Are Canadian Small-Scale Fisheries Too Small to Ignore? A Risk-Based Occupational Health & Safety Perspective

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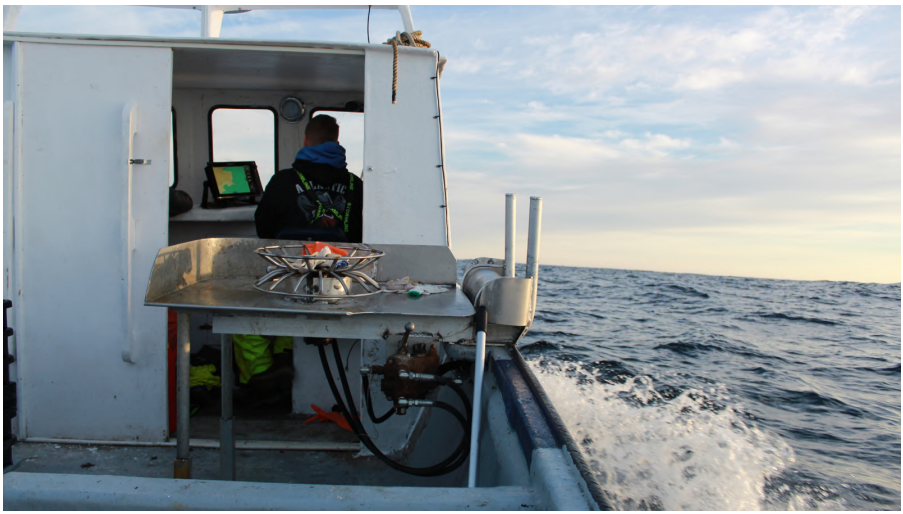

Figure 1. Are Canadian small-scale fisheries too small to ignore the Occupational Health & Safety (OHS) of their workers? Photo credit: M. Lorenzi.

Abstract

Canadian small-scale fisheries involve hazardous work that can lead to illness, injuries, and even fatalities of the people working in this sector. These businesses are considered small, as small-scale fisheries bring less capital, use low-technology fishing equipment and tools, and are livelihood sources for small communities. Are Canadian small-scale fisheries *too small* to ignore the Occupational Health and Safety (OHS) of their workers? This chapter uses a risk-based approach to answer this question and identifies risk factors that affect OHS in Canadian small-scale fisheries. The findings include operational, technological, biophysical, and environmental risks associated with Canadian small-scale fisheries. Working in harsh weather, lack of training, sophisticated equipment design, and long work hours pose additional risks to workers' health and safety. In this chapter, we situate our safety recommendations in the current governance framework of Canadian small-scale fisheries and identify potential gaps that need immediate attention.

Introduction

"*I didn't want to marry a fisherman at all.*"— Marilyn D'Entremont.

This is the statement of the widow of Canadian fisherman Lewis D'Entremont, who left his welding profession to join Canada's deadliest profession, commercial fishing. In 2004, Lewis was knocked overboard into the dark water and was pronounced dead due to traumatic injuries at work. In his memory, Lewis D'Entremont's name was written on a memorial for those 'Lost to the Sea', located in Yarmouth, Nova Scotia. While it is a sad story, more tragic is that this memorial bears the names of more than 2,500 residents of Yarmouth County who lost their lives while working in Canadian waters, and many names are unknown. Even more tragic is that the safety of fishers working at sea has not improved much in the ensuing years. The families of the deceased are left to deal with the lack of safety for workers associated with small-scale fisheries businesses and would like to see improvements.

For example, 15 years after the death of her husband, Marilyn D'Entremont, in an interview with CBC, highlights there is still a lot to do to ensure the safety of fishers doing business on a small scale (CBC 2019).

Before jumping into OHS, defining what small-scale fisheries mean is essential. No single definition can capture the complete characteristics of small-scale fisheries because small-scale fisheries are much more diverse and involve complex fisheries businesses. The Food and Agriculture Organization of the United Nations has provided a much more varied definition for small-scale fisheries. It states that "*Artisanal, or small-scale fisheries, are traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amounts of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, and mainly for local consumption. They can be for subsistence or commercial*" (FAO 2015). Irrespective of a precise definition of small-scale fisheries, their operations involve people and the occupational health and safety (OHS) of fishers and fish workers. Our focus in this chapter will be on discussing operational risks, challenges, and lack of governance systems in Canadian small-scale fisheries and how we can improve the current governance system to improve the safety of workers associated with Canadian small-scale fisheries.

