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Attitudes and Preferences Toward Pacific Halibut Management Alternatives in the Saltwater Sport Fishing Charter Sector in Alaska: Results from a Survey

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U.S. DEPARTMENT OF COMMERCE National Oceanic and Atmospheric Administration National Marine Fisheries Service Alaska Fisheries Science Center

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ABSTRACT

Management of marine recreational fishing for Pacific halibut (*Hippoglossus stenolepis*) off Alaska has changed considerably in recent years due to concerns over stock declines and allocation issues. Since 2007, increasingly restrictive limits have been placed on Pacific halibut fishing of charter boat anglers, and a limited entry program was established in 2011 to curb the growth of the charter sector. In 2014, the Alaska Halibut Catch Sharing Plan (CSP) was implemented. It formalized the process for both (a) determining allocation of halibut between the commercial and recreational charter sectors and (b) initiating changes to harvest restrictions on charter fishing. One provision in the CSP allows Alaska saltwater sport fishing charter businesses that hold charter halibut permits (CHP) to lease pounds of commercial individual fishing quota (IFQ), which get converted into guided angler fish (GAF). These GAF can be used by charter businesses to offer their clients harvesting opportunities that are less restrictive in terms of the number and size of fish they catch and keep on a charter fishing trip.

This report describes and summarizes the results from a survey of CHP holders (charter businesses) conducted during 2015 that collected information on CHP holders' attitudes and preferences toward Pacific halibut management in Alaska and preferences and behavior related to the GAF lease market, including values they place on GAF/leased IFQ under different sets of user or transactional restrictions. The mail survey was administered during 2015 to all CHP holders (565 charter businesses) and involved multiple mailings and a telephone contact. The survey response rate was 48% (271 completed surveys).

The survey results suggest that CHP holders generally had a negative view of the CSP and the GAF leasing program, with the majority believing that the GAF leasing program negatively impacts their business. Only a small percentage of respondents had participated in the program during 2014. Among those who had not leased GAF, the costs to lease GAF and generally opposing the GAF leasing program were cited by the most CHP holders as the primary reason for not participating in the program. About 84% of respondents did not plan to lease GAF in 2015 either. The majority of respondents also felt that relaxing restrictions on how GAF could be used (lease terms and transferability) were not likely to be helpful to their business. Respondents were also asked about their knowledge of, and attitudes toward, the Catch Accountability Through Compensated Halibut (CATCH) Proposal, which aims to create a recreational quota entity that can buy and sell commercial halibut IFQ. About 32% were not at all familiar with the CATCH Proposal, and over three-quarters of respondents indicated that they were not supportive of funding the proposal through a fee based on the number of endorsements held by CHP holders or a charter halibut tax per fish based on charter logbook records. Instead, the favored funding mechanism in terms of support was a charter halibut stamp, which would be purchased directly by charter anglers (70% were at least a little supportive). Respondents were split on whose responsibility (angler clients, charter businesses, or both) it was to fund the CATCH proposal, but the majority indicated that they did not feel the cost should be borne solely by charter businesses (about 68%).

There were several differences between responses from CHP holders in International Pacific Halibut Commission (IPHC) regulatory Areas 2C (Southeast Alaska) and 3A (Southcentral Alaska). Specifically, Area 3A respondents viewed the CSP, the GAF leasing program, and how

the current CSP would affect their businesses more negatively than those in Area 2C. They also differed in terms of their support for the CATCH Proposal, with Area 3A respondents being less supportive on average than Area 2C respondents. Area 2C and 3A respondents also seemed to feel differently about how supportive they would be of alternative programs, such as a GAF ownership program (that would allow individual charter businesses to buy and sell commercial fishing quota as GAF) and GAF leasing programs that were more flexible than the current program. In general, Area 2C respondents were a little more supportive than Area 3A respondents of these alternative programs. However, Area 2C and 3A respondents were similar in their statements about whose responsibility they felt it was to pay for the CATCH Proposal (in terms of charter anglers, charter businesses, or both) and their beliefs about how effective it would be if implemented.

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INTRODUCTION

The National Marine Fisheries Service (NMFS) is the agency responsible for collecting and analyzing scientific data on the United States' (U.S.) living marine resources, including Pacific halibut (*Hippoglossus stenolepis*). Under the Magnuson-Stevens Fishery Conservation and Management Act (see Section 303), Executive Order 12962 (Marine Recreational Fishery Statistics, Section 1(h)), and Executive Order 12866 (Section 1(b)(6)), NMFS is required to provide economic analyses of Federal management actions and policies to improve the Nation's fisheries. This data collection project meets these statutory and administrative requirements by providing resource managers with the information necessary to understand the likely future impacts of management actions on the Alaska charter boat-based halibut sport fishery.

Pacific halibut is a primary target sport fishery species in Alaska (Jennings et al. 2015). During 2013, for instance, about 453,000 halibut were harvested by sport anglers in the state, a large proportion of which were caught by anglers on charter vessels.¹ The Alaska charter boat sector has undergone significant change in recent years due, at least in part, to regulatory changes in the management of the Pacific halibut sport fishery. To control growth of the charter sector in the primary recreational charter boat fishing areas off Alaska, a limited entry program was implemented in 2011 (75 Federal Register 554) that requires charter businesses to have a valid charter halibut permit (CHP) aboard during every halibut charter fishing trip. In addition, since 2007 charter vessel operators in Southeast Alaska (International Pacific Halibut Commission [IPHC] Area 2C) have been subject to harvest controls that impose both size and bag limits on the catch of Pacific halibut on guided fishing trips, with these limits being more restrictive than the regulations for non-guided trips (e.g., 78 Federal Register 16425).² And in recent years, size limit restrictions have been added to the harvest controls (traditionally bag limits) used in IPHC Area 3A as well. Most recently, a Halibut Catch Sharing Plan (CSP) was implemented during 2014 that formalized the process (a) of allocating catch between the commercial and charter sector and (b) for evaluating changes to harvest restrictions (78 FR 75843) for Areas 2C and 3A only. Importantly, the CSP allows leasing of commercial halibut individual fishing quota (IFQ) by eligible charter businesses. The conversion of IFQ pounds to actual fish allowed to be caught in the charter sector, called guided angler fish or GAF, is based on a conversion factor determined by NMFS. During 2014, the number of IFQ pounds that would need to be leased per GAF in Area 2C was 26.4 lbs and in Area 3A was 12.8 lbs. In 2015, those conversion factors increased to 67.3 and 38.4 lbs in Areas 2C and 3A, respectively. Leased halibut IFQ converted and then used as GAF could then be used by charter businesses to relax harvest restrictions for their angler clients, since GAF fish would not be subject to the charter sector-specific size and bag limits. However, the non-charter sector size and bag limit restrictions (currently two fish of any size per day) would still apply to charter anglers individually. Thus, for instance, a charter business in Area 2C, where there currently is a bag limit of one halibut within a specific size range, can use a GAF to allow an angler client to catch an additional fish of any size (provided the other fish caught adheres to the size restrictions in place).

¹ From Alaska Department of Fish and Game's Statewide Harvest Survey website:

http://www.adfg.alaska.gov/sf/sportfishingsurvey/index.cfm?ADFG=region.home</u>. Accessed December 10, 2015. ² The other main area of Alaska in which saltwater fishing for Pacific halibut occurs is Southcentral Alaska (IPHC Area 3A), an area that includes the Cook Inlet region, Kodiak Island, and the Prince William Sound. Similar harvest restrictions were implemented in this area during 2014 (79 FR 13906).

This report describes and summarizes the results from a survey of CHP holders (charter businesses) conducted during 2015 that collected information on CHP holders' attitudes and preferences toward Pacific halibut management in Alaska and preferences and behavior related to the GAF lease market, including values they place on GAF/leased IFQ under different sets of user or transactional restrictions that would introduce flexibility into the way GAF is used. This information could be useful to the NMFS, the North Pacific Fishery Management Council (NPFMC), and the IPHC in future deliberations about Pacific halibut management. The remainder of the report is as follows: the next section describes the general structure of the survey and the development and qualitative pretesting activities associated with its development. The subsequent section covers the protocols used to implement the survey and results of the implementation. Next, a summary of the results is provided for all respondents and by IPHC regulatory area. Finally, the report concludes with a summary of findings and a discussion of challenges and next steps.

SURVEY DEVELOPMENT AND ORGANIZATION

The survey was developed during 2014. It benefited from input provided by numerous experts on Pacific halibut management in the North Pacific (staff at the NMFS Alaska Regional Office and NPFMC), experts in the design of surveys, and charter business owners who hold CHPs (i.e., members of the target population). One-on-one interviews with CHP holders were used to test the information and presentation of the survey questions, and survey generally, and ensure key concepts and terms were understood, and key design issues were evaluated. The interviews were also used to ensure the survey instrument was a comfortable length and easy to complete.

The survey instrument was organized into six sections (the survey instrument can be found in the Appendix). Section A was short and presents some basic information about the CSP, including the IFQ leasing (GAF) component of the program, while asking for information about general attitudes toward the CSP generally (A1), the GAF leasing program specifically (A2), and the expected effect the GAF leasing program will have on the individual's business (A3). These introductory questions were comparatively easy to answer for respondents and thus served the dual purpose of enabling them to voice general opinions about the CSP and to get them thinking about specific aspects of the program relevant to the survey.

Section B focused on gathering information about respondents' behavior in the GAF leasing market during 2014. This section included questions on whether or not the respondent leased GAF during 2014 and, if not, their reasons for not leasing GAF (B1); the amount of GAF leased (B2), whether a broker was used to facilitate the leasing process (B3); the relationship between the respondent and the person/entity from whom GAF was leased (B4); and the level of difficulty of the leasing process to the respondent (B5). Respondents indicating they did not lease GAF during 2014 were directed to B10, which asks all respondents to indicate whether or not they plan to lease GAF in the following year (i.e., in 2015). In addition, respondents were given some information about the program rules regarding mandatory returns of unused GAF (B6). They were then asked whether they returned any GAF (B6) during 2014, and whether there were any provisions in their lease agreement that allowed them to get a refund (or partial refund) for GAF that was unused and returned (B7). For respondents who leased GAF, question B8 asked respondents to assess how positive or negative the impact of having GAF during 2014 was for their business, while B9 asked them to state their reasons for leasing GAF during 2014. The data

collected in this section supplement information on lease transactions from IFQ transfer/lease application forms that are required to be submitted to NMFS.

