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Towards individual-owned and owner-operated fleets in the Alaska Halibut and Sablefish IFQ program

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Abstract

Although numerous IFQ programs include active participation measures intended to retain or transition fishing privileges to active fishermen, there has been limited research on the efficacy of these measures. This study addresses this gap by examining the impacts of active participation measures in the Alaska halibut and sablefish IFQ program, which were intended to provide for an ultimate transition of the catcher vessel fleets in these fisheries to becoming fully individual-owned and owner-operated. This paper shows that the effectiveness of these measures has been mixed and constrained by apparently strong incentives for many initial recipients of quota shares to effectively lease their annual IFQ allocations (through the use of hired skippers) rather than to sell their quota shares. Perhaps most problematic is the emergence of a class of wholly absentee quota shareholders, who hold only nominal interest in the vessel upon which their IFQ is fished, do not share in the risk of fishing, and continue to profit from the fishery while residing far away from the actual fishing grounds. There is also anecdotal evidence of differing cultural contexts for hired skipper use and second-generation entry between the Seattle and Alaska-based fleets in the Alaska halibut and sablefish fisheries. Wherein acting as a hired skipper may be analogous to an apprenticeship that facilitates quota share acquisition in the Seattle fleet, Alaskan hired skippers may be more analogous to strict lessees, who ultimately compete for quota shares in a market that includes initial recipients and second-generation shareholders both of whom were gifted quota shares.

Keywords: Active participation measures; Owner-on-board; Hired skipper; Second-generation shareholders; Adaptive management

Introduction

Since the 1970s, managers have employed economic solutions to address overcapacity and overfishing in fisheries by allocating exclusive harvesting privileges to a defined group of participants through individual fishing, or transferable, quota (IFQ or ITQ) programs. In these types of management programs initial recipients receive quota shares, a percentage of an overall total allowable catch (TAC) in the fishery, which are translated into annual IFQ allocations (fishable pounds). Although numerous researchers have documented the success of these management regimes at increasing economic efficiency, profitability, and product quality, improving safety, managing the

harvest within the TAC, and overall working conditions in the fisheries (Arnason 2005, Brinson and Thunberg 2013, Campbell et al. 2000, Costello et al. 2008, Dupont 2000, Grafton 1995, Grimm et al. 2012, Hilborn et al. 2005, Hughes and Woodley 2007, Newell et al. 2005a), others have shown that these types of management programs can have adverse impacts on some stakeholders and coastal communities due to consolidation and associated employment losses, changes in processing needs, and shifts in regional distribution of fishing privileges (Carothers 2008, 2013, Carothers et al. 2010, Copes and Charles 2004, McCay 2004, Olson 2011).

Researchers have also shown that leasing in IFQ programs, wherein the quota shareholder leases the annual IFQ allocation derived from his quota shares, can allow inactive fishermen to retain their shares and profit from the harvest of their IFQ without incurring the physical or financial risks of fishing, which can contribute to quota share prices becoming prohibitively expensive for the next generation of fishermen (Squires et al. 1998). Leasing can also contribute to the emergence of a class of absentee shareholders in the fishery, due to the entrance of investment speculators and to fishermen relying on leasing arrangements rather than selling their shares when they are no longer willing or able to fish their IFQ themselves (Le Gallic and Mongruel 2006, Pinkerton and Edwards 2009, van Putten and Gardner 2010, Stewart and Callagher 2011). Absentee shareholders may also have fewer ties to coastal communities than active fishermen, resulting in a transfer of the benefits from fishing privileges out of these communities (Carothers 2008, 2013, Copes and Charles 2004, McCay 2004, Olson 2011). Several researchers have shown that the implementation of a catch share or limited access program was associated with the migration of fishing privileges away from rural communities towards urban centers (Carothers et al. 2010, Knapp 2011). Since urban ownership of quota shares is sometimes associated with increased leasing (Le Gallic and Mongruel 2006), distributional and equity issues may be exacerbated in the fishery with geographic lines dividing lessors from lessees. Another social impact of absentee quota ownership could occur when profits from the fishery are earned through high lease rates charged by individuals that do not share in the annual risk of fishing. This scenario could be preventing those profits from being reinvested in the halibut and sablefish fisheries themselves, potentially contributing to the continued use of older vessels and gear and resulting decreases in harvesting efficiency and overall safety.

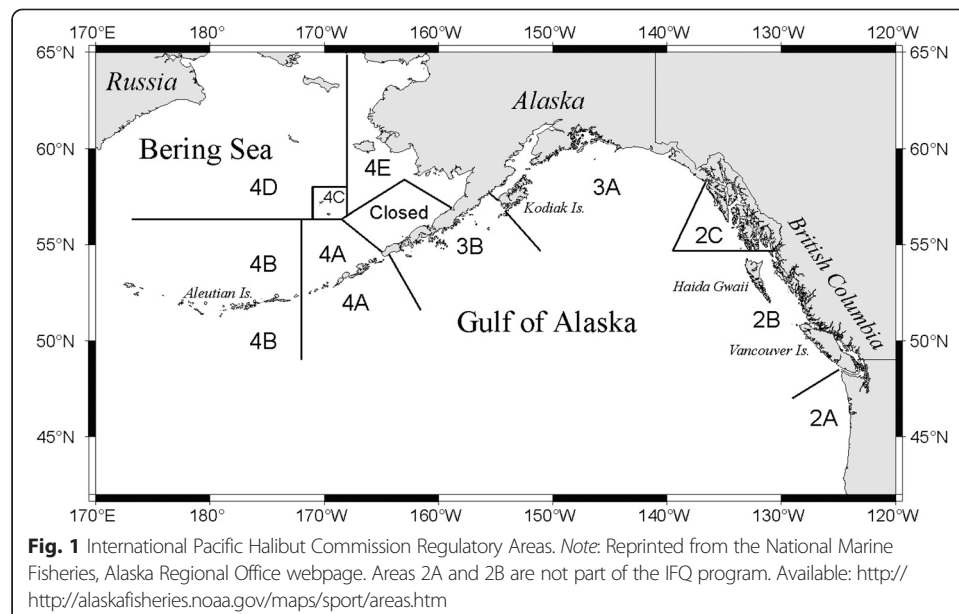
Managers, who are concerned with such impacts, have developed various active participation measures to ensure that quota is retained by active fishermen, including restricting leasing, constraining transferability to participants with fishing experience, and implementing owner-on-board requirements for the harvest of IFQ (GAO 2004). Despite the preponderance of these measures in IFQ programs, there has been limited research examining the efficacy of active participation measures at achieving their intended objectives. This paper addresses this literature gap by examining active participation measures in the Alaska halibut and sablefish IFQ program.