The sad deaths of 2,500 residents of Yarmouth County working in small-scale fisheries and many other workers across Canada raise an obvious question: are Canadian small-scale fisheries *too small* to ignore OHS issues in this profession? What are potential recommendations that can help to improve the current governance system in Canadian small-scale fisheries to ensure the safety of workers? Various risk factors affect the safety of Canadian small-scale fisheries and demand intervention by providing an improved governance system. However, these risk factors have not been well presented in the governance system. Furthermore, understanding OHS risks in small-scale fisheries needs more intensive research in the scientific community. OHS risks in Canadian small-scale fisheries lead to questions of mitigation. What risks affect small-scale fisheries in Canada, and how could such be mitigated? What roles are the Canadian regulatory bodies and policymakers playing, and what more can be done? This chapter discusses

these questions and attempts to answer them through a risk-based approach. The risk-based approach in this chapter is based on identifying the qualitative nature of OHS risks in Canadian small-scale fisheries, which can potentially cause workplace injuries and deaths.

This chapter is arranged into the following sections: Section 1 critically analyzes the safety of Canadian small-scale fisheries. Section 2 provides information on some of the key operational risks in this profession. Finally, Section 3 provides recommendations for the current Canadian small-scale fisheries governance framework.

1. How Safe are Canadian Small-Scale Fisheries?

Despite OHS improvements in many other industries and businesses in Canada, fishing is still among the most dangerous professions (Lough 2018). There are 0.831 fatalities per 1000 persons in Canadian fish harvesting annually, nearly 19 times higher than any other profession in Canada (Rezaee et al. 2017). Regulatory bodies and policymakers in Canada are pressured to address OHS issues that have become too common, where generations of fishers have gone out into Canadian waters. Many have not returned home safely, sometimes more than one family member perishing in each family. Irrespective of safety advancements in Canadian small-scale fisheries, on-the-job injuries and fatalities are occurring with alarming frequency across Canada and throughout the small-scale fisheries industry.

An analysis of fatality data from the Association of Workers' Compensation Board of Canada (AWCBC) is presented in Figure 1. The data in Figure 1 is the latest data available when writing this book chapter. It indicates that among 21 professions in Canada, agriculture, forestry, fishing, and hunting involve the highest fatalities. The extent of the risks in these sectors can be gleaned from the fact that there are more fatalities reported in these professions in Canada than in mining and oil and gas exploration, which are considered precarious jobs. It is worth mentioning here that human fatalities data in Fig. 1 are adopted from AWCBC, which may be undercounted. This undercounting is because not all small-scale fisheriess are part of Canada's

workers' compensation system; primarily, self-employed Canadian fishers are not included in this data.

Moreover, there are workers' compensation exemptions in some provinces, such as Prince Edward Island and New Brunswick, which means the human fatalities in Canadian small-scale fisheries may be more represented in Figure 1.