Section C was a short section that presented information on two restrictions in the current GAF leasing program that are sometimes relaxed in other tradable permit programs (Call and Lew 2015): single-season use and no transfers between CHP holders.³ Under the current rules for the GAF leasing program, several restrictions are placed on the use of GAF, including the following:

- 1. **Single-season use**. GAF must be used before the end of the season for which it is leased, with automatic returns if the GAF is unused by a certain date (15 days before the end of the commercial fishing season).
- 2. No transfers. GAF can't be transferred between CHP holders during the season.

In C1, they are asked how helpful, if at all, they believe being able to relax each of those restrictions would be for their business. This is followed by two questions that ask how their behavior in the GAF leasing market would change if the restrictions were relaxed in terms of how much GAF they would lease (C2 and C3).

Section D extended the line of questioning in Section C by asking respondents several stated preference questions (Bateman et al. 2002, Louviere et al. 2000) in which they are asked to choose their preferred option between two programs: the current GAF leasing program (and all the associated restrictions and rules) and an alternative program that relaxes one or both of the restrictions discussed in Section C. Each alternative program would have a different associated market price that the respondent would have to pay. These three choice questions (D1, D3, and D5) provide information on how respondents trade off relaxed restrictions with price variations they would hypothetically see in the market (i.e., the prices presented are hypothetical, but based on amounts determined to be in a range of plausible values in testing activities). In addition to these choice questions, respondents are asked to identify the amount of GAF they would lease under each of the presented options in D2, D4, and D6. D7 identifies how confident individuals are about their answers to the stated preference questions. In combination with the stated preference choice questions (D1, D3, and D5), these questions can be used to estimate the demand for GAF under different GAF leasing programs, and can be used to assess trade-offs charter businesses make with respect to relaxing restrictions and higher costs. These data are summarized in this report but are not analyzed formally. The analysis of the stated preference choice experiment data is left to future research.

Section E presented information about a proposed program that is being discussed at the Council presently. This program, the Catch Accountability through Compensated Halibut (CATCH) proposal (also referred to as the CATCH project herein), creates a recreational quota entity (RQE) that would be eligible for purchasing commercial halibut IFQ that would be added to the charter sector's allocation that is determined under the CSP. By increasing the overall share of the allocation to the recreational charter sector, the proposal intends to reduce the risk of the Council imposing constraining harvest restrictions (e.g., setting maximum size limits on halibut that are very small fish or reducing the number of fish that may be caught to a single fish in

³ Recent research has shown that the restrictions imposed on transfers within IFQ markets can have significant effects on economic efficiency and other non-efficiency goals (e.g., Kroetz et al. 2015).

combination with a size limit) due to concerns about the sustainability of the harvest across all sectors. Thus, it is a common pool approach to increasing the recreational charter sector's allocation. Question E1 asked about the respondent's familiarity with the proposal. In E2, respondents were provided information about several options for financing the proposal, and then were asked how supportive they would be of each of those funding mechanisms. E3 asked respondents if they would be willing to pay a specific amount of money that depends upon how many client anglers the respondent can take out fishing based upon the CHP they hold. Again, the presented amounts are hypothetical,⁴ but are based upon amounts viewed as plausible by respondents in pretesting activities. The section ended with a question that asks how much the respondent agrees or disagrees to several statements about the CATCH project (E4). These include statements regarding passing on higher fees to customers, supporting the CATCH project no matter how much it costs, how effective the CATCH project will be if implemented, and whose responsibility it is to fund it.

The final section (Section F) contained questions aimed at another alternative to the GAF leasing program, a program in which CHP holders were eligible to own GAF (IFQ), putting them on level ground with commercial fishermen. After describing the program, respondents are asked how helpful they feel such a program would be (F1) and how likely they would be to purchase halibut IFQ (F2). The final survey question (F3) asked how supportive the respondent would be to each of the three types of programs asked about in the survey, programs that relax GAF leasing restrictions, the CATCH project, and the GAF ownership program described in Section F.

SURVEY IMPLEMENTATION

This section describes the sampling frame, survey protocols, and results of implementing the survey with respect to the survey returns, undeliverables, and response rates.

Sampling Frame

The population of interest was all charter businesses holding a valid charter halibut permit during 2014 (referred to as CHP holders). The sampling frame for this population was the list of CHP holders according to the NMFS Alaska Regional Office. The updated list of this population is available on-line at https://alaskafisheries.noaa.gov/ram/charter/apps_permits.htm. The sampling frame excludes several types of CHP holders that were on the CHP holder list, specifically community quota entities (CQEs) that can hold CHPs. Therefore, all CQEs were removed from the list prior to finalizing the sampling frame. Numerous individuals and businesses entities held multiple CHPs, but the list was cleaned to only include unique names and businesses. The final list used as the sampling frame for this study consisted of 565 CHP holders. Among those on the final list, there were 304 with CHPs valid for charter fishing for halibut in IPHC Area 3A (Southcentral Alaska) and 261 with CHPs for IPHC Area 2C (Southeast Alaska). All individuals and businesses on the final list were included in the survey. That is, we conducted a full census of the population.

⁴ This is a contingent valuation question, which is another type of stated preference method for eliciting economic value (Bateman et al. 2002).

Survey Protocols

The survey was administered by a survey research firm, Quantech, using a mixed mode approach. Our survey protocols followed a modified version of the Dillman Tailored Design Method (Dillman et al. 2009), which consists of multiple contacts. The specific set of contacts employed was the following:

- 1. An **advance letter** notifying respondents about a week prior to the questionnaire arriving by mail.
- 2. An **initial mailing** sent about a week after the advance letter. Each mailing contained a personalized cover letter, questionnaire, and a pre-addressed stamped return envelope.
- 3. A postcard follow-up reminder mailed one week following the initial mailing.
- 4. A second full mailing mailed about 2 weeks after the initial mailing.
- 5. A **follow-up telephone interview** to encourage response. These interviews were conducted by trained, experienced interviewers and using computer-assisted telephone interviewing (CATI).
- 6. A **third mailing** to individuals identified in the follow-up phone interview as needing a new survey in order to be able to complete and return it. This mailing was done on an as-needed basis and was sent out within one business day of the telephone interview in which the need was identified.

Table 1 provides the dates each of the above contacts occurred. The survey implementation began in February 2015. The final mailing was sent in May 2015, and the final close date for receiving responses was 22 June 2015.

ruble 1. Think of the survey contacts.	
Contact	Date
Advance Letter	25 February 2015
Initial Mailing	4 March 2015
Postcard Reminder	11 March 2015
Second Mailing	25 March 2015
Follow-Up Telephone Calling	7 May 2015 – 20 May 2015
Third Mailing [*]	Within 1 business day of telephone follow-up,
	upon request only

Table 1. -- Timing of the survey contacts.

*The last Third Mailing was sent on 19 May 2015.

Survey Implementation Results

As noted above, a total of 565 surveys were mailed in March 2015 to CHP holders. However, 38 CHP holders had undeliverable addresses (including one deceased CHP holder), and 14 others were found to be ineligible (e.g., no longer in business). Moreover, two duplicate CHP holders were found and removed. In sum, this reduced the effective sample of CHP holders who received the survey to 511.

Table 2 presents the number of completed surveys returned by week for the 20-week period following the initial mailing. A total of 271 completed surveys were received during that period with the majority of returns being received by the end of April (about 70% of total returns),

although the number of returns per week remained in double digits until Memorial Day weekend (23-25 May) after which it dropped off considerably. This is likely attributable to the fact that the unofficial start of the charter fishing season in Alaska is the Memorial Day weekend. After that date, it is unlikely that charter business owners will have the time or inclination to complete voluntary surveys like this one.⁵

Time period	Surveys received	Cumulative percentage
		received
Initial mailing - 03/15/2015	4	1.5%
03/16/2015 - 03/22/2015	70	27.3%
03/23/2015 - 03/29/2015	41	42.4%
03/30/2015 - 04/05/2015	29	53.1%
04/06/2015 - 04/12/2015	17	59.4%
04/13/2015 - 04/19/2015	20	66.8%
04/20/2015 - 04/26/2015	8	69.7%
04/27/2015 - 05/03/2015	9	73.1%
05/04/2015 - 05/10/2015	28	83.4%
05/11/2015 - 05/17/2015	15	88.9%
05/18/2015 - 05/24/2015	15	94.5%
05/25/2015 - 05/31/2015	8	97.4%
06/01/2015 - 06/07/2015	5	99.3%
06/08/2015 - 06/14/2015	2	100.0%
06/29/2015 - 07/05/2015	0	100.0%
Total	271	

Table 2. -- Completed surveys by week.

Beginning in May 2015, individuals who had not returned a completed survey were contacted over the telephone. The availability of valid phone numbers reduced the total number of individuals eligible for the phone interview to 211. Quantech called each of these CHP holders up to 10 times. Of these 211, 31 eventually returned a completed survey (and are included in the numbers in Table 2). Only 118 (21.9%) were successfully contacted and interviewed, though almost all (115) of those individuals agreed to complete and return the survey. These individuals were subsequently mailed a final mailing in late April. Despite this outcome, the majority of the people agreeing to fill out and return the survey subsequently did not do so (only 36 of these individuals returned completed surveys). The remaining unsuccessful phone interview cases were primarily due to non-working numbers (10.7%) and refusals (17.2%).

The overall response rate based on the original sample size of 565 was 47.96% (271/565). However, using the adjusted sample size that removes ineligible, undeliverable, and duplicates, the overall response rate was 52.93% (271/511).

⁵ Note that 39 CHP holders who received the survey notified Quantech that they refused to complete the survey. For the purposes of calculating response rates, however, they are included among those who did not complete the survey (non-respondents).

SUMMARY OF SURVEY RESPONSES

Responses to questions on the survey are reported in IPHC regulatory Areas 2C and 3A individually⁶ and in combination. For every close-ended response (multiple choice) question, the count of responses for each individual option is presented along with the count as a proportion of all respondents (% resp) and the count as a proportion of only item respondents (% item). For numeric open-ended response questions, descriptive statistics are presented (mean, median, standard deviation, minimum, and maximum). When appropriate, these statistics are also presented with and without outliers and/or zeros omitted. Second, the distribution of numeric responses is summarized similarly to the closed response questions detailed above. In some sections, the set of respondents who are eligible to respond to a question is restricted. Eligibility to respond to certain questions in Sections B and D is conditional upon responses to earlier questions in those sections. The specific eligibility criteria are explained as needed in the context of individual questions or sets of questions. In every case, if a respondent who is ineligible to answer a question chooses to answer that question their response is omitted in the calculations of summary statistics and/or tabulated response counts.