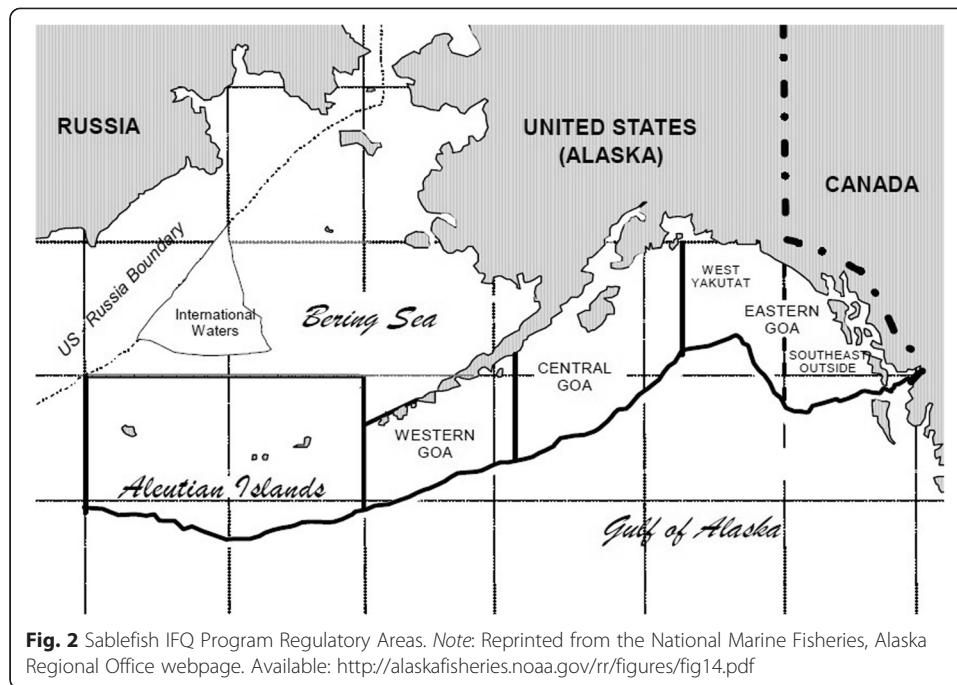
Background on the Alaska halibut and sablefish IFQ program

When the NPFMC implemented an IFQ program to manage the fixed gear (pot and hook-and-line) halibut and sablefish fisheries off Alaska in 1995 it included several active participation measures. The IFQ program was implemented to

reduce overcapacity and eliminate the race to fish, which had been occurring in these fisheries at that time. Quota shares in the program were allocated as percentages of the TAC to persons based on historical participation in the fisheries. These shares are translated into annual IFQ allocations, or fishable pounds, based upon the annual TAC. Quota shares are both area and vessel class specific, with no trading allowed between these categorizations. In both fisheries, there is a class of quota shares allocated to catcher processors, and multiple classes of catcher vessel shares, which are designated on the basis of vessel length (three in the halibut fishery and two in the sablefish fishery). Figures 1 and 2 show the regulatory areas for the halibut and sablefish fisheries.

In developing the Alaska halibut and sablefish IFQ program the NPFMC was concerned with the potential for investment speculators to buy catcher vessel quota shares and for the emergence of a class of absentee catcher vessel shareholders (NMFS 1992a). In addition to the tie between owner-operators and coastal communities, the concern focused more on catcher vessels that deliver to shoreside processing plants and tend to be more tied to coastal communities than on catcher processors that process on board and were already largely corporate owned when the IFQ program was being developed (NMFS 1992a). Therefore, the NPFMC included several active participation measures for catcher vessel quota shares in the IFQ program design, with the intent to maintain existent owner-operators and provide for an ultimate transition to wholly individual-owned and owner-operated fleets in both the halibut and sablefish fisheries. These measures include a prohibition on leasing after the first three years of the program, a limitation on the acquisition of quota shares by corporate entities (e.g. corporations, partnerships, and limited liability companies), and a limitation on the use of hired skippers (i.e., someone designated by a quota shareholder to fish the quota shareholder's annual IFQ allocation) to initial quota share recipients of the program (NMFS 1992a). Greater restrictions on quota share acquisitions by corporate





entities and the use of hired skippers were implemented in area 2C and the Southeast Outside area of the halibut and sablefish fisheries, respectively, to maintain what had historically been small vessel, owner-operated fleets and to facilitate entry for second-generation quota shareholders in these areas. Although they do not overlap perfectly, these two areas encompass what is commonly referred to as Southeast Alaska and will be referred to hereinafter as the Southeast regulatory areas.

Using data published by the NMFS and the NPFMC, this paper examines the impacts of the active participation measures in the halibut and sablefish IFQ program. First, the paper presents an analysis of the impacts of the measures that apply to all catcher vessel quota shareholders by assessing changes in quota share ownership of corporate entities and changes in the use of hired skippers since program implementation. Second, the paper presents an assessment of the impacts of the greater restrictions in the Southeast regulatory areas by examining the differences in the percent of area quota shares held by corporate entities and the use of hired skippers between the Southeast areas and the other regulatory areas.

Active participation measures in the Alaska halibut and sablefish IFQ program

Restriction on acquisition of QS to individuals

In the Alaska halibut and sablefish IFQ program, the acquisition of catcher vessel quota shares by corporate entities is restricted to those that are initial recipients of quota shares in the program. All second-generation owners of catcher vessel quota shares must be “IFQ crewmembers” - individuals who have at least 150 days of experience as part of a harvesting crew in any U.S. fishery (NMFS 1998). That is, no

new corporate entities can enter into the fishery by purchasing catcher vessel quota shares. Corporate entities that were initial recipients of catcher vessel shares could purchase additional catcher vessel shares, until December 1, 2014, after which transfer of catcher vessel shares is limited to individual initial recipients of catcher vessel shares and IFQ crewmembers (NMFS 2014a). The initial limitation on the acquisition of catcher vessel quota shares was intended to ensure that eventually, through attrition, all corporate entities would be eliminated from the fishery (NMFS 1992b).

In the Southeast regulatory areas only individuals (IFQ crewmembers and initial recipients of catcher vessel shares) are allowed to acquire catcher vessel quota shares. Corporate entities, even if they are initial recipients in the IFQ program, are prohibited from purchasing catcher vessel quota shares in the Southeast regulatory areas (NMFS 1998). This prohibition was implemented to maintain the competitive position of what had historically been an owner-operated fleet in these areas as there was concern that corporate entities could outbid owner-operators for quota shares (NMFS 1992b).

A regulation that went into effect on December 1, 2014 effectively constrains catcher vessel quota share transfers in all IFQ regulatory areas to IFQ crewmembers and initial recipients. However, this analysis is limited to the pre-2014 years. Therefore, for the purposes of this analysis, we will maintain the differentiation in the persons eligible to harvest catcher vessel quota shares between the Southeast and the other regulatory areas.

