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Socioeconomic considerations of the commercial weathervane scallop fishery off Alaska using SWOT analysis

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ABSTRACT

We conducted a socioeconomic assessment of the commercial weathervane scallop (*Patinopecten caurinus*) fishery off Alaska. The research was structured within the framework of an SWOT (strengths, weaknesses, opportunities, threats) analysis, a strategy commonly used to analyze the internal (strengths, weaknesses) and external (opportunities, threats) components of an industry. Specifically, we focused on five categories: social, technological, economic, environmental, and regulatory. Semi-structured interviews were conducted with 27 participants who had detailed knowledge of the fishery, including industry members, fishery managers, biologists, and members of coastal communities who interact with the fishery. We addressed topics such as attitudes of the Alaskan public towards scallop dredging, impacts of the scallop industry on Alaskan coastal communities, market influences of U.S. east coast and imported scallops, changes in the management of the fishery, and a number of environmental considerations. Several unifying opinions emerged from this study, including a lack of awareness of the fishery in many Alaskan communities and fears about rising fuel costs and diminishing harvest levels. Whereas the data-poor status of the stock appears to be the fishery's biggest weakness, the greatest strengths come in the form of conservative management, industry self-regulation, and the small footprint of the fishery. Impending threats include stock decline, unknown long-term detrimental effects of dredging, and changes in the management and structure of the fishery with the sunset of the State of Alaska's limited entry permit program. Most participants consider the fishery to be managed sustainably, although lack of data on scallop recruitment and abundance is a large concern. This analysis provides relevant information to both fishery managers and scallop industry members to contribute to the environmental, economic, and social sustainability of the scallop fishery.

1. Introduction

Due to the inseparable link between humans and the natural environment, biological and physical resources must be managed in the context of human use, development, and dependence, with sustainability being the key objective. Because of the view that oceans are a public domain and not the sole dominion of resource user groups, there are increasing appeals for more transparency and broader stakeholder involvement in marine resource management (Berghöfer et al., 2008; Mikalsen and Jentoft, 2001; Pomeroy and Douvere, 2008). Incorporation of stakeholder opinions has, in fact, become institutionalized into ecosystem-based management (EBM) of marine fishery resources, and in the U.S., public comment periods are required for federal fisheries managed under the Magnuson-Stevens Fishery Conservation and Management Act. The North Pacific Fishery Management Council, with approval from the National Marine Fisheries Service (NMFS), manages federal waters off the coast of Alaska, and is a global leader in EBM, having been one of the first to implement EBM strategies for groundfish fisheries in the U.S. (Witherell et al., 2000). However, major gaps in EBM remain for data-limited fisheries. Weathervane scallops (*Patinopecten caurinus*) constitute one of the most data-poor fisheries off the coast of Alaska. Despite four and a half decades of fishing for weathervane scallops, biological information on this species is sparse. Consequently, it is critical to capitalize on what information is known, largely being the knowledge of fishery stakeholders. Many stakeholders, including industry members,

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fishery managers, and biologists, have accumulated a wealth of knowledge, as they have been involved with the fishery for decades. This study therefore endeavored to address the current socioeconomic status of the fishery, identify some of the most recent changes, and gather baseline stakeholder knowledge that can be used to evaluate a future course of action for improved fishery management. We used a method for analyzing stakeholder opinions in a commercial fishery that is not commonly used for biological systems, but is gaining recognition as a useful approach for evaluating socioeconomic issues for fisheries worldwide.

2. Background

The commercial weathervane scallop fishery in Alaska began in 1967. Prominent scallop beds are located in the Gulf of Alaska off Yakutat Bay, southeast of Prince William Sound (near Kayak Island), in lower Cook Inlet, off Kodiak Island, along the Alaska Peninsula and Aleutian Islands, and in the eastern Bering Sea (Fig. 1). Approximately 80% of commercial scallop beds lie in federal waters off Alaska's coast (3-200 miles), while 20% occur in state waters (0-3 miles). The weathervane scallop fishery is small, with annual harvests averaging 210 mt (460,000 lbs) over the past decade. In comparison, the fishery for Atlantic sea scallops (*Placopecten magellanicus*) off the east coast of the United States harvested over 26,000 mt (58 million lbs) in 2010 (NEFSC, 2010).

The history of the weathervane scallop fishery in Alaska was reviewed by Kruse et al. (2005). In brief, the weathervane scallop fishery had an open-access, open-season management structure until 1993, at which point the State of Alaska developed a fishery management plan. Until then, the fishery experienced common patterns of discovery (1967–1973), fallback (1974–1979), redevelopment (1980–1989) and bandwagon growth (1990–1993, Kruse et al., 2005, Fig. 2). Numbers of vessels varied from 2 to 19, with a transition from small, multi-purposed vessels in the early days of the fishery to larger vessels mainly dedicated to scallop fishing in the late 1980s and early 1990s. Ex-vessel value peaked at $11.7 million (inflation-adjusted 2013 dollars) in 1992. During 2010–2013, exvessel value ranged over $4.0–4.7 million. Vessels typically carry 8–12 crewmembers. Additional details on employment and income associated with direct, indirect, and induced impacts of this fishery are unknown (NPFMC, 2014b).