Section A

Section A of the survey collected information from respondents about their views of the Halibut Catch Sharing Plan (CSP). Three questions were asked to assess respondents' views about the CSP: Question A1 asked respondents how positively or negatively they viewed the CSP as a whole. Similarly, Question A2 asked how positively or negatively respondents viewed the Guided Angler Fishing (GAF) component of the CSP, and Question A3 asked how positively or negatively they believed the ability to use GAF would affect their own businesses. In each of these questions, respondents were asked to choose between five responses (5-point scale): "very positively," "somewhat positively," "neither positively nor negatively," "somewhat negatively," and "very negatively."

⁶ Differences in survey responses between respondents from Areas 2C and 3A are important to examine given the area-specific nature of fishing regulations and fishery conditions, as well as attitudinal, cultural, and economic differences between areas.

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Very positively	5	4.17	4.2	4	2.65	2.7	9	3.32	3.37	
Somewhat positively	15	12.5	12.61	10	6.62	6.76	25	9.23	9.36	
Neither positively nor negatively	13	10.83	10.92	14	9.27	9.46	27	9.96	10.11	
Somewhat negatively	29	24.17	24.37	34	22.52	22.97	63	23.25	23.6	
Very negatively	57	47.5	47.9	86	56.95	58.11	143	52.77	53.56	
Blank	1	0.83	-	3	1.99	-	4	1.48	-	
Total	119	99.17	100	148	98.01	100	267	98.52	100	

Table 3. -- How positively or negatively do you view the CSP as a whole? (Question A1).

Overall, respondents viewed the CSP negatively, with 77.2% of item respondents indicating they viewed the CSP "somewhat negatively" or "very negatively" (see Table 3). A Mann-Whitney U test assuming a null hypothesis of equal response distributions between respondents from Areas 2C and 3A was rejected at the 90% confidence level (P = 0.055). This suggests views of the CSP as a whole tended to differ between Areas 2C and 3A. Item respondents in Area 3A tended to have more negative views about the CSP as a whole, compared to respondents in Area 2C. In particular, a greater proportion of item respondents indicated they viewed the CSP "very negatively" in Area 3A as opposed to Area 2C.

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Very positively	6	5	5.04	6	3.97	4.03	12	4.43	4.48	
Somewhat positively	18	15	15.13	13	8.61	8.72	31	11.44	11.57	
Neither positively nor negatively	16	13.33	13.45	12	7.95	8.05	28	10.33	10.45	
Somewhat negatively	16	13.33	13.45	25	16.56	16.78	41	15.13	15.3	
Very negatively	63	52.5	52.94	93	61.59	62.42	156	57.56	58.21	
Blank	1	0.83	-	2	1.32	-	3	1.11	-	
Total	119	99.17	100	149	98.68	100	268	98.89	100	

Table 4. -- How positively or negatively do you view the GAF component of the Catch Sharing Plan? (Question A2).

Respondents generally viewed the GAF component of the CSP negatively, with only a small proportion of respondents indicating they viewed it positively (see Table 4). In fact, only 16.1% of the total item respondents felt "somewhat positively" or "very positively" about the GAF component of the CSP. To test for response differences between Areas 2C and 3A, a Mann-Whitney *U* test assuming a null hypothesis of equal response distributions was rejected at the 90% confidence level (P = 0.057). This suggests views of the GAF component of the CSP tended to differ between respondents in Areas 2C and 3A. Again, respondents from Area 3A were more negative than respondents from Area 2C. In particular, 66.4% of item respondents in Area 3A held these same views.

		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Very positively	7	5.83	5.88	4	2.65	2.74	11	4.06	4.15	
Somewhat positively	13	10.83	10.92	9	5.96	6.16	22	8.12	8.3	
Neither positively nor negatively	41	34.17	34.45	47	31.13	32.19	88	32.47	33.21	
Somewhat negatively	13	10.83	10.92	21	13.91	14.38	34	12.55	12.83	
Very negatively	45	37.5	37.82	65	43.05	44.52	110	40.59	41.51	
Blank	1	0.83	-	5	3.31	-	6	2.21	-	
Total	119	99.17	100	146	96.69	100	265	97.79	100	

Table 5. -- How positively or negatively do you believe the ability to use GAF will affect your business? (Question A3).

Respondents also indicated they believed the ability to use GAF negatively affected their own businesses, though opinions were more measured than in the previous questions (see Table 5). Slightly over half (54.3%) of item respondents from both areas thought that the ability to use GAF would "somewhat negatively" or "very negatively" affect their businesses, while another 33.2% indicated that the ability to use GAF would affect their own business "neither positively nor negatively." A Mann-Whitney *U* test assuming a null hypothesis of equal response distributions was rejected at the 90% confidence level (P = 0.075), suggesting item respondents in Areas 2C and 3A differed in their beliefs about the effect of GAF on their own businesses. In line with responses to previous questions in this section, item respondents in Area 3A indicated the ability to use GAF leasing would affect their own business "somewhat negatively" or "very negatively," compared to fewer than 48.7% of item respondents in Area 2C. Roughly equal proportions of respondents in both areas indicated a belief that the ability to use GAF would affect their own business "somewhat negatively" or "very negatively," compared to fewer than 48.7% of item respondents in Area 2C. Roughly equal proportions of respondents in both areas indicated a belief that the ability to use GAF would affect their businesses "neither positively" or "very negatively."

Section B

Section B was intended to gather information about respondents' participation in the GAF leasing market. Ten questions were asked about participation in the leasing market. First, in Question B1, all respondents were asked whether they participated in the 2014 GAF leasing market. Only 7.1% of item respondents and 7.01% of all survey respondents indicated they had participated in the GAF leasing market in 2014 (see Table 6). Slightly more respondents participated in the GAF leasing market in Area 2C than in Area 3A, however the difference was not statistically significant according to a two sample t-test for equality of proportions (P = 0.33).

				0 -		,				
		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Yes	11	9.17	9.24	8	5.3	5.41	19	7.01	7.12	
No	108	90	90.76	140	92.72	94.59	248	91.51	92.88	
Blank	1	0.83	-	3	1.99	-	4	1.48	-	
Total	119	99.17	100	148	98.01	100	267	98.52	100	

Table 6. -- Did you lease GAF during 2014? (Question B1).

Respondents who indicated they did not participate in the leasing market were subsequently asked their main reasons for not leasing GAF (Table 7). Respondents were asked to select all applicable responses from a list of seven and an option to select "other." In the case a respondent selected "other," they were prompted to specify the reason. For any differences reported, a two sample t-test for equality of proportions is computed and P-values are reported.

Cost and effort to lease GAF were commonly-cited reasons respondents did not participate in the GAF market (see Table 7). In particular, 50.0% of item respondents indicated "leasing GAF was too expensive," and 27.4% indicated "the leasing process was too difficult." Item respondents who did not lease from Area 3A indicated in greater proportion that cost and effort related reasons were main reasons for not participating in the GAF lease market as compared to 2C. Two sample t-tests for equality of proportions in Areas 2C and 3A were rejected at the 90% confidence level (P = 0.068 "too expensive," P = 0.097 "too difficult").

Support for the leasing program and willingness to work with the commercial fishing sector were also common reasons for deciding to not participate in the GAF leasing market. About half (49.2%) of item respondents indicated they did "not support the GAF leasing program," while about the same percentage (50.0%) indicated leasing was too expensive. Almost a quarter (24.2%) of item respondents indicated they "did not want to conduct business with commercial fishing businesses." A larger proportion of item respondents from Area 3A indicated that both the lack of support for the GAF program (P = 0.026) and willingness to work with commercial fishing (P = 0.087) were main reasons for not participating in the GAF lease market compared to those from Area 2C.

Lack of a need for GAF was also important, but to a lesser degree. Almost 28% of item respondents who did not participate in the leasing market indicated their "business did not need any GAF." Item respondents indicated this answer in roughly equal proportions across Areas 2C and 3A (P = 0.386).

Reasons related to knowledge of and certainty about the GAF program were selected in the lowest proportion by item respondents. Nineteen percent of item respondents indicated "the program was too new and there was too much uncertainty," while only 4.4% of item respondents indicated they "did not know about the GAF leasing program." Item respondents from Area 2C indicated in greater proportion that reasons related to knowledge and certainty were important reasons for not leasing GAF. These differences were not significant at the 90% confidence level (P = 0.751, "too much uncertainty", P = 0.171 "did not know").

Finally, 10.1% of item respondents suggested "other" reasons for not participating in the GAF leasing market.

		2C			3A			All areas	
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Leasing GAF was too expensive	48	40	44.44	76	50.33	54.29	124	45.76	50.00
The leasing process was too difficult	24	20	22.22	44	29.14	31.43	68	25.09	27.42
My business did not need any GAF	27	22.5	25	42	27.81	30	69	25.46	27.82
I do not support the GAF leasing program	44	36.67	40.74	78	51.66	55.71	122	45.02	49.19
I did not want to conduct business with commercial fishing businesses	20	16.67	18.52	40	26.49	28.57	60	22.14	24.19
The program was too new and there was too much uncertainty	21	17.5	19.44	26	17.22	18.57	47	17.34	18.95
I did not know about the GAF leasing program	7	5.83	6.48	4	2.65	2.86	11	4.06	4.44
Other	14	11.67	12.96	11	7.28	7.86	25	9.23	10.08
Blank	12	10	0	11	7.28	0	23	8.49	0

Table 7. -- Main reasons for not leasing GAF during 2014 (Question B1).

Respondents who indicated they did participate in the 2014 GAF lease market were asked a series of questions about their participation in the market. We refer to these respondents as "eligible respondents" for summaries of the responses to the remaining questions in Section B (i.e., the complement of the eligible respondents is "ineligible respondents").