Restrictions on leasing

The NPFMC also sought to incentivize the transition to owner-operated fleets by prohibiting leasing of all IFQ derived from catcher vessel quota shares after the first three years of the program. For these first three years, catcher vessel quota shareholders were allowed to lease up to 10 % of their quota shares, subject to the same restrictions as permanent quota share transfers (i.e., no inter-vessel class or inter-area trading and transfers only to eligible persons – i.e. initial recipients or IFQ crewmembers). This temporary leasing allowance was included to give fishermen more flexibility to plan their fishing operations, and to allow participants to better adapt to the new program, as it was expected to initially be easier for shareholders to evaluate the value of their annual IFQ allocation rather than their quota share allocation (NMFS 1992b).

Hired skipper/owner-on-board mandate

Catcher vessel quota shareholders may employ hired skippers to harvest their annual IFQ allocation, as long as the shareholder is able to demonstrate at least a 20 % ownership interest in the vessel on which their annual IFQ allocation is being fished. Any catcher vessel quota shareholders who are not initial recipients (hereinafter referred to as second generation shareholders) are required to be on board when their annual IFQ allocation is being harvested (NMFS 1998). The NPFMC implemented these differentiated mandates for initial recipients and second generation shareholders in order to give the former the latitude to continue the business practices that they had prior to the

implementation of the IFQ program while still providing for an ultimate transition to an owner-operated fleet (NMFS 2014a).

Catcher vessel quota shareholders in the Southeast regulatory areas are subject to greater restrictions than in the other regulatory areas. In the Southeast, only corporate initial recipients may hire skippers. That is, all individuals (including initial recipients) must be on board when their annual catcher vessel IFQ allocation is being fished (NMFS 1998). Additional restrictions were placed in the Southeast regulatory areas in order to maintain what had historically been a small vessel, owner-operated fleet and to facilitate entry into the fisheries in these areas, by ensuring that aging quota shareholders have to sell their quota shares once they are no longer willing or able to fish their annual IFQ allocation themselves (NPFMC 2014).

Amendments to the hired skipper provision

Since the start of the program, the hired skipper provision has been amended several times to reflect the NPFMC's ongoing concern that the use of hired skippers by participants does not reflect the intended goals of the program. In 1999, the NPFMC amended the provision to include the current mandate for 20 % vessel ownership for quota shareholders using hired skippers, because some participants were purchasing nominal interests in vessels to meet the original vessel ownership requirements (NPFMC 2014). The mandate for a defined percentage of vessel ownership interest was intended to ensure that quota shareholders were using hired skippers on vessels actually owned by the quota shareholder, rather than leasing their IFQ to the owner of another vessel. In 2002, the NPFMC amended the IFQ program to include a provision that a quota shareholder may use a hired skipper on a vessel owned by a corporation in which that quota shareholder has at least a 20 % interest (NPFMC 2014). In 2007, the NPFMC passed an amendment specifying the required documents for proof of the requisite vessel ownership: 1) an Abstract of Title for a documented vessel showing the required 20 % vessel ownership interest, or 2) a State of Alaska vessel registration or license for undocumented vessels (NMFS 2007). Prior to this amendment, the requirement was simply for written documentation of ownership, which was often difficult to verify, and there was concern that quota shareholders were continuing to engage in informal vessel ownership arrangements in order to be able to use hired skippers (NPFMC 2014).

The NPFMC recently elected to take two more substantive measures to restrict the use of hired skippers. First, in order to address that some shareholders are still using hired skippers on vessels that they own only for the duration of the fishing trip, the NPFMC added a mandate that an individual quota shareholder must own a minimum 20 % interest in the vessel upon which the skipper will harvest their IFQ allocation for the 12-month period prior to using a hired skipper (NMFS 2014b). Second, the NPFMC recommended regulations that prohibit the use of a hired skipper to fish IFQ halibut or sablefish derived from catcher vessel quota shares that were purchased after February 12, 2010. This rule, known as the Sunset Provision, went into effect on December 1, 2014 (NMFS 2014a). This second rule is intended to limit the amount of quota shares available for harvest by hired

skippers. Furthermore, it should ensure that the initial recipients who utilize hired skippers would no longer be competing on the market for quota shares.

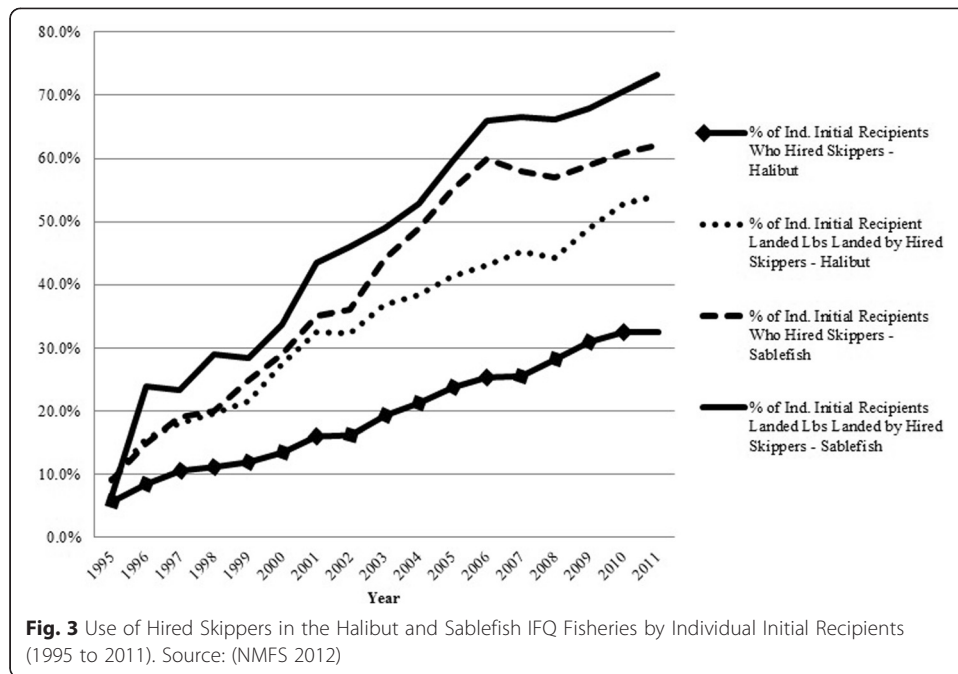
Analysis of the impacts of the active participation measures

