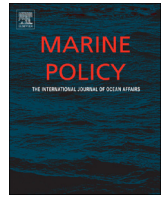




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Why fishers want a closed area in their fishing grounds: Exploring perceptions and attitudes to sustainable fisheries and conservation 10 years post closure in Labrador, Canada



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ABSTRACT

The Hawke Box on the Labrador continental shelf has been closed to trawling and gillnetting but open for snow crab (*Chionocetes opilio*) pot fishing for three months of the year for the past decade. The closure was instigated by fishers and long-standing adjacent communities. To explore why, 19 local fishers were interviewed in March 2012, the majority of whom fished both snow crab (in the Box) and trawled for shrimp, (*Pandalus* spp.), now prohibited. All respondents indicated that the closure was beneficial to them, their community, and marine life. Respondents believed that protecting the area from trawling was the primary reason they still have a viable fishery, despite little improvement in Snow crab since the closure and their own partial exclusion. Fishers understood that reducing their own (not someone else's) fishing effort would likely enhance long-term sustainability of livelihoods. A full 94.7% believed that fisheries and conservation are compatible goals. Closures with fishers support based on local knowledge are more likely to meet fishery and conservation goals than those that do not. Closures can become building blocks of an ecosystem based management approach that includes fishers as part of the system, meeting both international marine protection targets and fisheries production goals.

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1. Introduction

Many fisheries closures and marine protected areas might be judged successful from a biological perspective, resulting in enhanced biodiversity [1], connectivity [2] and species abundance [3] but nevertheless fail to generate local support. In general, fishers that initially support closures are more likely to support further marine protection efforts [4]. Thus it is important to understand why and how such support can be garnered in attempts to conserve fisheries and biodiversity. The importance of community involvement has been recognised in the Convention on Biological Diversity (CBD) 2011–2020 Aichi Biodiversity Targets for signatory countries to achieve by 2020 [5,6]. These targets include sustainable fisheries, protection of at least 10% of coastal and marine areas by 2020 with participation of local communities and respecting and integrating traditional and local knowledge. Thus, understanding how fishers are involved in these types of areas and may be supportive (or not) is imperative towards achieving such targets.

In 2003, the Department of Fisheries and Oceans Canada (DFO) established the Hawke Channel trawling and gillnetting exclusion zone (herein referred to as "Hawke Box") following calls for the closure from local fishers. An initial 10 by 10 nautical mile closure was expanded the following year to 50 by 50 nautical miles (8610 km²) (Fig. 1). The Hawke Box was instigated and fully supported by the local community [7] with the strong sense of ownership often documented in near shore tropical areas [8–11], but seldom for temperate continental shelf regions [12]. The Hawke Box is unique as a community initiated closed area in a boreal offshore environment; there are few, if any, examples in the literature of fishers instigating and supporting a closure in their own fishing grounds in a boreal environment.

The present research aimed to explore why the Hawke Box was initiated by local fishers and their perceptions of its benefits or liabilities and to sustainable fisheries and conservation a decade after the initial closure. The primary objective was to assess why fishers that use trawls would ask for and support a trawling closure on a central portion of their own fishing grounds. Secondary objectives were to assess fishers' perceptions of the successes or failures of the closure thus far, and to determine perceptions of conservation, if they would support additional protection in the form of specially designated marine protected areas in the Hawke Channel and other adjacent areas that would allow some types of