Question B2 asked eligible respondents how many GAF they leased over the course of 2014. If an eligible respondent did not answer this question, we assume that they did not lease any GAF over the course of 2014 (hence assuming the response is 0 GAF). Similarly, respondents who were ineligible to answer this question, but responded, were omitted. On average, eligible respondents leased 49.6 GAF during 2014 (see Table 8). This estimate is sensitive to outliers. When we dropped observations more than two standard deviations from the mean (a total of two observations), average GAF leased fell to 30.1. Eligible respondents in Area 2C stated that they leased 27.7 GAF while respondents from 3A leased 79.6 GAF. However, after two outliers in Area 3A were dropped, the average GAF leased in that area fell to 34.5. By the outlier definition used here, Area 2C had no outliers. A two sample t-test with a null hypothesis of equal mean GAF purchases by eligible respondents in Area 2C and Area 3A is rejected at a 90% confidence level (P = 0.066). This suggests eligible item respondents from Areas 2C and 3A differed in the average number of GAF they indicated leasing in 2014. However, when outliers were dropped from Area 3A, the same test could not reject the null hypothesis at the 90% confidence level (P = 0.512).

	Descrip	Descriptive Statistics									
		2C				3A				All areas	
Respondents	Eligibl	e Positi Respo	ve nse	Eligi	ble	Outliers dropped	Posit Respo	tive onse	Eligible	Max dropped	Positive Response
Mean	27.73	30.5	5	79.0	52	34.5	79.0	62	49.58	30.12	52.33
Std Dev	20.87	19.8	3	84.0	56	17.1	84.0	66	60.34	19.23	60.89
Median	22	26.	5	40)	35	40)	31	30	35.5
Min	0	4		12	2	12	12	2	0	0	4
Max	60	60		23	0	62	23	0	230	62	230
n	11	10		8		6	8		19	17	18
	Distributio	on (Eligible	Resp	ondent	s)						
-		2C		3A			1			All areas	
	Count	% resp	% i	tem	Coun	t % re	sp 9	% item	Count	% resp	% item
0	1	0.83	9.	09	0	0		0	1	0.37	5.26
1-9	1	0.83	9.	09	0	0		0	1	0.37	5.26
10-29	4	3.33	36	.36	2	1.3	2	25	6	2.21	31.58
30-99	5	4.17	45	.45	4	2.6	5	50	9	3.32	47.37
100-299	0	0	()	2	1.3	2	25	2	0.74	10.53
300+	0	0	()	0	0		0	0	0	0
Blank	109	90.83		-	143	94.	7	-	252	92.99	-
Total	11	9.17	10	00	8	5.	3	100	19	7.01	100

Table 8. -- How many GAF did you lease during 2014? (Question B2).

Eligible respondents are respondents who answered "Yes" to question B1. Respondents who did not answer B2, but answered "Yes"" to B1 were counted as zeros. "Outliers dropped" omits observations more than two standard deviations above the mean. "Positive Response" omits respondents who would be counted as zeros. Standard deviations are computed with finite population correction factor for a population size of 565, the number of CHP holders in the sampling frame.

Question B3 asked eligible respondents whether they used a broker to facilitate the leasing of GAF (yes/no response). Very few eligible respondents reported using a broker to facilitate leasing GAF, with only three respondents, or 15.8% of eligible item respondents, reported doing so (see Table 9).

Table 9. – Did you use a broker to facilitate the leasing of GAF? (Question B3).

						-				
		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Yes	1	0.83	9.09	2	1.32	25	3	1.11	15.79	
No	10	8.33	90.91	6	3.97	75	16	5.9	84.21	
Blank	109	90.83	-	143	94.7	-	252	92.99	-	
Total	11	9.17	100	8	5.3	100	19	7.01	100	

Question B4 asked eligible respondents from whom they leased GAF. Respondents to this question were asked to select from three responses: "someone I knew personally who held halibut IFQ (friend or family)," "myself (you hold both commercial IFQ and a CHP and leased to yourself)," and "someone I did not know personally prior to leasing."

		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Someone I knew personally who held halibut IFQ	4	3.33	36.36	3	1.99	37.5	7	2.58	36.84	
Myself (you hold both commercial IFQ and a CHP and leased to yourself)	5	4.17	45.45	4	2.65	50	9	3.32	47.37	
Someone I did not personally know prior to leasing	4	3.33	36.36	2	1.32	25	6	2.21	31.58	
Blank	109	90.83	0	143	94.7	0	252	92.99	0	

Table 10. -- From whom did you lease GAF? (Question B4).

In the (admittedly small) sample of those who had leased GAF, CHP holders tended to lease through personal connections or their own commercially-held IFQ (see Table 10). Almost half (47.4%) of eligible item respondent indicated that they leased GAF from themselves, which was the most popular response. The second most frequently selected response was IFQ holders who the respondent knew personally--IFQ holders not known personally was the least frequent response. Responses across Areas 2C and 3A were broadly similar.

Question B5 asked eligible respondents how difficult the leasing process was in general. Respondents were asked to choose between five responses: "not at all difficult," "somewhat difficult," "difficult," "very difficult," and "extremely difficult."

					U			/		
	2C			3A			All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all difficult	5	4.17	45.45	2	1.32	25	7	2.58	36.84	
Somewhat difficult	6	5	54.55	5	3.31	62.5	11	4.06	57.89	
Difficult	0	0	0	0	0	0	0	0	0	
Very difficult	0	0	0	1	0.66	12.5	1	0.37	5.26	
Extremely difficult	0	0	0	0	0	0	0	0	0	
Blank	109	90.83	-	143	94.7	-	252	92.99	-	
Total	11	9.17	100	8	5.3	100	19	7.01	100	

Table 11. -- How difficult was the leasing process in general? (Question B5).

A combined 96.7% of eligible item respondents indicated that the leasing process was "not at all difficult" or "somewhat difficult," with only one respondent indicating that the leasing process was of greater difficulty (see Table 11). A Mann-Whitney *U* test could not reject a null hypothesis of equal response distributions across Area 2C and 3A respondents at the 90% confidence level (P = 0.255). This suggests respondent views about the difficulty of the leasing process did not differ statistically between Areas 2C and 3A.

Question B6 asked respondents if they returned any unused GAF. Respondents were asked to select from the following: "yes, I voluntarily returned unused GAF before the end of the season," "yes, my unused GAF was returned automatically," and "no." Because it is plausible that a respondent's GAF could be returned "voluntarily" in part and "automatically" in part, respondents were allowed to select one or both of these responses.

0	, ,		5			/				
		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Yes, I voluntarily returned unused GAF before the end of the season	2	1.67	20	2	1.32	25	4	1.48	22.22	
Yes, my unused GAF was returned automatically	6	5	60	6	3.97	75	12	4.43	66.67	
No	2	1.67	20	1	0.66	12.5	3	1.11	16.67	
Blank	110	91.67	0	143	94.7	0	253	93.36	0	

Table 12. -- During 2014, did you return any unused GAF? (Question B6).

Respondents tended to need to return GAF at year end (i.e., automatically) -- only16.7% of eligible item respondents did not return GAF, presumably because it was fully utilized within the season (see Table 12). The modal response (i.e., the most selected response) among eligible item respondents was that they returned GAF automatically -- 66.7% of eligible item respondents. Responses were broadly similar across Areas 2C and 3A.

Question B7 asked about eligible respondents' lease agreements. In particular, the question asked whether or not a provision was included that allowed the respondent to get a refund (or partial refund) for GAF that were unused and returned. Few eligible respondents reported such a provision in their lease agreements (see Table 13). In particular, no respondents in Area 2C had such a provision, while two respondents reported such a provision in Area 3A. In total, 11.1% of respondents across areas indicated their lease agreement had a provision for a refund of unused GAF.

	P								
		2C			3A			All areas	
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Yes	0	0	0	2	1.32	25	2	0.74	11.11
No	10	8.33	100	6	3.97	75	16	5.9	88.89
Blank	110	91.67	-	143	94.7	-	253	93.36	-
Total	10	100	100	8	5.3	100	18	6.64	100

Table 13. -- In your lease agreement, was there a provision that allowed you to get a refund (or partial refund) for GAF that are unused and returned? (Question B7).

Question B8 asked eligible respondents how much of an impact, positive or negative, they believed leasing GAF in 2014 had on their own businesses. Respondents were asked to choose one of five responses (5 point scale): "very positive," "somewhat positive," "neither positive nor negative," "somewhat negative," or "very negative."

Eligible respondents tended to have positive view about the impact of GAF on their businesses (see Table 14). In particular, no respondents in either area indicated that having GAF impacted their business "very negative" and no respondents from Area 2C indicated that having GAF impacted their businesses "somewhat negative." A majority of respondents in both areas indicated that GAF somewhat positively affected their business, with 61.1% of eligible item respondents. A Mann-Whitney *U* test assuming a null hypothesis of equal response distributions across Areas 2C and 3A respondents failed to reject the null hypothesis at the 90% confidence level (P = 0.447). This suggests beliefs about the impact of GAF on respondents own businesses did not differ statistically between Areas 2C and 3A among those who had leased GAF.

		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Very positive	1	0.83	10	1	0.66	12.5	2	0.74	11.11	
Somewhat positive	7	5.83	70	4	2.65	50	11	4.06	61.11	
Neither positive or negative	2	1.67	20	1	0.66	12.5	3	1.11	16.67	
Somewhat negative	0	0	0	2	1.32	25	2	0.74	11.11	
Very negative	0	0	0	0	0	0	0	0	0	
Blank	110	91.67	-	143	94.7	-	253	93.36	-	
Total	10	8.33	100	8	5.3	100	18	6.64	100	

Table 14. -- How much of an impact, positive or negative, do you believe having GAF during 2014 had on your business? (Question B8).

Finally, in Question B10 all respondents were asked whether or not they plan to lease GAF during 2015. A majority of item respondents in Areas 2C and 3A indicate that they do not plan to lease GAF in 2015 (see Table 15). A greater proportion of item respondents in Area 2C indicated that they would lease GAF compared to those in Area 3A. However, the count of respondents indicating that they plan to lease GAF in 2015 was almost the same as leased GAF in 2014 (See Question B1). In particular, 12 respondents in Area 2C indicated they planned to lease GAF in 2015, compared to 11 that leased during 2014. The same number of respondents from Area 3A planned to lease GAF in 2015 as had leased in 2014 (8).