Impacts outside of Southeast Alaska

Hired skipper use outside of Southeast Alaska

Despite the efforts to implement active participation measures in these fisheries, the use of hired skippers has increased significantly above levels that existed at the start of the IFQ program, as both the number of quota shareholders, who hire skippers, and the percentage of the total halibut IFQ landed by hired skippers have increased (NMFS 2014a). Figure 1 shows the changes in the use of hired skippers by individual initial recipients in the halibut and sablefish fisheries from 1995 to 2011. Note that this figure does not include the Southeast regulatory areas of the two fisheries due to the differences between how the program was set up for Southeast Alaska compared to the rest of the fishing grounds. Although, there has been a significant attrition of individual initial recipients since the IFQ program was implemented, the number of these individuals who hired skippers to fish their annual IFQ allocations has increased significantly. In fact, the percent of individual initial recipients who hired skippers has increased from 3 % to 33 % and from 9 % to 42 % in the halibut and sablefish fisheries, respectively, during this time period. Furthermore, Fig. 3 shows that from 1995 to 2011 the percent of individual initial recipients' landed IFQ harvested by hired skippers increased from 9 % to 54 % in the halibut fishery and from 7 % to 73 % in the sablefish fishery. This increasing use of hired skippers corresponds to the aging of initial quota share recipients, who, instead of divesting themselves of their shareholdings are opting to utilize hired skippers to fish their annual IFQ allocations. Furthermore, those initial recipients who were previously utilizing hired skippers have consolidated quota shares, which accounts for some of the increase in the amount of quota landed for individual initial recipients.

In February of 2011, when the hired skipper Sunset Provision was being discussed at the NPFMC, public testimony revealed that this was a very contentious and divisive issue. It was evident from this testimony and other literature that several types of hired skipper arrangements have emerged in the fishery. Some initial recipients maintain their vessels upon retiring from fishing and promote a crewmember into the wheelhouse, who acts as their hired skipper. There is also a class of retired initial recipients (described in more detail below), who are absentee shareholders and engage in relationships with hired skippers that are functionally equivalent to leasing (NPFMC 2014). The switch to using hired skippers is gradual for many initial recipients. For example, initial recipients with large holdings may use hired skippers during the long fishing season in order to take a break from fishing. There are also some concerning trends in how participants are meeting the owner-on-board requirement for second-generation quota shareholders. Anecdotal evidence indicates that some second-generation quota shareholders go on board as crewmembers for the duration of the trip during which their IFQ is being harvested, but do not actually participate in the fishing activity (NPFMC 2009, 2014). The skipper and his crew harvest the shareholder's



quota while he is below deck and then the vessel and the shareholder split the ex-vessel revenue from the harvest. This type of second-generation shareholder (known as a walk-on or ride-along) (Van der Voo 2013) appears to view ownership of quota shares as a financial investment rather than a lifestyle. This would indicate that even when the quota shares do transition to second-generation owners, the current regulations are not fully effective at providing for a transition to an owner-operator fleet.

Although the Sunset Provision is meant to expedite the transition to an owner-operator fleet, which should facilitate entry for second-generation shareholders while constraining how initial recipients can use their quota shares, public testimony at the 2011 NPFMC meeting on the potential impacts of this provision was not divided along generational lines. The potential beneficiaries of this provision, second-generation shareholders and hired skippers who may want to buy quota shares, testified on both sides of the issue. Within this group, some argued that the emergence of a generation of absentee shareholders was never the intention of the NPFMC, while others testified that the hired skipper arrangements allowed them to make a living while incrementally purchasing quota shares. Initial recipients also testified on both sides, with similar arguments.

The divide between industry participants centered more on historic differences between the fleet based in Seattle and the fleet based in Alaska rather than generational divisions, revealing some continued cultural distinctions in how these two geographic groups participate in the fishery and think about second-generation ownership. (It should be noted that there are participants in the halibut and sablefish IFQ fisheries from numerous other states, but those testifying to the NPFMC at the 2011 meeting were from Alaska and Seattle and these two fleets comprise the vast majority of participants in these two fisheries). The Seattle-based fleet has historically consisted of large,

highliner vessels while the Alaska fleet is much more diverse and includes numerous small (under 60 foot) vessels (Committee on the Merchant Marine and 1921, Bernton 2010, Harms 2014). Of those testifying to the NPFMC at the 2011 meeting, the Alaska contingent was largely in favor of the Sunset Provision and an expedited transfer of fishing privileges in the IFQ fisheries to the next generation of shareholders, asserting that initial recipients had been given ample time to make their mark in the fishery. On the other hand, many in the Seattle contingent testified that the shareholder-hired skipper relationship is a key component of their family-run fishing businesses, as sons acquire valuable experience and capital to invest in their own quota shares while they work as hired skippers for their fathers. Periods of transition between two generations are not uncommon in fisheries and acting as a hired skipper may be analogous to an apprenticeship or a rite-of-passage (Package-Ward and Himes-Cornell 2014, Pinto da Silva and Kitts 2006).

Another significant difference between the Seattle and the Alaska based fleets that was evident from the 2011 testimony before the NPFMC was access to lending institutions and financial assistance with purchasing quota shares for hired skippers and second-generation shareholders. Amongst the Seattle-based fleet, some initial recipients will use the collateral that they have in their own shareholdings to assist hired skippers in buying quota shares. It was contended that whereas crewmembers and hired skippers in Seattle may be receiving financial assistance from the initial recipients with whom they are affiliated, their counterparts in Alaska often live in small coastal communities with limited access to financial resources. In addition, there is evidence of a growing number of “gifted” (i.e. non-compensated) quota share transactions to second-generation shareholders in the IFQ fisheries (NPFMC 2014), which can perpetuate distributional and access dichotomies.

Perhaps the most contrary to the original intent of the NPFMC for a fully owner-operated catcher vessel fleet is the use of hired skippers by a group of wholly absent shareholders. These shareholders sometimes reside far away from the location of the actual fisheries, have minimal if any risk in the fisheries because they hold only nominal interests in the vessels upon which their IFQ is harvested, but continue to collect a check from their hired skippers (NPFMC Public Testimony 2011). A business model of strict reliance on hired skippers and disinvestment in vessel ownership is precisely the kind of absentee ownership that the NPFMC sought to prevent in the IFQ fisheries (NMFS 1992a). It was argued by some of those testifying at the 2011 meeting that limiting the capacity for shareholders to use hired skippers in this way (by increasing the vessel ownership requirement to 50 % and mandating the use of Internal Revenue Service documents to prove this ownership) would effectively address the misuse of the hired skipper use privilege but not curtail the capacity for family operations to continue with their established business practices (NPFMC Public Testimony). Although hired skipper fees are not tracked in the fishery, anecdotal evidence indicates that in some areas shareholders retain up to 75 % of ex-vessel revenue for the landing of their annual IFQ allocation (NPFMC Public Testimony, der Voo and Lee 2013). At these rates, shareholders may be earning more from retaining their shares and utilizing hired skippers than from selling their shares and investing that money elsewhere. Similar trends in absenteeism and increasing lease rates have been studied in Canada (Pinkerton and Edwards, 2009), Tasmania (van Putten and Gardner 2010),

Iceland (Guyader and Thebaud 2001), New Zealand (Newell et al. 2005b) and elsewhere (Le Gallic and Mongruel 2006).