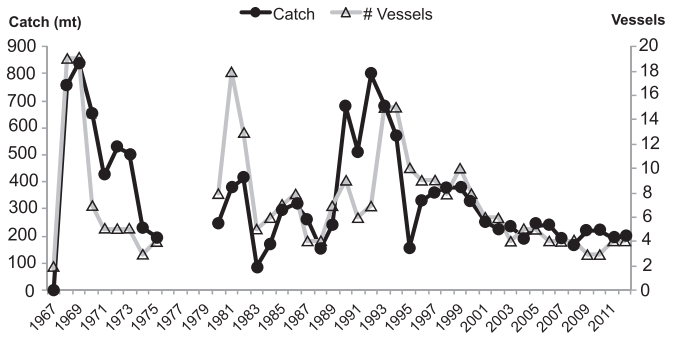

Fig. 2. Catch (mt) and number of vessels fishing in the weathervane scallop fishery off Alaska over 1967–2012. Landings for 1967–1993 come from Barnhart (2003), and those for 1993–2012 come from NPFMC (2014b). Data from 1976 to 1979 were excluded due to confidentiality constraints caused by few participating vessels and a closed fishery in 1978.

Currently, the fishery is managed jointly by the National Marine Fisheries Service and the Alaska Department of Fish and Game (ADF&G) under the auspices of a federal fishery management plan

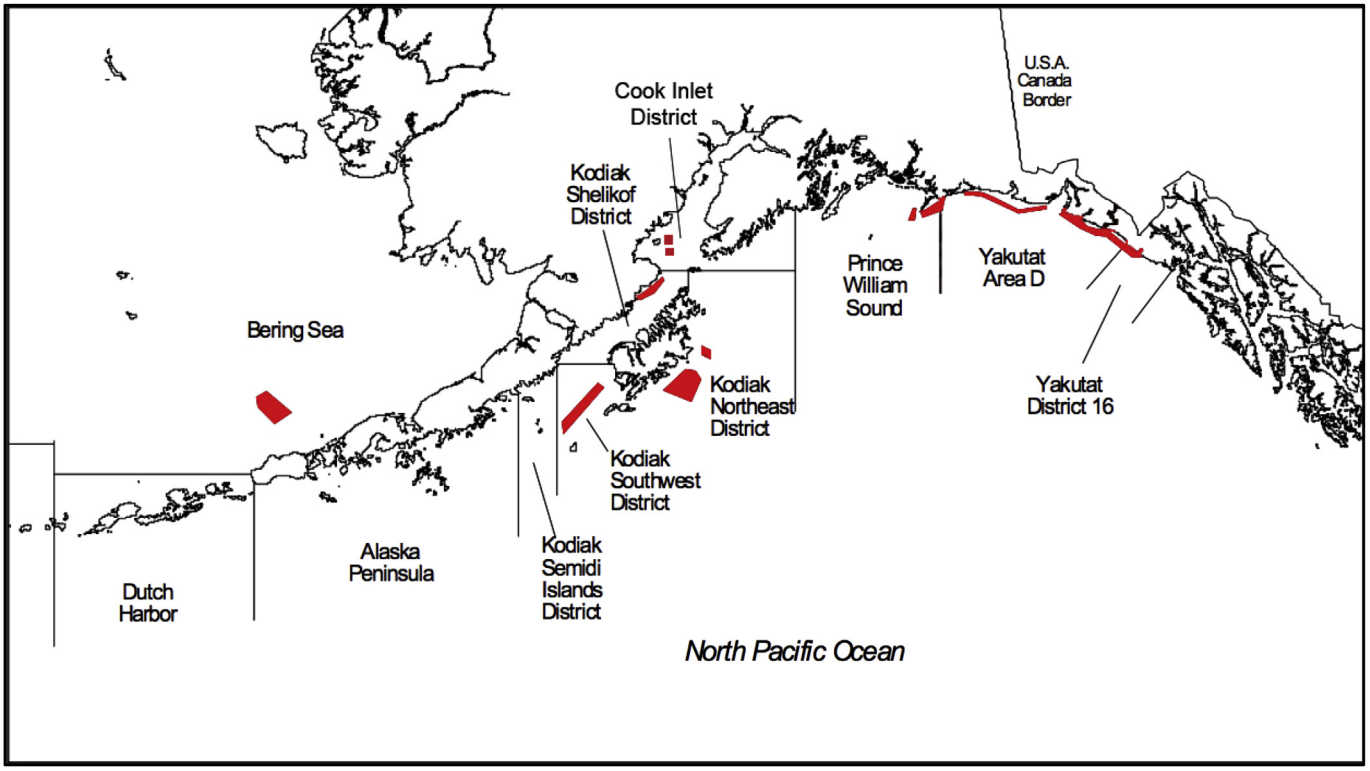

Fig. 1. Map of Alaskan weathervane scallop fishery registration districts and general areas of scallop fishing effort, indicated by red polygons. Modified from Rosenkranz and Spafard (2013). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)