	· · ·	2C		<u> </u>	3A	,	All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Yes	12	10	11.21	8	5.3	6.15	20	7.38	8.44	
No	85	70.83	79.44	114	75.5	87.69	199	73.43	83.97	
Don't Know	10	8.33	9.35	8	5.3	6.15	18	6.64	7.59	
Blank	13	10.83	-	21	13.91	-	34	12.55	-	
Total	107	89.17	100	130	86.09	100	237	87.45	100	

Table 15. -- Do you plan to lease GAF during 2015? (Question B10).

Section C

Section C collected information about respondents' opinions on potentially relaxing restrictions in the current GAF leasing program. Specifically, the current program restricts GAF leases to be valid for a single season and does not allow GAF lease holders to transfer the GAF to other CHP holders. Relaxing these use restrictions would introduce flexibility that could be valuable to charter businesses. Question C1 asked respondents how helpful, if at all, relaxing each of these two restrictions would be to them. Respondents were asked to choose between five responses (5 point scale): "not helpful at all," a little helpful," "somewhat helpful," "very helpful," and "extremely helpful."

seas	on use? (Question C1).									
		2C			3A			All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not helpful at all	49	40.83	47.57	82	54.3	67.77	131	48.34	58.48	
A little helpful	11	9.17	10.68	8	5.3	6.61	19	7.01	8.48	
Somewhat helpful	19	15.83	18.45	16	10.6	13.22	35	12.92	15.62	
Very helpful	10	8.33	9.71	5	3.31	4.13	15	5.54	6.7	
Extremely helpful	14	11.67	13.59	10	6.62	8.26	24	8.86	10.71	
Blank	17	14.17	-	30	19.87	-	47	17.34	-	
Total	103	85.83	100	121	80.13	100	224	82.66	100	

Table 16. -- How helpful, if at all, would relaxing the following restriction be to you: single-season use? (Question C1).

Across the entire sample, a majority of item respondents indicated that relaxing the restriction on single-season use of CHP would be "not helpful at all" (see Table 16). A Mann-Whitney U test rejected a null hypothesis of equal response distributions at the 99% confidence level (P = 0.003). This suggests Area 2C and Area 3A respondents differed statistically in how they tended to view relaxing the restriction in single-season use. Item respondents from Area 3A indicated that relaxing single-season use restrictions was "not helpful at all" at a higher frequency (by about 20 percentage points) as compared to Area 2C respondents. Almost half (47.6%) of item respondents from Area 2C indicated that relaxing single-season use was "not helpful at all," compared to 67.8% of item respondents from Area 3A.

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not helpful at all	55	45.83	53.4	78	51.66	66.67	133	49.08	60.45	
A little helpful	8	6.67	7.77	6	3.97	5.13	14	5.17	6.36	
Somewhat helpful	14	11.67	13.59	10	6.62	8.55	24	8.86	10.91	
Very helpful	10	8.33	9.71	10	6.62	8.55	20	7.38	9.09	
Extremely helpful	16	13.33	15.53	13	8.61	11.11	29	10.7	13.18	
Blank	17	14.17	-	34	22.52	-	51	18.82	-	
Total	103	85.83	100	117	77.48	100	220	81.18	100	

Table 17. -- How helpful, if at all, would relaxing the following restriction be to you: No transfers between CHP holders? (Question C1).

As with the responses for the single-season use restrictions, a majority of item respondents from all areas indicated that relaxing restrictions on transfers between CHP holders would be "not helpful at all" (see Table 17). A Mann-Whitney *U* test of equal response distributions was rejected at the 90% confidence level (P = 0.063). This suggests item respondents from Areas 3A and 2C differed statistically in their views of relaxing transfer restrictions. A larger percentage of item respondents from Area 3A indicated that CHP transfers were "not helpful at all" as compared to those from Area 2C (66.7% and 53.4% of item respondents, respectively).

Overall, respondents do not appear to believe relaxing either of the restrictions would be helpful: A Mann-Whitney U test for equal response distributions across responses to the different restrictions could not be rejected at the 90% confidence level (P = 0.962). However, opinions about relaxing transfers between CHP holders tended to be more strongly divided than opinions about relaxing single-season use restrictions in the sense that opinions were further from the center of the distribution (see Tables 16 and 17). Proportionally more item respondents indicated that transfers were "not helpful at all" as compared to single-season use. On the other hand, a higher proportion of item respondents also indicated that relaxation of transfers was "very helpful" or "extremely helpful" compared to single-season use.

Question C2 asked respondents how their participation in the GAF leasing market would change if multi-year leases of GAF were allowed in the following year (i.e., 2015). Similarly, Question C3 asked respondents how their participation in the IFQ leasing market would change if they were allowed to transfer a limited amount of GAF to other CHP holders during the season starting in the next year. For these two questions, respondents were asked to choose one of three responses: "I would lease more GAF than I previously planned," "I would lease the same amount of GAF that I currently planned (no change)," or "I don't know" (in the text, "more," "less," "the same amount," and "didn't know," respectively).

In response to these two questions, a majority of item respondents indicated they "didn't know" how their leasing behavior would change (see Tables 18 and 19). However, among the item

respondents who provided a non-"don't know" response, there were more who would want to lease "the same amount," or "more," as opposed to leasing "less."

	2C				3A		All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
I would lease more GAF than I currently planned	11	9.17	11.58	10	6.62	9.35	21	7.75	10.4
I would lease the same amount of GAF that I currently planned (no change)	23	19.17	24.21	20	13.25	18.69	43	15.87	21.29
I would lease less GAF than I currently planned	2	1.67	2.11	1	0.66	0.93	3	1.11	1.49
I don't know	59	49.17	62.11	76	50.33	71.03	135	49.82	66.83
Blank	25	20.83	-	44	29.14	-	69	25.46	-
Total	95	79.17	100	107	70.86	100	202	74.54	100

Table 18. -- If multi-year leases of GAF were allowed next year, how would your participation in the GAF leasing market change? (Question C2).

When asked about relaxing the single-season GAF leasing restriction, 66.8% of item respondents indicated they "didn't know" how their participation in the GAF market would change (see Table 18). In particular, a higher proportion of item respondents from Area 3A reported not knowing how their leasing behavior would change relative to those in Area 2C. Of those who did know, the modal response was to keep leasing "the same amount" (21.3% of item respondents). About 10% of item respondents answered that they would purchase "more" GAF, while only 1.5% answered that they would purchase "less" GAF under multi-year leasing. Differences in responses between Areas 2C and 3A were small, with a slightly greater proportion of item respondents from Area 2C indicating they would lease "more," "the same amount," and "less" compared to item respondents in Area 3A.

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
I would lease more GAF than I currently planned	13	10.83	13.98	13	8.61	12.04	26	9.59	12.94	
I would lease the same amount of GAF that I currently planned (no change)	23	19.17	24.73	24	15.89	22.22	47	17.34	23.38	
I would lease less GAF than I currently planned	6	5	6.45	2	1.32	1.85	8	2.95	3.98	
I don't know	51	42.5	54.84	69	45.7	63.89	120	44.28	59.7	
Blank	27	22.5	-	43	28.48	-	70	25.83	-	
Total	93	77.5	100	108	71.52	100	201	74.17	100	

Table 19. -- If you were allowed to transfer a limited amount (up to a specific amount) of GAF to other CHP holders during the season starting next year, how would your participation in the IFQ leasing market change? (Question C3).

When respondents were asked about relaxing restrictions on transfers of GAF between CHP holders, 59.7% of item respondents "didn't know" how their leasing behavior would change (see Table 19). Almost a quarter (23.4%) of all item respondents indicated they would lease "the same amount," 12.9% would lease "more", and 3.98% suggested they would lease "less" GAF. A higher proportion of item respondents from Area 3A indicated they "didn't know" how they would respond to this when compared to those from Area 2C. Differences in responses between Areas 2C and 3A were small.

Section D

Section D elicited respondents' preferences for potential features of GAF leasing programs. At the beginning of this section, respondents were asked a series of questions involving choosing between several counterfactual options for relaxing restrictions in the GAF leasing program. These questions are examples of stated preference (SP) choice questions (e.g., Freeman et al. 2014), which involve having respondents choose between alternatives that provide information about their underlying preferences and values for features of those alternatives. In our case, four programs were presented, including the present program (as of 2015) and three counterfactuals:

- Single-season, no transfers (SSNT) program: The default program that is currently in place does not allow transfers between CHP holders and only allows a single-season lease length
- Single-season, transfers (SST) program: A program that allows for the ability to transfer to other CHP holders within season, but maintains a lease length of a single season
- Multi-season, no transfers (MSNT) program: A program that allows for lease periods of one or two seasons, but does not allow transfers to other CHP holders
- Multi-season, transfers (MST) program: A program that both allows lease periods of one or two seasons and allows transfers between CHP holders

In each choice experiment, respondents were asked to choose between the default program and one of the other programs described above. Each of the programs seen by the respondent has a different price per pound for GAF associated with them. The default program (SSNT) has a price that is based on prevailing prices per pound seen in each area during 2014, while the other programs (SST, MSNT, and MST) that relax one or more rules of the default program have prices per pound that are more expensive.⁷ This facilitates an evaluation of tradeoffs that respondents are willing to make between the current program and ones that have both benefits (relaxed rules) and costs (higher per pound prices). As noted earlier, a more formal analysis of these data are left for future research, but the basic responses are summarized here. Since different versions of the survey presented the programs in the SP choice questions in a different order, we present the responses by the program presented above instead of by question number.

After each SP choice question, respondents were asked the number of GAF they would lease under that program. In the following, we focus on the reported responses for those respondents who answered the choice question directly preceding the number of GAF question. In addition, for the purposes of the following discussion if a respondent answered the SP choice question but left the number of GAF they would lease blank, the blank response was interpreted as zeros. Those respondents who answered the associated SP choice question are referred to as "eligible respondents."

In the tables summarizing responses to number of GAF questions, two sets of results are presented. First, descriptive statistics are presented with means, medians, standard deviations, minimums, and maximums. In certain cases, extreme values (outliers) are dropped from the calculation. In these cases, the descriptive statistics with extreme values dropped are presented in addition to the descriptive statistics for all eligible respondents that include the extreme values.⁸ Second, the distribution of eligible responses is presented in a frequency table.

We first summarize the responses to the SP choice question that asked respondents to choose which program they prefer between the SSNT program, which is the current (or default) program, and the SST program. Respondents tended to favor the current program; 65.6% of item respondents indicated that they prefer the SSNT program as opposed to the program with transfers allowed but with a higher per pound price per GAF (see Table 20). Differences were minimal across areas: item respondents from Area 2C indicated they would select the default program in slightly higher proportion, but the difference in proportions is not statistically significant (P = 0.8203).

