



# Evaluating the recreational fishery management toolbox: Charter captains' perceptions of harvest controls, limited access, and quota leasing in the guided halibut fishing sector in Alaska

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## ARTICLE INFO

### Keywords:

Recreational fishing  
For-hire  
Regulations  
Pacific halibut

## ABSTRACT

Examining the reasons why individuals choose to participate or comply with certain fishing regulations is a key part of successful fisheries management. This paper presents a case study that evaluates fisher perceptions of multiple recreational fishery regulations, including traditionally used methods of bag and size limits and a novel regulation involving quota leasing, in the for-hire (i.e., charter) recreational fishing sector for Pacific halibut (*Hippoglossus stenolepis*) in Alaska. This study examined responses from open-ended and Likert-scale questions from semi-structured interviews with 45 charter operators in Homer and Sitka. Our results highlight that controls on individual harvest can be perceived to have unintended consequences for charter businesses, such as effects on profitability and distance traveled. In response to open-ended questions on a voluntary quota leasing program, participants discussed themes of inequity reflecting broader perceptions of conflicts with the commercial sector and the management system. Perceived inequities that have not been fully addressed can shape how stakeholders feel about current management institutions and affect compliance. Therefore, it is important to understand the historical and political contexts of fishery systems to better anticipate support for future management approaches.

## 1. Introduction

As harvests in marine recreational fishing have increased in magnitude in the U.S. over the last few decades [1], scholars have explored ways to reduce the environmental impact of recreational fishing [2,3]. Currently, the tools available for managing recreational fisheries focus primarily on the angler. Some place restrictions on individual anglers, such as daily catch limits, possession limits, and size limits, and others focus on the entire sector, such as where, when, and how fish can be caught. However, as the effectiveness of these methods to restrict recreational catch have been increasingly scrutinized, it has become evident that while individual harvest controls limit individual catch, they do not effectively limit total recreational harvest because there are no limits on licenses or effort (i.e., number of participants) [4]. To control total recreational harvests, tools affecting sector-wide effort and catch have emerged, such as quota allocation, and limits on the total number of licenses issued.

While traditional harvest control tools have been at the core of managing recreational fishing, research shows that success of fishing regulations largely depends on fisher compliance [5–7]. Lack of

compliance can affect the efficacy and outcomes of fisheries regulations [8–10]. Examining the reasons why individuals choose to participate in recreational fisheries or comply with certain fishing regulations, including social dynamics and perceptions of management, is a key part of successful fisheries management [11–14]. Understanding the human dimensions of recreational fisheries, such as fisher behavior, motivations, and attitudes, allows managers to better anticipate responses to regulations and to design regulations that are more likely to receive support from stakeholders [15], while still achieving desired objectives.

For guided fishing businesses, perceptions of regulations by captains can play an important role in how regulations and fishing advisories are transmitted to recreational anglers [16]. Therefore, captains of fishing businesses have the potential to affect angler compliance on a large scale. This paper presents a case study that evaluates charter captains' perceptions of multiple recreational fishery regulations, including traditionally used methods of harvest controls and a novel regulation involving quota leasing, in the for-hire (i.e., charter) sector for Pacific halibut (*Hippoglossus stenolepis*) in Alaska. Charter fishing is a popular activity in Alaska and an important source of revenue for businesses in tourism-focused coastal communities. Pacific halibut (hereafter

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referred to as halibut) is the most harvested bottomfish in the charter sector, comprising 47% of bottomfish harvest in 2014 [17]. Controls on the charter sector were established in 1975 (two-fish bag limit with no size limit) [18], which remained unchanged for over 30 years until 2007 in Southeast Alaska and 2014 in Southcentral Alaska [19,20]. Concerns over the growth of the charter sector have led to the implementation of additional restraints on charter fishing effort, including a limited entry program in 2011 (75 Federal Register 554) and an assortment of measures starting in 2014 in the form of trip limits, a closure of one or more days per week, and voluntary quota leasing [21]. However, with the exception of an analysis of the voluntary leasing program [22], there has been little research on the perceptions and support of these recent management measures by the charter industry.

The objective of this study was to examine charter operators' perceptions of traditional and novel recreational fishery management tools in two communities: Homer, Alaska, and Sitka, Alaska. It was hypothesized that perceived impacts of regulations on charter captains and their businesses would differ between Homer and Sitka, due to differences in their social, economic, regulatory, and ecological characteristics. Homer is located in the Southcentral region of Alaska and is on the Alaska road system. It is accessible to much of the state, including the Anchorage metropolitan area, the largest population center in Alaska (2016 U.S. census population estimates; [www.census.gov](http://www.census.gov)). Sitka, by comparison, is located on Baranof Island, in the Southeast region of Alaska, and is accessible only by plane or boat. The Southcentral region attracts more Alaska resident angler effort (26% of charter angler-days fished by residents in 2014) compared to the Southeast region (3% charter angler-days fished by residents in 2014) [17]. In addition to differences in their customer base, Sitka and Homer also differ in the variety of species available, the types of trips offered to customers (e.g., Pacific halibut-only vs. multispecies), and their histories of regulation [23]. How these differences set the context for understanding charter operators' perceptions of recent regulatory changes is discussed below. Ultimately, the research reported here highlights the importance of understanding the political and historical context of local fishery systems and provides a deeper examination of the possible impacts of regulations on charter businesses. These perceived impacts and, more importantly, the perceived fairness of the regulatory process that caused them, can ultimately affect levels of compliance.