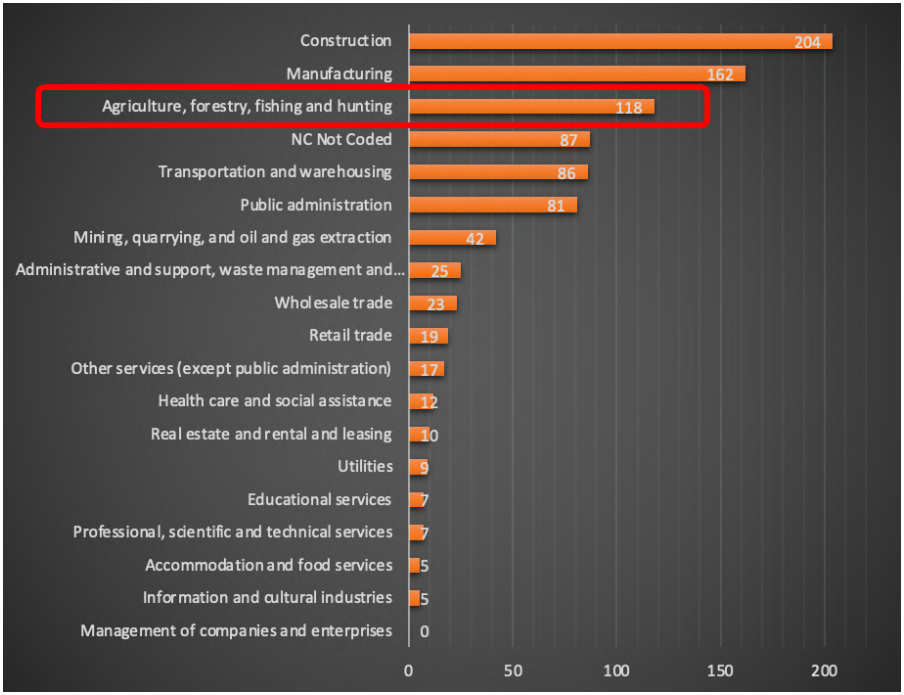

Figure 1. Fatalities in Canadian occupations in 2019. This figure does not present an occupation with values of 3 or less—data adapted from the Association of Workers' Compensation Board of Canada (AWCBC 2023).

2. Operational Risks in Canadian Small-Scale Fisheries and OHS

Various risk factors contribute to the dangerous working conditions in Canadian small-scale fisheries, resulting in injuries and even fatalities. Injuries could be skin allergies, bites, poison, and back pain due to lifting heavy equipment for a long time and sometimes working in a remote and harsh environment (Windle et al. 2006). In terms of the working environment, these risk factors may include unstable vessels and unpredictable and hostile working environments (Saldanha et al. 2020). In terms of work activities, 'highly repetitive' ones and 'poor work postures' in fishing cause the development of shoulders injuries in workers (Bernard et al. 1997). Other factors such as weather (state of atmosphere and air at a particular time and place), seasons (when temperature almost remains the same for several days), and technological risk factors may increase OHS risks to workers. Equipment design, congested vessels, search and rescue (SAR) infrastructures, and weather forecasting tools can also pose hazards to the safety of workers. Furthermore, training and education of fishers, workplace safety inspection, workers' compensation, and safe return to work also affect OHS in the Canadian small-scale fisheries (Neis et al. 2020). Figure 2 shows the typical operational risks that affect OHS in Canadian small-scale fisheries and will be discussed next.

Figure 2. Operational risks in Canadian small-scale fisheries. The overlapping of each risk factor indicates their interdependency.

2.1 Bad weather

Major storms, sudden gales, and heavy fog are the primary causes of grounding, capsizing, colliding, and loss of small boats (Pfeiffer 2020). Bad weather causes poor radio communications for fishers working at sea and adds risks of human fatalities. Environment Canada (EC) provides weather forecasts for boaters, fish harvesters, and shippers on their website (Government of Canada 2023) and communicates weather updates through Canada-wide radio stations. However, there are no defined regulations or governing policies on how fishers receive information about weather forecasts. Extreme environmental conditions such as seawater temperature, air temperature, precipitation, wind speed, and sea pressure affect fishing incident rates and their risk severity levels (Rezaee et al. 2016).

2.2 Unsafe fishing operations

Unsafe fishing operations are a risk factor that could lead to severe injuries and even fatalities (Transport Canada 2022). A trawling vessel that has its gear snag on a fastener may capsize. Fishers could be swept overboard if caught in the nets on board or if the rope starts to move while fishers are setting up the gear. Such a situation is hazardous and can cause injury to the workers. Fishers can also get injured from deck mechanisms and fishing gear. Stings, bites, and tail kicks by fish can also cause injuries to fishers – the risk multiples when diving and wading fishers touch poisonous creatures or encounter large predators. One recent Canadian study reveals that training fish vessel operators helped to reduce unsafe fishing operations (Davis et al. 2019). There are several organizations and associations at federal and provincial levels, such as the Professional Fish Harvesters Certification Board Newfoundland and Labrador (PFHCB 2023), Canadian Council of Professional Fish Harvesters (CCPFH 2023), Prince Edward Island's Fishermen's Association (PEIFA 2023), and Nova Scotia's Fisheries Sector Council (NSFSC 2023). These organizations are working to provide training and increase safety awareness for people associated with Canadian small-scale fisheries.