⁷ The prices per pound for each program varied across survey versions from \$4 to \$11 per pound, a range

determined to be plausible given ex-vessel prices and GAF transactions that had been completed during 2014. ⁸ Observations considered outliers are almost two orders of magnitude higher than the mean GAF leased by eligible respondents, despite the same respondents indicating they had not leased GAF during 2014.

	2C				3A		All areas			
Program	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Single-season, no transfers	45	37.5	67.16	33	21.85	63.46	78	28.78	65.55	
Single-season, transfers	22	18.33	32.84	19	12.58	36.54	41	15.13	34.45	
Blank	53	44.17	-	99	65.56	-	152	56.09	-	
Total	67	55.83	100	52	34.44	100	119	43.91	100	

Table 20. -- Stated preference choice question: Single-season no transfer (SSNT) program versus single-season transfer (SST) program.

For the SP choice question asking respondents to choose between the SSNT program and MSNT program, respondents tended to prefer the current program (SSNT) with 62.4% of item respondents indicating they prefer the current program to the program with extended period leases and a higher per pound price per GAF (see Table 21). Again, item respondents from Area 2C tended to prefer the current program slightly more than those from Area 3A, but the difference in proportions is not significant (P = 0.828).

Table 21. -- Stated preference choice question: Single-season no transfer (SSNT) program versus multi-season no transfer (MSNT) program.

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Single-season, no transfers	41	34.17	64.06	32	21.19	60.38	73	26.94	62.39	
Multi-season, no transfers	23	19.17	35.94	21	13.91	39.62	44	16.24	37.61	
Blank	56	46.67	-	98	64.9	-	154	56.83	-	
Total	64	53.33	100	53	35.1	100	117	43.17	100	

Another SP choice question asked respondents to choose their preferred program between the SSNT program and the MST program with a higher per GAF price. For this question, 73.9% of item respondents indicated they would prefer the single-season program with no transfers (the current program) to a program with multiple season leases and transfers (see Table 22). This is a similar qualitative result to the first two choice questions. A larger proportion of item respondents from Area 2C preferred the current program compared to those in Area 3A. However, this difference in proportions between IPHC areas was not statistically significant (P = 0.609).

	2C				3A		All areas		
	Count	%	%	Count	%	%	Count	%	%
		resp	item		resp	item		resp	item
Single-season, no transfers	49	40.83	76.56	36	23.84	70.59	85	31.37	73.91
Multi-season, transfers	15	12.5	23.44	15	9.93	29.41	30	11.07	26.09
Blank	56	46.67	-	100	66.23	-	156	57.56	-
Total	64	53.33	100	51	33.77	100	115	42.44	100

Table 22. -- Stated preference choice question: Single-season no transfer (SSNT) program versus multi-season transfer (MST) program.

Following Question D1, eligible respondents were asked how many GAF they would lease in the next year under the current program (no transfers and single year leases).⁹ In this case, "eligible respondents" were respondents who provided a response to Question D1. A total of 119 respondents across both IPHC areas were eligible to answer this question. Positive values were indicated by 25 eligible respondents, or 21.0% of item respondents. Eligible respondents indicated that under the current program, they would lease an average of 17.85 GAF (see Table 23). However, after dropping an extreme value, that number dropped to 5.29 GAF. Comparing stated lease behavior between eligible respondent in Areas 2C and 3A, we note that differences were small. A two sample t-test with a null hypothesis of equal means rejected the null hypothesis at the 90% confidence level (P = 0.937). Since estimates are sensitive to the presence of extreme values, one outlier is dropped in this test, though this does not affect the significance of the test at the 90% level.

⁹ Note that for this question, as well as those asking how many GAF would be leased in the next year under the single-season transfer (SST), multi-season transfer (MST), and multi-season no transfer (MSNT) programs, respondents are asked to assume the price per pound presented in the survey that is associated with the program in question would be the price they would pay.

	Descriptive	e statistics								
	2	2C		34	1				All areas	
Respondents	Eligible	Positive responses	Eligibl	e Outl drop	iers l ped re	Positive responses		gible	Outliers dropped	Positive responses
Mean	5.39	25.79	33.9	5.1	6	160.27	1′	7.85	5.29	84.96
Std Dev	16.31	29.16	198.1	1 12.	89	424.15	12	2.64	14.02	263.16
Median	0	16	0	0)	30		0	0	25
Min	0	1	0	0)	1		0	0	1
Max	104	104	1500	5	C	1500	1	500	104	1500
Ν	67	14	52	5	1	11	1	19	118	25
	Distribution of intended GAF		l GAF leas	ses						
		2C			3A				All areas	
No. of GAF	Count	% resp	% item	Count	% resp	o % ite	m	Count	% resp	% item
0	53	44.17	79.1	41	27.15	78.8	5	94	34.69	78.99
1-9	6	5	8.96	3	1.99	5.7	7	9	3.32	7.56
10-29	5	4.17	7.46	2	1.32	3.8	5	7	2.58	5.88
30-59	0	0	0	5	3.31	9.62	2	5	1.85	4.2
60-119	3	2.5	4.48	0	0	0		3	1.11	2.52
120+	0	0	0	1	0.66	1.92	2	1	0.37	0.84
Blank	53	44.17	-	99	65.56	-		152	56.09	-
Total	67	55.83	100	52	34.44	100)	119	43.91	100

Table 23 GAF that would be lea	sed under a single-season	no transfer program (SSNT
program).		

Eligible respondents are those who responded to the number of GAF leased under the current single-season no transfer (SSNT) program. Respondents who did not answer this question are counted as zeros. "Positive response" omits respondents who would be counted as zeros. Standard deviations are computed with a finite population correction factor.

Following each SP choice question, eligible respondents were asked how many GAF they would lease next year under the alternative (non-current) program. Responses to these questions are in Tables 24-26. For the SST program, eligible respondents indicated that they would lease, on average 4.79 GAF under a single season lease program with transfers (Table 24). The mean number of GAF that eligible respondents would lease under the MSNT was higher, 17.56 GAF (Table 25). However, after an extreme value was dropped, the average number of GAF dropped to nearly the same level as for SST, 4.78 GAF. Under the MST program, eligible respondents on average indicated they would lease 1.98 GAF in the next year (Table 26). There were no statistical differences between Area 2C and Area 3A in these responses according to t-test results.

	Desemptiv	e statistic							
		2C			3A			All areas	
Respondents	Eligible	e P	ositive	Eligible	e F	Positive	Eligibl	le P	ositive
		re	sponses		re	esponses		re	sponses
Mean	4.79	4.7924.6915.2128.32		4.79		31.12	4.79		27.14
Std Dev	15.21	15.21 28.32		16.46		33.51	14.75	5	27.94
Median	0		10	0		17.5	0		10
Min	0 1		0		1	0		1	
Max	104		104	100		100	104		104
n	67		13	52		8	119		21
	Distributi	on of inte	nded GAF	leases					
		2C			3A			All areas	
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
0	54	45	80.6	44	29.14	84.62	98	36.16	82.35
1-9	5	4.17	7.46	3	1.99	5.77	8	2.95	6.72
10-29	4	3.33	5.97	2	1.32	3.85	6	2.21	5.04
30-59	2	1.67	2.99	1	0.66	1.92	3	1.11	2.52
60-119	2	1.67	2.99	2	1.32	3.85	4	1.48	3.36
120+	0	0	0	0	0	0	0	0	0
Blank	53	44.17	-	99	65.56	-	152	56.09	-
Total	67	55.83	100	52	34.44	100	119	43.91	100
Eligible respo	ndents are t	hose who	responded	to the num	ber of G	AF leased 1	inder the s	ingle-seas	on

 Table 24. -- GAF that would be leased under a single season transfer program (SST program).

 Descriptive statistics

Eligible respondents are those who responded to the number of GAF leased under the single-season transfer (SST) program. Respondents who did not answer this question are counted as zeros. "Positive response" omits respondents who would be counted as zeros. Standard deviations are computed with a finite population correction factor.

	Descriptive	bescriptive statistics								
	2	2C		3.	A				All areas	
Respondents	Eligible	Positive	Eligib	le Out	liers	Positive	E	ligible	Outliers	Positive
		responses	_	uop	peu	responses			uroppeu	responses
Mean	4.52	24.08	33.32	2 5.	12	176.6	1	7.56	4.78	93.41
Std Dev	13.24	23.38	196.2	9 16.	15	443.96	1	23.95	13.69	281.01
Median	0	15.5	0	()	25		0	0	22.5
Min	0	1	0	()	1		0	0	1
Max	70	70	1500	10	00	1500		1500	100	1500
n	64	12	53	5	2	10		117	116	22
	Distributio	n of intende	d GAF lea	ses						
		2C			34	1			All areas	5
	Count	% resp	% item	Count	% re	esp % it	em	Count	% resp	% item
0	52	43.33	81.25	43	28.4	48 81.	13	95	35.06	81.2
1-10	6	5	9.38	3	1.9	9 5.6	6	9	3.32	7.69
10-29	1	0.83	1.56	2	1.3	2 3.7	7	3	1.11	2.56
30-59	3	2.5	4.69	3	1.9	9 5.6	6	6	2.21	5.13
60-119	2	1.67	3.12	1	0.6	6 1.8	9	3	1.11	2.56
120+	0	0	0	1	0.6	6 1.8	9	1	0.37	0.85
Blank	56	46.67	-	98	64.	9 -		154	56.83	-
Total	64	53.33	100	53	35.	1 10	0	117	43.17	100

Table 25 GAF that would be l	eased under a multi-season no	transfer program (MSNT
program).		

Eligible respondents are respondents who responded to the number of GAF leased under the MSNT program question. Respondents who did not answer this question are counted as zeros. "Positive response" omits respondents who would be counted as zeros. Standard deviations are computed with a finite population correction factor.

