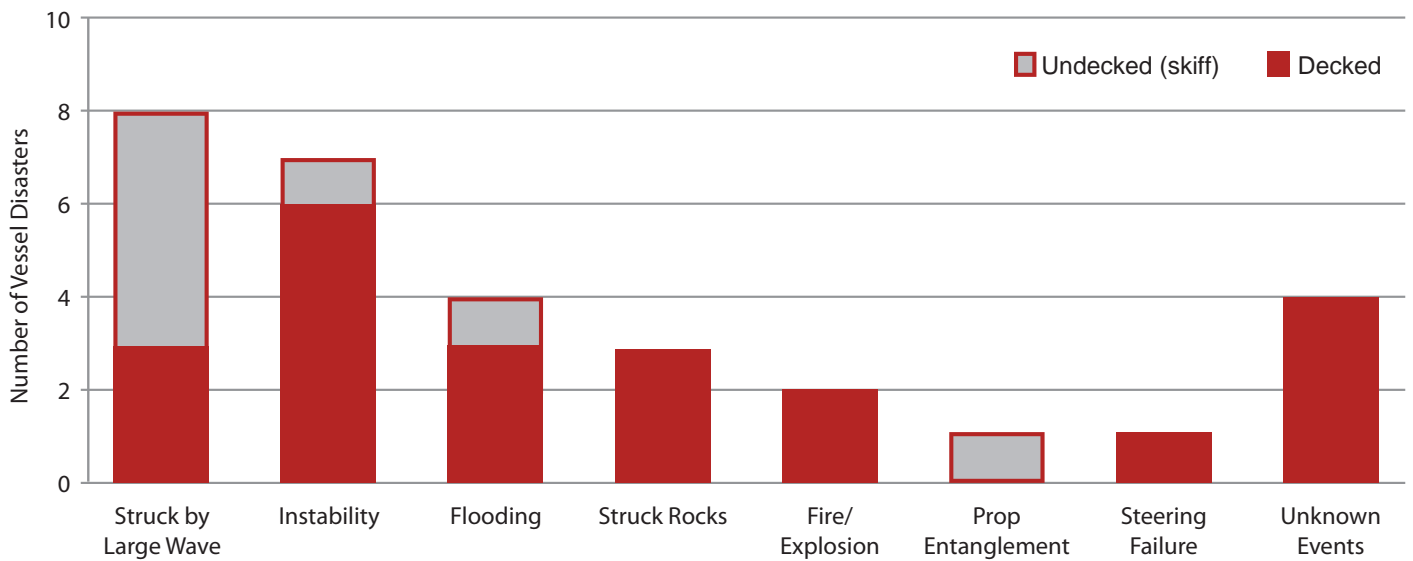
Data Key

- Vessel Disaster
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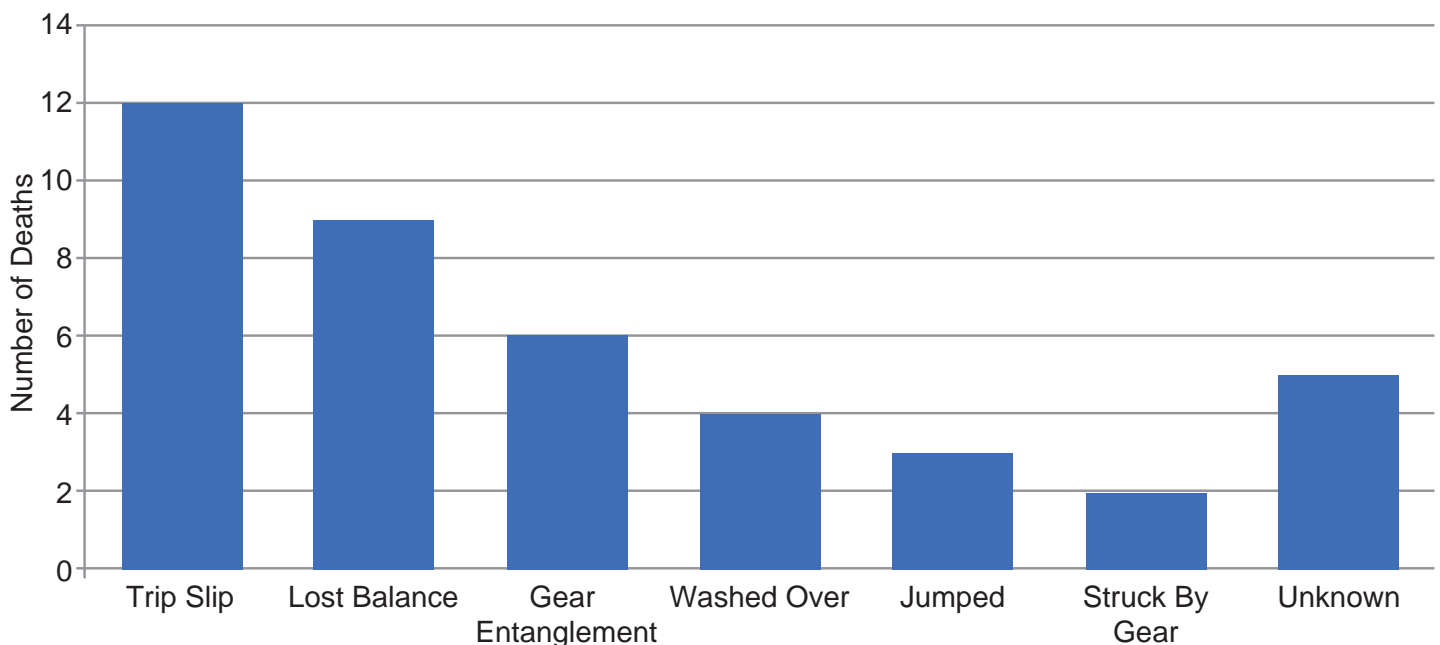
as the Alternate Compliance Safety Agreement (ACSA) focused on the Bering Sea Aleutian Island trawl fleet that fish for cod and sole. ACSA required vessel inspections to improve hull and material condition of the vessel, updated vessel stability guidance, additional lifesaving and fire fighting capabilities, and demonstration of emergency drills by the crew.