Participation of corporate entities outside of Southeast Alaska

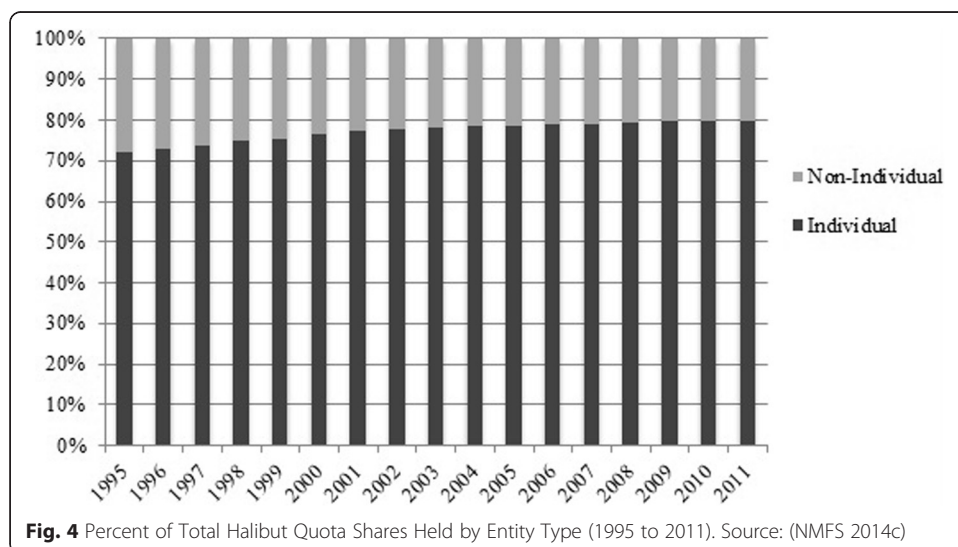
Whereas the transition to owner-operated fleets has been slow, the transition to individual-owned fleets has been more successful, with quota shares migrating from corporate entities to individuals. Figures 4 and 5 show the distribution of quota shares between individuals and corporate entities in the halibut and sablefish fisheries, respectively, from 1995 to 2011. In the halibut fishery, 8 % of the total quota shares have transferred from corporate entities to individuals, while 10 % of the shares in the sablefish fishery have transferred from corporate entities to individuals. However, corporate entities have historically and continue to have a much greater presence in the sablefish fishery than in the halibut fishery, likely due to much greater capital investment requirements to participate in the sablefish fishery, which is prosecuted in off-shore and deeper waters than halibut. It should be noted that herein corporate entities include corporations formed and solely owned by individual initial recipients, which may be slowing the transition to fully individual-owned catcher vessel fleets in these fisheries.

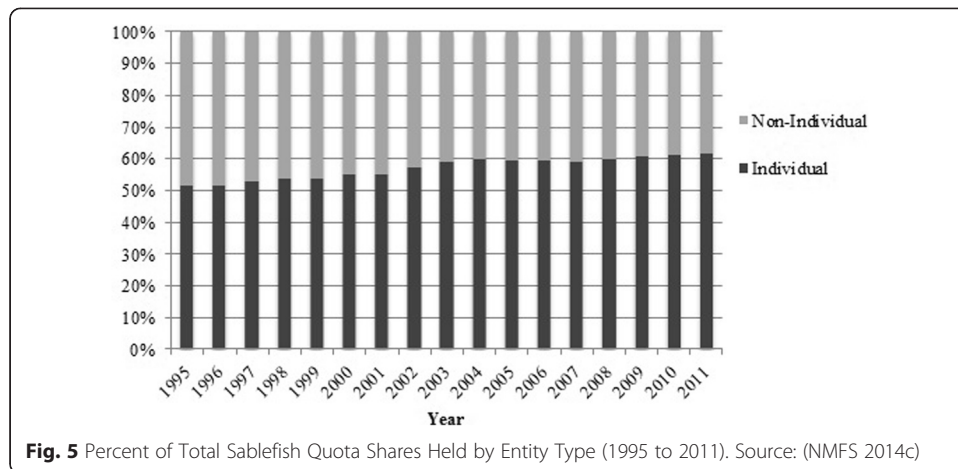
Impacts of the more restrictive measures in the Southeast regulatory areas

Impacts of the prohibition on acquisition of quota shares by corporate entities

Given the prohibition on the acquisition of quota shares by any corporate entity in the Southeast regulatory areas, it is reasonable to expect that the percentage of the area quota shares held by corporate entities would be lower, and the divestiture of quota shareholdings by corporate entities would be higher, in these areas than in the other regulatory areas. To assess this hypothesis, we compared quota shareholdings and rates of quota share divestiture of corporate entities in the different regulatory areas.

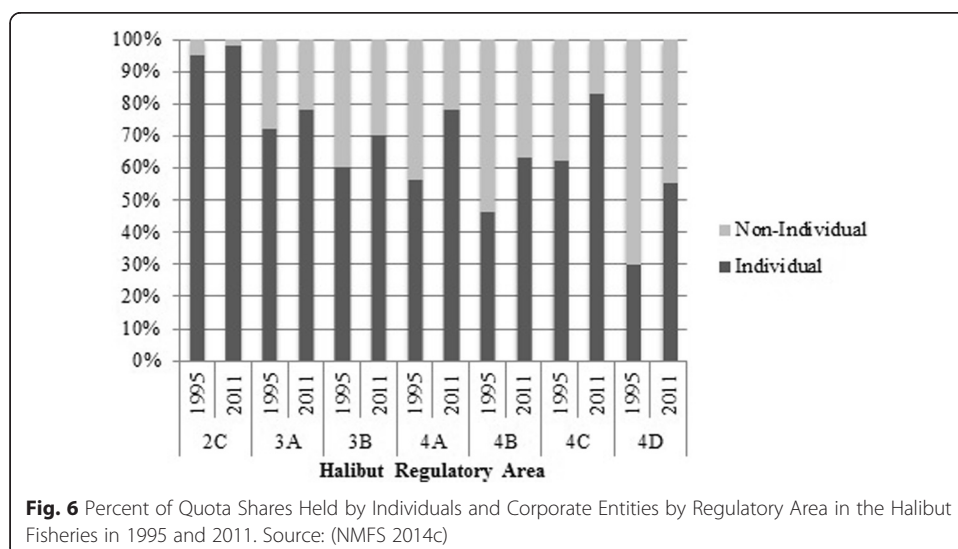
Figures 6 and 7 show the percent of area quota shares held by individuals and corporate entities in the halibut and sablefish fisheries in 1995 and 2011. “Individuals” in these