	Descriptiv	e statistics							
		2C			3A			All areas	
Respondents	Eligible	e I re	Positive esponses	Eligible	r	Positive responses	Eligibl	e l re	Positive esponses
Mean	1.47		11.75	2.63		16.75	1.98		14.25
Std Dev	5.47		12.11	8.45		16.22	6.52		13.2
Median	0		8	0		13	0		8
Min	0		2	0		1	0		1
Max	40		40	50		50	50		50
n	64		8	51		8	115		16
	GAF distri	ibution							
		2C			3A			All areas	
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
0	56	46.67	87.5	43	28.48	84.31	99	36.53	86.09
1-10	4	3.33	6.25	4	2.65	7.84	8	2.95	6.96
10-29	3	2.5	4.69	2	1.32	3.92	5	1.85	4.35
30-59	1	0.83	1.56	2	1.32	3.92	3	1.11	2.61
60-119	0	0	0	0	0	0	0	0	0
120+	0	0	0	0	0	0	0	0	0
Blank	56	46.67	-	100	66.23	-	156	57.56	-
Total	64	53.33	100	51	33.77	100	115	42.44	100

Table 26. -- GAF that would be leased under a multi-season transfers program (MST program).

Eligible respondents are respondents who responded to the number of GAF under the MST program question. Respondents who did not answer this question are counted as zeros. "Positive response" omits respondents who would be counted as zeros. Standard deviations are computed with a finite population correction factor.

Finally, Question D6 asked all survey respondents how confident they were in their answers to the SP choice questions and the questions about how much GAF they would lease under the different programs. In particular, they were asked for the level of confidence about how accurately their answers reflect how they feel about the different programs for GAF use on a 5-point scale from "not at all confident" to "extremely confident." Overall, a slight majority (50.9% of item respondents) of item respondents indicated they were "very confident" or "extremely confident" in their answers (see Table 27). About 22% of item respondents indicated they were "not confident at all." Item respondents from Area 3A tended to be more divided in their level of confidence compared to those from Area 2C. A higher proportion of Area 3A respondents from Area 2C. A Mann-Whitney *U* test assuming a null hypothesis of equal response distributions could not be rejected at the 90% confidence level (P = 0.305). This suggests the distribution of responses to this question did not differ statistically between Areas 2C and 3A.

		2C			3A			All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all confident	20	16.67	20.62	29	19.21	23.58	49	18.08	22.27	
Slightly confident	9	7.5	9.28	9	5.96	7.32	18	6.64	8.18	
Somewhat confident	22	18.33	22.68	19	12.58	15.45	41	15.13	18.64	
Very confident	14	11.67	14.43	18	11.92	14.63	32	11.81	14.55	
Extremely confident	32	26.67	32.99	48	31.79	39.02	80	29.52	36.36	
Blank	23	19.17	-	28	18.54	-	51	18.82	-	
Total	97	80.83	100	123	81.46	100	220	81.18	100	

Table 27. -- How confident are you that your answers in D1 through D6 accurately reflect how you feel about the different programs for GAF use? (Question D7).

Section E

Section E of the survey collected information about respondents' views on the CATCH Project and ways of funding it. We explore three funding options; a CHP fee, a charter halibut tax, and a halibut stamp. These options differ in who ends up bearing the responsibility of funding the CATCH Project. In particular, the CHP fee puts the responsibility of funding the CATCH program on the industry through a fee charged per angler endorsement in the charter halibut permits held by the business. The charter halibut tax would also require funding the CATCH Project to be the responsibility of recreational charter fishing businesses, who would pay via a tax levied on harvest. In this way, a business' contribution towards funding the CATCH Project would be proportional to their clients' harvest of halibut. And finally, the halibut stamp would be expected to be set up similarly to the king salmon stamp program (Yamada and Flumerfelt 2014, Davis et al. 2013). Thus, individual charter anglers planning to harvest halibut while charter boat fishing would purchase halibut stamps; in this way funding the CATCH Project would more directly fall on halibut anglers.

In Question E1, respondents were asked about their level of familiarity with the CATCH Project in general. In particular, respondents were asked to select one of the following responses: "not at all familiar," "somewhat familiar," "familiar," "very familiar," or "extremely familiar."

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all familiar	34	28.33	30.36	42	27.81	32.06	76	28.04	31.28	
Somewhat familiar	35	29.17	31.25	32	21.19	24.43	67	24.72	27.57	
Familiar	16	13.33	14.29	24	15.89	18.32	40	14.76	16.46	
Very familiar	15	12.5	13.39	18	11.92	13.74	33	12.18	13.58	
Extremely familiar	12	10	10.71	15	9.93	11.45	27	9.96	11.11	
Blank	8	6.67	-	20	13.25	-	28	10.33	-	
Total	112	93.33	100	131	86.75	100	243	89.67	100	

Table 28. -- How familiar are you, if at all, with the CATCH Project? (Question E1).

Familiarity with the CATCH Project was skewed towards item respondents being less familiar, but not strongly so. While 31.3% of item respondents were "not at all familiar" with the CATCH Project, 44.0% of respondents were either "somewhat familiar" or "familiar," and another 24.7% were "very familiar" or "extremely familiar" (see Table 28). Familiarity in Areas 2C and 3A were broadly similar: A Mann-Whitney *U* test failed to reject a null hypothesis of equal response distributions at the 90% confidence level (P = 0.808). This suggests item respondents in Areas 2C and 3A did not differ in their level of familiarity with the CATCH project.

Question E2 asked about support for the three different funding mechanisms. In particular, respondents were asked if the CATCH project were adopted, how supportive, if at all, they would be of funding the project with a given mechanism on a 5-point scale: "not at all supportive," "a little supportive," "somewhat supportive," "very supportive," or "extremely supportive."

Seventy-seven percent of item respondents indicated that they were "not at all supportive" of funding the CATCH Project with a CHP fee (see Table 29). Of the remaining 23.0%, another 16% were "a little supportive" or "somewhat supportive," with the remaining 6.1% being "very supportive" or "extremely supportive." Support for a CHP fee was broadly similar across Areas 2C and 3A. A Mann-Whitney *U* test testing a null hypothesis of equal response distributions failed to reject at the 90% confidence level (P = 0.862). This suggests support (or lack thereof) for funding the CATCH Project with a CHP fee did not differ statistically in Areas 2C and 3A.

		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all supportive	79	65.83	75.96	98	64.9	77.78	177	65.31	76.96	
A little supportive	11	9.17	10.58	12	7.95	9.52	23	8.49	10	
Somewhat supportive	7	5.83	6.73	9	5.96	7.14	16	5.9	6.96	
Very supportive	6	5	5.77	2	1.32	1.59	8	2.95	3.48	
Extremely supportive	1	0.83	0.96	5	3.31	3.97	6	2.21	2.61	
Blank	16	13.33	-	25	16.56	-	41	15.13	-	
Total	104	86.67	100	126	83.44	100	230	84.87	100	

Table 29. -- If the CATCH Project were adopted, how supportive, if at all, would you be of funding the project with a CHP fee? (Question E2).

79.0% of item respondents report were "not at all supportive" of funding the CATCH Project with a charter halibut tax (see Table 30). Of the remaining 21.0%, another 16.7% were "a little supportive" or "somewhat supportive," with the remaining 4.4% being "very supportive" or "extremely supportive." Support for a charter halibut tax was broadly similar across item respondents from Areas 2C and 3A. A Mann-Whitney *U* test failed to reject the null hypothesis of equal response distributions at the 90% confidence level (P = 0.770), suggesting item respondents support for funding the CATCH Project with a charter halibut tax does not differ between Areas 2C and 3A.

Table 30 If the CATCH Project were adopted, how supportive, i	if at all, wo	uld you be	of
funding it with a charter halibut tax? (Question E2).			

	2C				3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all supportive	81	67.5	78.64	99	65.56	79.2	180	66.42	78.95	
A little supportive	8	6.67	7.77	12	7.95	9.6	20	7.38	8.77	
Somewhat supportive	9	7.5	8.74	9	5.96	7.2	18	6.64	7.89	
Very supportive	3	2.5	2.91	2	1.32	1.6	5	1.85	2.19	
Extremely supportive	2	1.67	1.94	3	1.99	2.4	5	1.85	2.19	
Blank	17	14.17	-	26	17.22	-	43	15.87	-	
Total	103	85.83	100	125	82.78	100	228	84.13	100	

In general, there was support for the halibut stamp as a means of funding the CATCH Proposal. Among item respondents, only 30.1% were "not at all supportive", while about 48% were "very" or "extremely" supportive of a halibut stamp (Table 31). The results from a Mann-Whitney *U* test also suggest that Area 3A responses were different from Area 2C responses. Item respondents from Area 3A tend to be less supportive than those from Area 2C. This appears at both ends of the distribution. The proportion of item respondents indicating they were "not at all supportive" is 12.7 percentage points higher in Area 3A than Area 2C (35.9% and 23.15%, respectively). Additionally, the proportion of item respondent indicates they were "extremely supportive" is 7.9 percentage points lower in Area 3A as compared to Area 2C (32.8% and 40.7%, respectively).

There was also evidence that item respondents were generally more supportive of the halibut stamp compared to the other two funding mechanisms. Pairwise Mann-Whitney *U* tests of equal response distributions rejected at the 99% confidence level (p < 0.001) that the distribution of support for a charter halibut tax and a halibut stamp were the same. A similar test comparing the responses indicating level of support for the halibut stamp and CHP fee were statistically different (p < 0.001).

	C	2C		•	3A	,	All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all supportive	25	20.83	23.15	47	31.13	35.88	72	26.57	30.13	
A little supportive	9	7.5	8.33	6	3.97	4.58	15	5.54	6.28	
Somewhat supportive	15	12.5	13.89	21	13.91	16.03	36	13.28	15.06	
Very supportive	15	12.5	13.89	14	9.27	10.69	29	10.7	12.13	
Extremely supportive	44	36.67	40.74	43	28.48	32.82	87	32.1	36.4	
Blank	12	10	-	20	13.25	-	32	11.81	-	
Total	108	90	100	131	86.75	100	239	88.19	100	

Table 31. -- If the CATCH Project were adopted, how supportive, if at all, would you be of funding it with a halibut stamp? (Question E2).

Question E3 asked respondents whether they would vote in favor of the CATCH Project if it meant paying a specific CHP fee level per angler endorsement, which varied across survey versions (yes/no response). Different survey versions presented different cost levels ranging from \$300 to \$1,800 per endorsement. The range was chosen based on the total funds that would be raised given the total number of endorsements across all CHPs and the funds that are likely to be needed to fund the CATCH Project according to Yamada and Flumerfelt (2014) and Davis et al. (2013).