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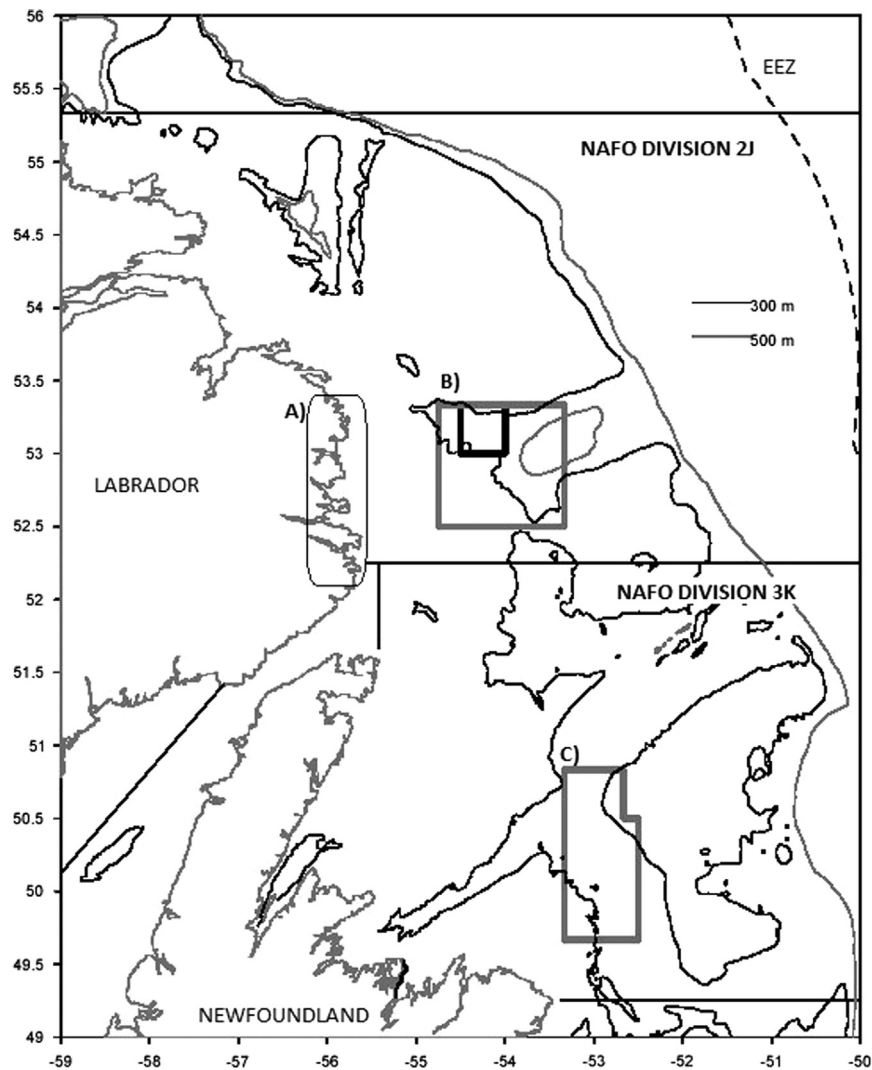


Fig. 1. Map of SE Labrador with NAFO divisions 2J and 3K. (A) Location of fisher respondents in communities along the SE Labrador coast. (B) The Hawke Box offshore closed area. The small black box indicates the original 2002 closed area, while the larger grey box indicates the present closed area and includes the deeper 500 m channel. (C) Funk Island Deep closed area in 3K, closed to trawling, but only voluntarily closed to large shrimp trawling. Map adapted from DFO Shrimp Integrated Fishery Management Plan (2007) [15].

fishing but not others. Such information will be of use to marine management within Canada, and all countries that have made commitments towards marine protection, sustainable fisheries, and an ecosystem based management approach. This paper includes a history and overview of the Hawke Channel closed area and the local fishery, followed by an overview of the survey methodology used to interview local fishers. A combined results and discussion section discusses the topic of why fishers had asked for a closure in their fishing grounds, and discusses the results in context of the knowledge and perceptions of fisheries and conservation in general.

1.1. The Hawke Channel and Box

The Hawke Channel is a deep offshore soft mud bottom environment located off southern Labrador (Fig. 1) in the North-west Atlantic Fisheries Organisation (NAFO), Division 2J. The Channel is characterised by low species diversity, slow growth, and has habitat utilised by both resident and highly migratory species. The surface waters are dominated by the cold Labrador Current (to -1.5 C) that is undercut in the Channel by much warmer Atlantic Ocean waters (to 4.5 C) [13]. The region is covered

with sea ice for several months of the year and crab pot fishing is seasonal (Table 1). In the 1990s, following the collapse of the cod stock that frequented this region [14] increases in pandalid shrimp (*Pandalus* spp.) led to the area being heavily trawled. The area also became a centre for a snow crab (*Chionocetes opilio*) fishery utilising passive pot gear, in part by the same fishers and communities. A key difference in the two fisheries was that the crab fishery was prosecuted entirely by Labrador fishers from communities adjacent to the Channel, whereas the shrimp fishery had a local component that utilises smaller (65 ft. and smaller) trawlers, but also a non-local fishery that utilises large (ca. 65 m) trawlers. By 2001, strong concerns were expressed by local fishers about the potential effects of the intensive trawling on the lucrative snow crab fishery and 2J crab fishers submitted a proposal for a no-trawl zone to DFO. Initial requests were rejected, but the 2J crab fishers persisted [15]. After consultations with stakeholders, and with support from the former Fisheries Resource Conservation Council, who also perceived some benefits to juvenile groundfish, in particular Atlantic cod (*Gadus morhua*), recommendations were made to close the area to all trawling. DFO implemented a no-trawl-no gillnetting zone in 2002. The Hawke Channel thus became a year-round offshore closed area that excluded all

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