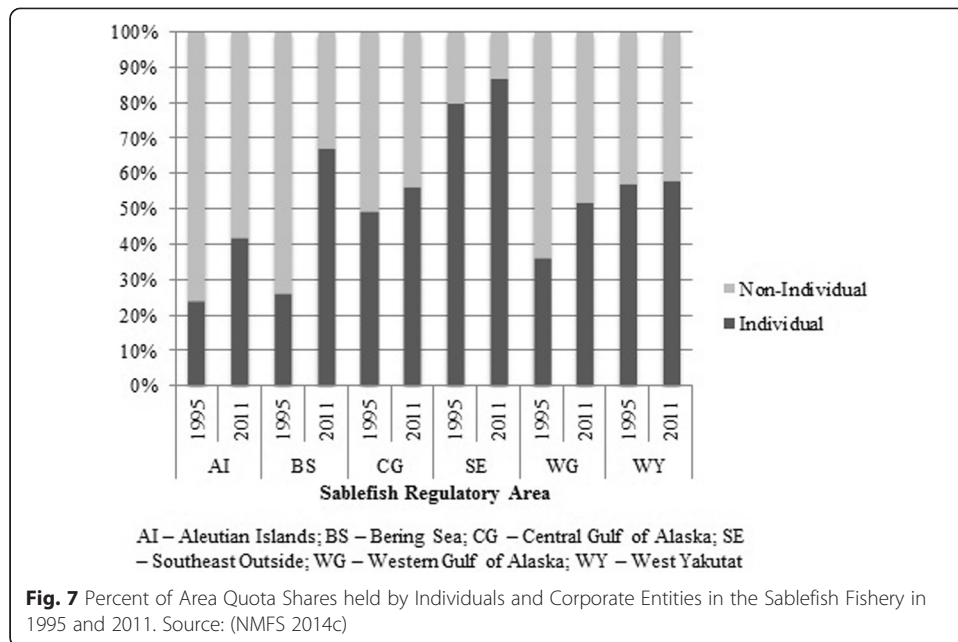




figures includes both initial recipients and second-generation quota shareholders. As expected in comparison to the other regulatory areas, in the Southeast regulatory areas corporate entities hold significantly smaller percentages of the total area quota shares than individuals. Given that in the Southeast regulatory areas corporate entities held significantly smaller percentages of the areas' quota shares at initial allocation, it may be more informative to analyze the changes in the shareholdings of corporate entities in these areas from 1995 to 2011. Over this time period, in the halibut fishery, the percent decrease in quota shareholdings of corporate entities was the largest in area 2C (at -60 %); however, in the sablefish fishery, the largest percent decrease was in the Bering Sea regulatory area (at -55 %), compared to a decrease of 35 % in the Southeast Outside regulatory area.

Based on the above examination of shareholdings by different participant types, the hypothesis about the impacts of the special restriction on corporate entities in the Southeast regulatory areas is only partially substantiated. Figures 6 and 7 show that individuals now own the majority of the quota shares across all areas in both fisheries,





with the exception of the Aleutian Islands regulatory area of the sablefish fishery. Furthermore, the decrease in the percent of area quota shares held by corporate entities has been substantial across all areas, with the exception of the western Yakutat area of the sablefish fishery. Although corporate entities own less of the total quota shares in the Southeast regulatory areas than in other regulatory areas, the percent of the total area quota shares held by corporate entities in the Southeast regulatory areas was also less than in the other regulatory areas at the start of the IFQ program. Furthermore, the rate of quota share divestiture of corporate entities in the Southeast regulatory areas compared to the other regulatory areas is not significantly higher. As in the other regulatory areas, the continued participation of corporate entities in the Southeast regulatory areas may be in part due to the formation of corporations by individual initial recipients.

Impacts of limiting the use of hired skippers to corporate entities

Given the prohibition on the use of hired skippers by all individuals and the prohibition on the acquisition of quota shares by corporate entities in the Southeast regulatory areas, it is reasonable to expect that the use of hired skippers would be lower and the facility of entry would be higher in the Southeast regulatory areas than in the other areas. To assess this hypothesis, we first analyzed the percent of initial recipients who hired skippers and the percent of total landings that were landed by hired skippers. Second, we analyzed the attrition rate of initial quota share recipients and the percent of area quota shares held by second-generation quota shareholders.

Table 1 presents the summary data of skipper use by regulatory area for both the halibut and sablefish fisheries for 2011. The hired skipper use statistics in the table include both individual and corporate quota shareholder usage. The table shows that the percent of initial recipients who hired skippers is significantly lower in the Southeast regulatory areas than in the other areas for both fisheries, with 4 % in halibut area 2C and 21 % in the sablefish Southeast Outside area, compared to an average rate in the other areas of 40 % and of 59 %, respectively. The percent of the total harvest landed by

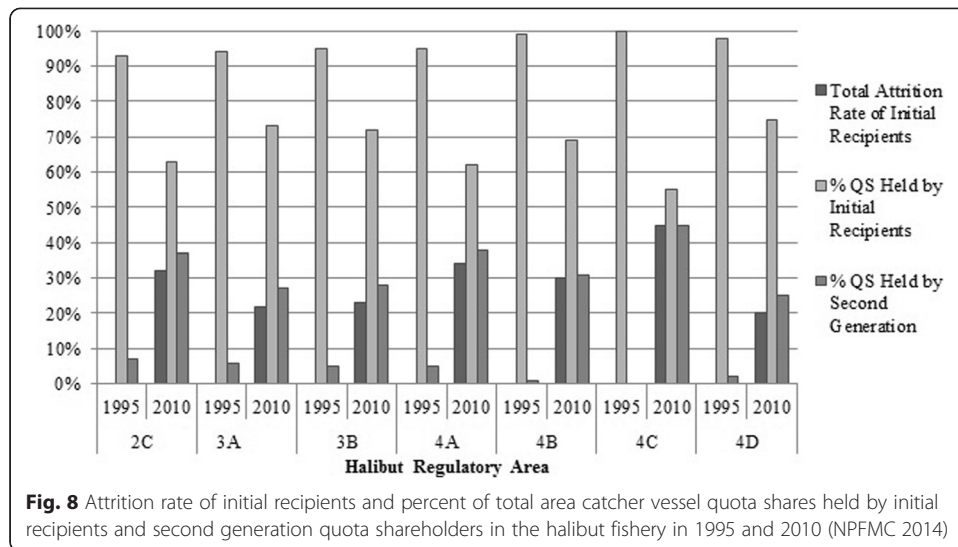
Table 1 Use of Hired Skippers and Their Landings by Regulatory Area (2011). Source: (NMFS 2011, 2012)