## 2. Management of the charter halibut sector in Alaska

Management of Pacific halibut occurs at the international, federal, and state levels. At the international level, halibut is jointly governed between the United States and Canada through the International Pacific Halibut Commission (IPHC), which conducts annual stock assessments and sets an overall catch limit and apportions it among ten regulatory areas, one in the U.S. Pacific Northwest, one encompassing the coast of British Columbia, and eight in waters off Alaska. In addition, the IPHC establishes seasons, minimum size limits for commercial fisheries, and other annual management measures [24]. Each nation is responsible for ensuring that the sum of directed catches (commercial, sport, and subsistence), incidental catch, and discard mortality is no greater than the limit set by the IPHC. Under the Magnuson-Stevens Fishery Conservation and Management Act (U.S. Public Law 94–265), authority to allocate Pacific halibut catch among fishing sectors devolves to the North Pacific Fishery Management Council (NPFMC), subject to consistency with national standards and other applicable federal law. Responsibility for reviewing NPFMC decisions, implementing management measures, monitoring catches, and enforcing regulations falls to the National Marine Fisheries Service (NMFS). At the state level, the Alaska Department of Fish and Game (ADF&G) administers license programs for sport fishers and sportfishing guides, oversees a logbook program that is required for charter vessels, conducts creel surveys, and manages an annual statewide harvest survey of sport anglers in Alaska.

Halibut catch in the Alaskan charter fishery is influenced, primarily, through size limits, gear restrictions, and bag and possession limits. Even though catch restrictions are common recreational fishing management tools, they alone cannot restrict sector-wide harvests without accompanying constraints on participation [25]. This challenge has been observed in Alaska's charter sector; as charter halibut harvest increased in Alaska throughout the early 2000s [21], there was also a 14% increase in the number of saltwater-guide businesses in Alaska, from 847 in 1999 to 917 in 2006 [26,27]. In an attempt to control charter sector growth, the NPFMC established the Charter Halibut Limited Access Program in 2011 to limit the number of charter vessels permitted to offer charter trips for halibut in Southeast and Southcentral Alaska [28]. This program issued a fixed number of federal Charter Halibut Permits (CHP) to charter operators and/or businesses based on historical participation as a charter operator during a set of qualifying years. In 2014, the Guided Angler Fish (GAF) program was introduced, which allows for temporary one-way leasing of commercial individual fishery quota (IFQ) for use by charter businesses, including self-transfers for charter operators who also own IFQ (78 Federal Register 75843). The GAF program is dependent on willing participation from the commercial sector, which has been managed under IFQs since 1995 [29]. A charter operator participating in the GAF program leases IFQ from a commercial fisher and during that charter season, can designate a customer who can harvest halibut up to non-charter sport bag and size limits (i.e., two fish daily bag limit with no size restrictions) (50 CFR 300.65) [22]. While the charter operator pays an upfront cost to the commercial fisher to lease IFQ, this cost is typically passed on to the charter customer who harvests under the more liberal GAF guidelines. In 2014, the first year of the program approximately 18.6 metric tons of IFQ were leased, equating to around 2000 fish [30], but only 1069 fish were actually harvested [31].

Participation in the GAF program has been relatively limited by charter businesses since its inception in 2014 (7% of the unique 564 CHP holders participated in 2016; Scheurer, Charter Halibut Permits List <https://alaskafisheries.noaa.gov/permits-licenses>) [32]. A 2015 mail survey conducted by NOAA and sent to all CHP holders (response rate of 48%) found that the most frequently cited reasons for not participating in the GAF program during 2014 were that “leasing GAF was too expensive” (46% of participants) and “did not support the GAF program” (45% of participants) [22]. In Southeast Alaska, “leasing GAF was too expensive” was the most frequently cited reason (50% of Southeast respondents) for not participating [22]. In 2016, the average cost per GAF halibut was \$197 in Southcentral and \$353 in Southeast [32]. In Southcentral Alaska, “did not support the GAF program” was the most frequently cited reason (52% of Southcentral respondents) for not participating [22]. These survey results, combined with consistent low participation, suggest that along with issues of cost, there is substantial charter opposition to the GAF program. While the NOAA survey showed a general lack of support amongst charter businesses and captains, it was not designed to identify why they did not support the GAF program. This research, among other topics, fills this gap by identifying the key reasons for low charter participation in and resistance to the GAF program.

## 3. Materials and methods

Semi-structured, in-person interviews [33] were conducted with charter operators in Homer (May and June of 2015) and Sitka (May and June of 2014 and 2015). Participants were initially solicited through newsletter announcements distributed by four charter associations (Alaska Charter Association, Homer Charter Association, Southeast Alaska Guides Organization, and Sitka Charter Boat Operators Association). Additionally, introduction letters were mailed in spring 2014 to 2014 CHP holders with their CHP address listed in Sitka, AK. In spring 2014, introduction letters were mailed to 2014 CHP holders with their CHP address listed in Sitka, AK. Introduction letters included a

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