The salmon fishery in Alaska claims the highest number of lives. While not the highest risk fishery in the State (assessed by the fatality rate), there are clearly safety problems which need to be addressed. Priority should be given to the specific areas contributing to the most deaths. This report identified falls overboard on drift-gillnet vessels and swamping/capsizing of set-gillnet skiffs as the problems of greatest concern. To reduce fatalities due to falls overboard on drift-gillnet vessels, fishermen should wear a PFD on deck, utilize a man-overboard alarm system, and have procedures and equipment in place to recover a man-overboard. To prevent deaths on set-gillnet skiffs due to swamping and capsizing in adverse sea conditions, fishermen should wear a PFD in the skiff, especially in bad weather. Avoid going out in sea conditions that exceed the safe operating limits of the skiff. Finally, have emergency communications equipment on-board to call for help.

Initiating Events Contributing to Fatal Vessel Disasters, Alaska, 2000-2009 (30 Disasters with 67 Deaths) *Figure 4*



Causes of Fatal Falls Overboard, Alaska, 2000-2009 (41 Total) *Figure 5*



RECOMMENDATIONS

Vessel Disasters

Take a marine safety class at least once every 5 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.

Do monthly drills: Abandon ship, Flooding, Fire - Safety training equips fishermen with survival skills and knowledge. Monthly drills give fishermen an opportunity to practice and re-enforce those skills.

Test immersion suit for leaks - When watertight, immersion suits provide thermal protection and flotation in cold water. If an immersion suit has leaks, it will provide less protection from cold water. Instructions for inflation testing immersion suits are available at www.amsea.org.

Heed weather forecasts and avoid fishing in severe sea conditions - Make the decision to stay in port when the seas are too rough for your vessel to operate in. Keep track of forecasts and seek shelter before the storm arrives or intensifies beyond the safe operating limits of your vessel.

Maintain watertight integrity - Inspect and maintain the hull of your vessel and all through-hull fittings. When seas are rough, ensure that watertight doors and hatches are sealed. Inspect and test high water alarms regularly.

Falls Overboard

Wear a PFD on deck - Falls overboard occur without warning or time to prepare. A PFD stowed away onboard will not help float a fisherman who has fallen overboard. Wearing a PFD on deck is the single most important thing a fisherman can do to increase survivability following a fall overboard. There are many new styles of PFDs which have been evaluated by fishermen in real working conditions and are comfortable to work in on deck. Results of the NIOSH PFD study are available at www.cdc.gov/niosh/topics/fishing.

Utilize a man overboard alarm system - Man overboard alarms are devices which alert others instantly to a fall overboard emergency, even if the fall was not witnessed. Systems vary in features and cost, but even the most inexpensive and basic system can save lives by immediately sounding an alarm if a fisherman falls overboard. Some of these systems can also benefit fishermen who work alone on small vessels by shutting down the engine if the sole operator falls overboard. This gives the fisherman, especially one prepared by wearing a PFD, a chance to get back to the vessel and re-board it.

Conduct monthly man-overboard drills - If you fell overboard, would you want it to be the first time your crewmates tried to recover a man-overboard? Practicing man-overboard recovery procedures is essential for a crew to perform well in an actual emergency.

On-Board Injuries

Install emergency stop (e-stop) devices on deck machinery - Deck machinery, especially deck winches, are particularly hazardous and result in many fatal and non-fatal injuries. Emergency-stop buttons have been developed specifically for deck machinery on fishing vessels and can be adapted and retrofitted onto any winch or other machinery. More information about e-stops for fishing vessels can be found at www.cdc.gov/niosh/topics/fishing.



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Department of Health and Human Services
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health
DHHS (NIOSH) Publication Number: 2011-103
November 2010