	Number of Hired Skippers	Number of Initial Recipients Who Hired Skippers	Total Initial Recipients (Individuals and Corporate Entities)	% of Initial Recipients Who Hired Skippers	Hired Skipper Landings % of Total Landings
<i>Halibut</i>					
2C	24	29	681	4 %	3 %
3A	219	271	899	30 %	43 %
3B	156	166	303	55 %	56 %
4A	60	66	128	52 %	52 %
4B	34	38	50	76 %	75 %
4C/D	26	30	60	50 %	66 %
<i>Sablefish</i>					
AI	32	34	53	64 %	95 %
BS	42	34	61	56 %	65 %
CG	136	148	261	57 %	84 %
SE	41	49	252	19 %	17 %
WG	54	67	99	68 %	93 %
WY	78	98	149	66 %	72 %

*Regulatory areas 4C and 4D are combined because area 4C IFQ can be fished in area

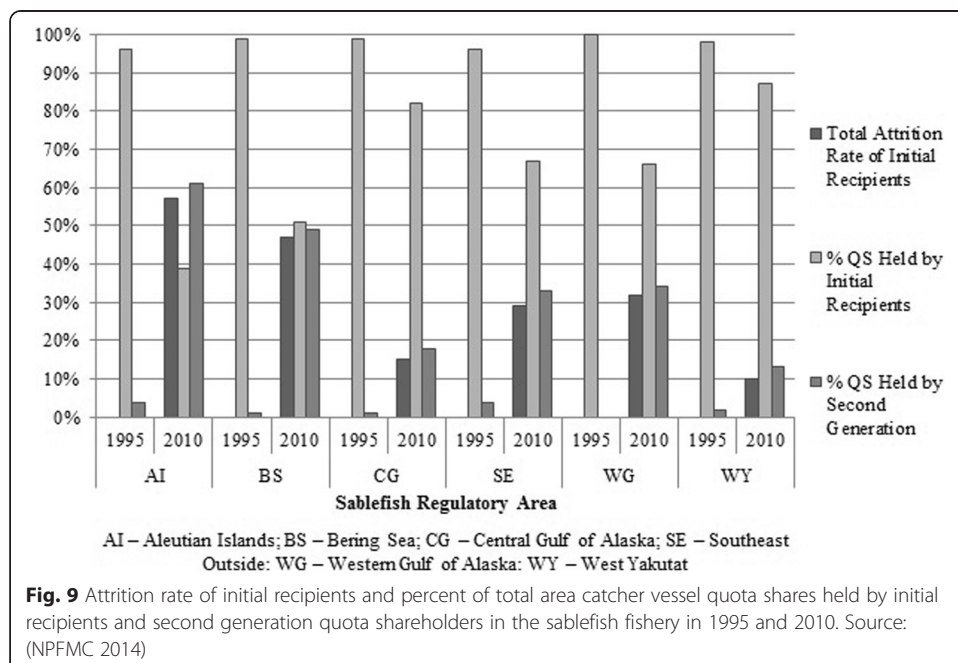
hired skippers is also significantly lower in the Southeast regulatory areas than in the other areas. In the halibut fishery in area 2C, hired skippers accounted for 3 % of the total landings, compared to an average rate of 62 % across the other areas in 2011, whereas in the Southeast regulatory area of the sablefish fishery, hired skippers accounted for 17 % of the total landings, compared to an average rate of 82 % across the other areas in 2011. Although the hypothesis on the impacts of the greater restriction on hired skipper use in Southeast Alaska is substantiated by the data in Table 1, these areas have also had historically much smaller numbers of corporate entities, which have to use hired skippers, than the other regulatory areas. Therefore, the lower use of hired skippers in the Southeast regulatory areas may be a product of relatively few corporate entities, a greater number of owner-operators since program implementation, and the special restriction on hired skipper use.

Figures 8 and 9 compare the attrition rate of initial quota share recipients (including both individuals and corporate entities) and the percent of the total area quota shares held by initial recipients and second-generation quota shareholders across the regulatory areas. Between 1995 and 2010, the total attrition rate of catcher vessel quota share units held by initial recipients was 32 % in halibut area 2C, compared to an average rate of 29 % across the other regulatory areas for this fishery. In the sablefish Southeast Outside regulatory area, the total attrition rate was 29 %, compared to an average rate of 32 % across the other regulatory areas. That is, the total attrition rates of initial recipients are not significantly higher for the Southeast regulatory areas than the other regulatory areas of the two fisheries. The percentage of area catcher vessel quota shares owned by second-generation quota shareholders has increased across all areas. The percentage of the total catcher vessel quota shares held by second-generation quota shareholders was 37 % in halibut area 2C, compared to an average rate of 39 % across the other regulatory areas, and 33 % in the Southeast Outside



sablefish area compared to an average rate of 35 % across the other regulatory areas in 2010. That is, the quota shareholdings of second-generation quota shareholders are not significantly higher in the Southeast regulatory areas than in the other areas.

Visual examination of Figs. 8 and 9 does not appear to support the hypothesis that the more restrictive use of hired skippers in the Southeast regulatory areas has provided for more facilitated entry into the IFQ fisheries. The exodus of initial quota share recipients from the other regulatory areas indicates that given the ability to hire skippers to fish their IFQ, some quota shareholders will still opt to retire from the fishery altogether rather than to use a hired skipper. It should be noted, however, that there is anecdotal evidence that some retiring initial recipients have sold their quota shares in the Southeast regulatory areas but retained their shares elsewhere (or even bought more elsewhere) to be harvested



by hired skippers (NPFMC Public Testimony 2011). This trend may be too recent to show up in the data as a substantial increase in second-generation quota share ownership, but it may begin to evidence itself in the next five to ten years as these initial recipients continue to retire.

As a primary factor that could impact entry and exit decisions, different expectations of current and future earnings across the regulatory areas are reflected in variable quota share prices. These anticipated earnings are based upon current differences in and expectations about future changes to factors such as ex-vessel prices, operating costs, competition for quota, TACs, and regulatory changes across the areas (Karpoff 1989, Wilen 1989, Huppert et al. 1996). The expectation is that the highest rates of entry and exit would occur in areas with the lowest quota prices, as new entrants want to buy cheap quota shares and initial recipients may be less inclined to retain quota shares that have not appreciated much in value since the start of the program. In reviewing Table 2, which shows mean quota share prices (expressed as nominal dollars per pound of associated IFQ) by area for the halibut and sablefish fisheries, this hypothesis holds true for the areas in the sablefish fishery with the highest entry and exit rates, but less so for the halibut fishery, where despite high quota share prices in area 2C, entry and exit rates in this area are still the third highest for the fishery.