2.3 Lack of technology

While technology benefits fishing operations in Canadian small-scale fisheries, sophisticated technologies impose more significant risks than they provide lifesaving tools. For example, a fisher may lack training in working a new sophisticated radio and may lose communications from other vessels or emergency services. This situation may put a life at risk. Overall, it is essential to weigh the risks and benefits of sophisticated technologies carefully and ensure they are used responsibly and with appropriate safety measures. With proper regulation and oversight, these technologies can provide significant benefits without putting lives at unnecessary risk.

2.4 Lack of communication

Search and rescue (SAR) activity cannot be effective without radio contact with fishers. Additional challenges may occur if the radio-telephone connection is established, including a language barrier between a fisher who needs help and those who will assist. In the case of language barriers, there could be life-threatening consequences. The Canadian Coast Guard (CCG) is responsible for developing fishing vessel radio communication regulations in Canadian waters. The Canadian Coast Guard Auxiliary (CCGA) is another organization that educates Canadians on safe boating and SAR activities. Radio communication is used to communicate navigational and safety messages. Under Canada's lifesaving regulations, fishing vessels of 20 m or more in length are required to carry a search and rescue transponder (SART) in their fishing boat (Minister of Justice 2021).

2.5 Economic hardship

When small-scale fisheries businesses face economic hardship, they may be willing to work in unsafe conditions. The Government of Canada acknowledges this risk and is actively working to support fishers through a program named "employment insurance fishing benefits". The program is meant to help Canadian small-scale fisheries who face hardships due to lack of work and compensates anglers based on their earnings rather than insurable hours of employment. While insurance is not mandatory for fishing vessels, the Worker's Compensation Boards (WCB) in some provincial governments in Canada require proof of insurance coverage before issuing fishing permits. The premiums paid by fishers for workplace injury insurance are much higher than other occupations. For example, in 2012, a fisherman in Nova Scotia paid $7.85 per $100 of payroll (an increase of $0.35 from the previous year), $2.65 more than any other occupation (WCBNS 2012).

2.6 Unsuitable boat/vessel

Small fishing boats may have to travel farther offshore and stay there for extended periods due to shifting species, changing weather, and efforts to remain competitive with larger vessels. Many of these boats are too small and inappropriate for offshore fishing. Such vessels have been designed for inshore fishing and day trips and often lack safety equipment. As a result, the safety of fishers on these boats has been increasingly compromised. Boats in Canadian small-scale fisheries operations should be stable enough to withstand the high-water waves and strong winds in Canadian waters (Rezaee et al. 2017). Analyses of small fishing vessels incidents from 1999-2010 in Canadian waters indicate that vessel stability was the main safety issue, among other risk factors. Other prominent risk factors are lack of lifesaving equipment, inadequate fisheries resource management, lack of training, and noncompliance with safe work practices (TSB 2012). It indicates that many fishing boats in small-scale fisheries are not designed or built to meet minimum safety requirements. Unsafe design and poor construction of ships used in small-scale fisheries pose high risks to fishers.

2.7 Fire onboard

On open boats, fire detection is instantaneous, yet it poses high risks to people's lives. However, fires on pirogues and canoes with outboard engines and carrying large amounts of emergency hydrocarbon fuel can pose higher safety risks to workers. In most cases, fire on the boat cannot be controlled, which could lead to a series of accidents, including vessel sinking (Perez-Labajos 2008).

2.8 Loss of power

This risk factor is one of the primary causes of accidents in small-scale fisheries. Most small fishing boats work on power provided by an outboard motor, and due to their small size, these boats do not carry spare engines

or sailing rigs. It is pertinent to mention that the risk factors presented in Figure 2 are not independent, but a change in one aspect will lead to another change. For example, proper work training for people associated with small-scale fisheries can reduce the severity levels of accidents occurring at the workplace, and it can help decrease insurance rates.

3. Implications of Good Governance in Canadian Small-Scale Fisheries

Safety is a shared responsibility among government institutions and people associated with Canadian small-scale fisheries. Robust practices and procedures to run Canadian small-scale fisheries can help achieve the objectives of a safe work environment for Canadian enterprise owners and boat operators. Based on this study, Figure 3 summarizes some recommendations for Canadian small-scale fisheries governance to improve workers' safety. A viable and robust governance framework in Canadian small-scale fisheries can aid in returning workers home safely. Improvements in contemporary Canadian small-scale fisheries governance can help small privately held companies sustain themselves in the market, especially when they do not have lobbying powers.