Given that the use of quota shares in Southeast Alaska is more constrained than in the other regulatory areas (i.e., no hired skipper use by individuals and QS transfers only to IFQ crewmembers), we would expect quota share prices to be lower in these areas than in the other areas. However, quota shares in the Southeast regulatory areas may be more valuable because of the extent of demand in these areas in comparison to other areas. For example, halibut in Southeast Alaska is found in protected inland

Table 2 Quota Prices and Ex-vessel Prices in the Halibut and Sablefish IFQ Fisheries. Source: (NMFS 2011)

Year ^a	Area	Mean Price \$/IFQ	Year ^a	Area	Mean Price \$/IFQ ^b
<i>Halibut</i>			<i>Sablefish</i>		
1995	2C	7.58	1995	AI	Unknown
2010		22.71	2009		Unknown
1995	3A	7.37	1995	BS	4.87
2010		21.06	2009		3.26
1995	3B	6.53	1995	CG	6.02
2010		18.63	2009		16.75
1995	4A	5.64	1995	SE	6.73
2010		12.60	2009		18.22
1995	4B	6.14	1995	WG	6.16
2010		8.93	2009		12.11
1997	4C	6.29	1995	WY	5.93
2010		9.90	2009		17.18
1997	4D	5.85			
2010		9.50			

^aSablefish IFQ prices are most recently available for 2009, whereas halibut IFQ prices are most recently available for 2010. Halibut IFQ prices were not available for 1995 in Areas 4C and 4D. The first year these prices were available was 1997

^b QS prices are not comparable across regulatory areas necessitating the use of mean quota share prices expressed as dollars per associated pound of IFQ

waters and can therefore be harvested from small vessels with limited gear. This in addition to the deep cultural roots of halibut fishing in Southeast Alaska, where rural residents have historically and continue to fish halibut for subsistence, has likely contributed to substantial competition for this area's quota (Himes-Cornell et al. 2013). Sablefish fishing, on the other hand, demands slightly more investment, as it is found in deeper and less protected waters, although many fishermen in Southeast Alaska own both halibut and sablefish quota shares. Greater demand for both sablefish and halibut quota shares in Southeast Alaska can also be attributed to the number of people living adjacent to this regulatory area, which has the second largest human population after Area 3A.

Conclusions

The effectiveness of the active participation measures in the Alaska halibut and sablefish IFQ program has been mixed. Whereas the limit on corporate ownership of quota shares has been relatively successful in providing for a transition of shareholdings to individuals, the transition to owner-operators has been hampered by the continued use of hired skippers by initial recipients. In the Southeast regulatory areas, the prohibition on hired skipper use by all individuals has effectively minimized this use, but the transition to a fully individual owned fleet in these areas has been slowed by the continued presence of corporate entities and new entry rates are comparable to other regulatory areas.

The experience with the hired skipper provision and the prohibition on quota share acquisition by corporate entities in the IFQ program raises the question of how to develop effective measures to achieve active participation objectives in fisheries management. Perhaps the most important lesson that can be learned from this experience is that management needs to be adaptive to the changing realities in a fishery and to the likelihood that fishery participants will exploit loopholes if sufficient economic incentives exist to do so. In fact, proper understanding of incentives is paramount for the development of effective active participation measures. The transition to owner-operated fleets in the IFQ fisheries has been slow because individual initial recipients continue to have the incentive to hire skippers rather than divest themselves of their quota shareholdings. That is, it seems that many shareholders consider the retention of their shares and the use of hired skippers to be more profitable than selling their shares. Because often initial recipients are in a better financial position than hired skippers and second-generation shareholders and because they can leverage their ownership interests in their initially allocated shares, they are likely to be able to outbid these new entrants for quota shares, thus also constraining entry.

According to testimony at the February 2011 NPFMC meeting, the Sunset Provision had already begun to impact the actions of some initial recipients, who testified that they had stopped transferring quota shares after the February 2010 control date because they did not want to be limited in their capacity to use hired skippers for landing their annual IFQ allocations. Ultimately this provision may expedite the transition to second-generation ownership by locking initial recipients into their current holdings and by providing a disincentive for these initial recipients to compete for quota shares. However, the use of hired skippers is still likely to increase in the coming years as more

initial quota share recipients become unable or unwilling to harvest their own annual IFQ allocation, and the full impacts of the Sunset Provision will likely not be evident for a number of years. Given this, it would seem prudent for fisheries managers to address the lack of data on hired skipper fees/lease rates in order to better understand the impacts of such lease rates on the profitability of the fisheries as a whole as well as the individual profitability of different categories of quota shareholders, vessel owners, hired skippers and new entrants to the fisheries.

New fishermen incrementally building up ownership stakes in a fishery is not new. As a skilled trade, fishing has always had a culture of apprenticeship, with fishermen working their way up from the deck to the wheelhouse. What is different with catch share programs is that, for the most part, initial recipients are granted quota shares gratis and second-generation shareholders have to pay for them, which can create inter-generational equity issues. The intent of the NPFMC in the Alaska halibut and sablefish IFQ program was not to ensure that all initial recipients could use hired skippers in the long run, but it was seen as being too burdensome administratively to tie the hired skipper privilege to the actual quota shares (NPFMC 2014). The transition towards hired skipper use by many individual initial recipients, who had previously not used hired skippers to fish their annual IFQ allocations, has in turn slowed the transition to second-generation ownership of catcher vessel shares. At the same time, the increasing use of hired skippers means that initial recipients are benefiting not only from the windfall gains of freely allocated quota shares but from the income they are generating as lessors, which presumably is higher than what they could earn with other investments. This may exacerbate the inter-generational equity issues that arise with initial allocations and the differentiation of the privileges associated with quota share holdings based on generation (e.g., using a hired skipper), especially if it results in initial recipients delaying when they sell their shares and how much the shares are worth.

Abbreviations

IFQ: Individual fishing quota; ITQ: Individual transferable quota; TAC: Total allowable catch; NMFS: National Marine Fisheries Service; NPFMC: North Pacific Fishery Management Council.

Competing interests

The authors declare that they have no competing interests.

Acknowledgements

We would like to thank Jean Lee at the Pacific States Marine Fisheries Commission for her assistance with obtaining the secondary data for this study. We would also like to thank Dr. Ron Felthoven, Dr. Ben Fissel and the anonymous reviewers of this journal for their insight and comments on earlier versions of this paper. The findings and conclusions in the study are those of the authors and do not necessarily represent the views of the National Marine Fisheries Service.

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Received: 6 January 2015 Accepted: 14 September 2015

Published online: 02 December 2015

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