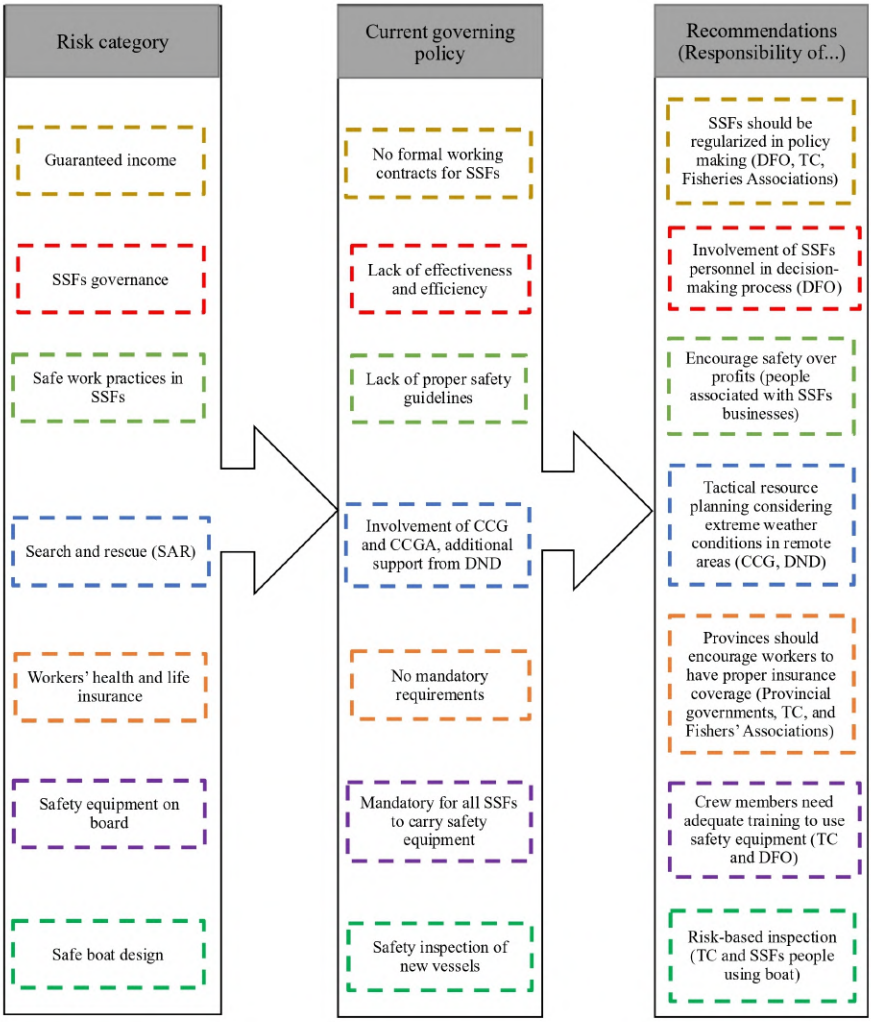

Figure 3. Summary of key OHS lessons in this chapter. (The acronym SSFs stands for small-scale fisheries).

Conclusions

Working in a safe environment is the fundamental right of every enterprise owner and boat operator associated with Canadian small-scale fisheries. This chapter identifies that OHS risks in Canadian small-scale fisheries are evolving, and a more robust governance framework is needed to mitigate such risks. In this chapter, we argued that Canadian small-scale fisheries *are not too small* to ignore the safety of workers associated with this profession. The study identifies a distinct need to develop better governance policies to protect small-scale fisheries workers, and tailored intervention strategies from federal and provincial governments and local authorities are needed to ensure the safety of fish workers. This work puts forward recommendations in the current governance system to improve the safety of workers in Canadian small-scale fisheries. To conclude, we argue that Canadian small-scale fisheries must be recognized in governance policy to develop well-documented and monitored OHS conditions for Canadian associated with small-scale fisheries. Achieving such an objective is only possible when we understand the risks to Canadian small-scale fisheries and comprehend an integrated OHS approach for this sector.

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