92.3% of item respondents in all areas indicated that they would not be willing to vote in favor of the CATCH project if it meant paying the CHP fee per angler endorsement presented to them (see Table 32). The difference in the proportion of item respondents who answered "no" was not statistically significant across Area 2C and Area 3A (P = 0.789).¹⁰

		+L1 P			<u> </u>				-).
		2C			3A			All areas	
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Yes	7	5.83	6.67	11	7.28	8.46	18	6.64	7.66
No	98	81.67	93.33	119	78.81	91.54	217	80.07	92.34
Blank	15	12.5	-	21	13.91	-	36	13.28	-
Total	105	87.5	100	130	86.09	100	235	86.72	100

Table 32. -- Would you vote in favor of the CATCH Project if it required you to pay a CHP fee of $[X]^a$ per angler endorsement you have each year? (Question E3).

^a X ranged from \$300 to \$1,800. Values were randomly assigned to surveys.

Question E4 gathered information about a number of items related to the funding mechanisms discussed above. In particular, respondents were asked the extent to which they agreed or disagreed (on a 5 point scale ranging from "strongly agree" to "strongly disagree") with the statements. The statements related to whether they expected to pass CHP fees on to customers, whether they unconditionally support the CATCH Project, whether they believed the CATCH Project would be effective (if passed), and whose responsibility it is to fund the project.

When asked if they expected to pass the CHP fee on to their customers, 49.6% of item respondents indicated that they "somewhat agree" or "strongly agree" that they would (see Table 33). However, item respondents tended to be split in their expectations, as another 28.1% of item respondents "strongly disagree" that they would pass on fees to the customer. A Mann-Whitney *U* test of equal response distributions failed to reject at the 90% confidence level (P = 0.113) that there were differences in response distributions between Areas 2C and 3A.

¹⁰ Additional analysis of these data will be conducted in the future.

		2C			3A		All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Strongly disagree	27	22.5	25.96	36	23.84	30	63	23.25	28.12
Somewhat disagree	4	3.33	3.85	5	3.31	4.17	9	3.32	4.02
Neither agree nor disagree	17	14.17	16.35	24	15.89	20	41	15.13	18.3
Somewhat agree	21	17.5	20.19	30	19.87	25	51	18.82	22.77
Strongly agree	35	29.17	33.65	25	16.56	20.83	60	22.14	26.79
Blank	16	13.33	-	31	20.53	-	47	17.34	-
Total	104	86.67	100	120	79.47	100	224	82.66	100

Table 33. -- I expect to pass on any fee to the customer (Question E4).

Respondents were asked to indicate their agreement with a statement that indicates they would support the CATCH project no matter what the CHP fee was (Table 34). Respondents tended to disagree with this statement: 72.1% of item respondents across all areas "strongly disagree" with the statement. A Mann-Whitney *U* test could not reject the null hypothesis of equal response distributions (P = 0.195) between Area 3A and Area 2C respondents.

Table 34. -- I would support the CATCH Project no matter what the fee was (Question E4).

		2C			3A		All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Strongly disagree	70	58.33	66.67	95	62.91	74.8	165	60.89	71.12
Somewhat disagree	17	14.17	16.19	15	9.93	11.81	32	11.81	13.79
Neither agree nor disagree	11	9.17	10.48	9	5.96	7.09	20	7.38	8.62
Somewhat agree	2	1.67	1.9	4	2.65	3.15	6	2.21	2.59
Strongly agree	5	4.17	4.76	4	2.65	3.15	9	3.32	3.88
Blank	15	12.5	-	24	15.89	-	39	14.39	-
Total	105	87.5	100	127	84.11	100	232	85.61	100

Next, respondents were asked for their level of agreement with a statement that the CATCH Project will be effective if adopted. While 53.5% of item respondents "somewhat disagree" or "strongly disagree" the CATCH Project will be effective, another 27.4% "somewhat agree" or "strongly agree" the CATCH Project will be effective (see Table 35). Responses were broadly similar across IPHC areas, which was confirmed with a Mann-Whitney U test (P = 0.386).

		2C			3A			All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Strongly disagree	46	38.33	44.23	62	41.06	49.21	108	39.85	46.96	
Somewhat disagree	6	5	5.77	9	5.96	7.14	15	5.54	6.52	
Neither agree nor disagree	21	17.5	20.19	23	15.23	18.25	44	16.24	19.13	
Somewhat agree	13	10.83	12.5	13	8.61	10.32	26	9.59	11.3	
Strongly agree	18	15	17.31	19	12.58	15.08	37	13.65	16.09	
Blank	16	13.33	-	25	16.56	-	41	15.13	-	
Total	104	86.67	100	126	83.44	100	230	84.87	100	

Table 35. -- If adopted, I believe the CATCH Project will be effective (Question E4).

Three statements were then presented that differ on whom the responsibility for funding the CATCH Project should be placed. Levels of agreement tend to be consistent with respondents' support levels for various funding mechanisms, which reflect a proclivity towards placing responsibility on angler clients. The first of these statements asked if funding the CATCH Project should be the angler's (customer's) responsibility alone. Respondents tended to favor this view: 42.4% of item respondents across all areas "somewhat agree" or "strongly agree" that funding the CATCH Project should be the angler's responsibility, while 31.3% "somewhat disagree" or "strongly disagree" (see Table 36). A Mann-Whitney U test suggests similar response distributions across Area 2C and 3A respondents (P = 0.185).

Table 36. -- I should not have to fund the CATCH Project at all (it is the angler's responsibility) (Question E4).

		2C			3A		All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Strongly disagree	16	13.33	16.16	32	21.19	25.6	48	17.71	21.43
Somewhat disagree	9	7.5	9.09	13	8.61	10.4	22	8.12	9.82
Neither agree nor disagree	29	24.17	29.29	30	19.87	24	59	21.77	26.34
Somewhat agree	11	9.17	11.11	13	8.61	10.4	24	8.86	10.71
Strongly agree	34	28.33	34.34	37	24.5	29.6	71	26.2	31.7
Blank	21	17.5	-	26	17.22	-	47	17.34	-
Total	99	82.5	100	125	82.78	100	224	82.66	100

The second statement about funding responsibility stated that charter businesses should fund the CATCH project (or that funding the CATCH project was the industry's responsibility). Respondents tended not to agree that it was the industry's responsibility to fund the CATCH Project. In particular, 78.4% of the item respondents "somewhat disagree" or "strongly disagree" with the statement, while 12.1% "somewhat" or "strongly agree" with it (see Table 37). In this case, using a Mann-Whitney *U* test the response distributions across IPHC regions were found to be statistically different at the 10% level (P = 0.070), with a higher proportion of item respondents from Area 3A who "strongly disagreed" (by 12.1 percentage points) compared with Area 2C item respondents (73.0% to 60.95%, respectively).

		2C			3A		All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Strongly disagree	64	53.33	60.95	92	60.93	73.02	156	57.56	67.53
Somewhat disagree	13	10.83	12.38	12	7.95	9.52	25	9.23	10.82
Neither agree nor disagree	15	12.5	14.29	7	4.64	5.56	22	8.12	9.52
Somewhat agree	8	6.67	7.62	10	6.62	7.94	18	6.64	7.79
Strongly agree	5	4.17	4.76	5	3.31	3.97	10	3.69	4.33
Blank	15	12.5	-	25	16.56	-	40	14.76	-
Total	105	87.5	100	126	83.44	100	231	85.24	100

Table 37. -- Charter businesses, like mine, should have to fund the CATCH Project (it is the industry's responsibility) (Question E4).

Finally, respondents were presented with a statement that said funding the CATCH Project is a responsibility that should be shared between charter businesses (like theirs) and anglers. A majority of respondents disagreed with this statement: 53.7% of item respondents from all areas either "somewhat disagree" or "strongly disagree," while 26.0% of respondents either "somewhat agree" or "strongly agree" (see Table 38). Item respondents in Areas 2C and 3A did not appear to differ statistically with respect to this question (Mann-Whitney *U* test with a P = 0.189).

Table 38. -- Funding the CATCH Project is a responsibility that should be shared between charter businesses and anglers (Question E4).

		2C			3A		All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item
Strongly disagree	43	35.83	40.95	57	37.75	45.24	100	36.9	43.29
Somewhat disagree	11	9.17	10.48	13	8.61	10.32	24	8.86	10.39
Neither agree nor disagree	16	13.33	15.24	31	20.53	24.6	47	17.34	20.35
Somewhat agree	21	17.5	20	14	9.27	11.11	35	12.92	15.15
Strongly agree	14	11.67	13.33	11	7.28	8.73	25	9.23	10.82
Blank	15	12.5	-	25	16.56	-	40	14.76	-
Total	105	87.5	100	126	83.44	100	231	85.24	100

Section F

Section F of the survey collected information about respondents' views of potentially owning (as opposed to leasing) GAF. Question F1 asked respondents how helpful a program in which individual charter businesses would be able to purchase halibut quota share and use it as GAF (a GAF ownership program) would be to them. Respondents were asked to choose among the following five responses: "not helpful at all," "a little helpful," "somewhat helpful," "very helpful," or "extremely helpful." Question F2 asked respondents about their likelihood of purchasing IFQ were a GAF ownership program put into place. Respondents were asked to choose among the following five responses: "not at all likely," "a little likely," "somewhat likely," "very likely," and "extremely likely." The final question in this section, F3, asked respondents about their level of support for the three proposals introduced in the survey; relaxation of GAF restrictions, the CATCH project, and the GAF ownership program. Respondents were asked to choose from the following five responses: "not at all supportive." "a little supportive," "somewhat supportive," "extremely supportive."

		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not helpful at all	51	42.5	47.66	80	52.98	59.7	131	48.34	54.36	
A little helpful	9	7.5	8.41	11	7.28	8.21	20	7.38	8.3	
Somewhat helpful	22	18.33	20.56	22	14.57	16.42	44	16.24	18.26	
Very helpful	12	10	11.21	9	5.96	6.72	21	7.75	8.71	
Extremely helpful	13	10.83	12.15	12	7.95	8.96	25	9.23	10.37	
Blank	13	10.83	-	17	11.26	-	30	11.07	-	
Total	107	89.17	100	134	88.74	100	241	88.93	100	

Table 39 How helpful, if at all, would this GAF ownership program be to you? (Questic	n F1).
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When asked how helpful a GAF ownership program would be in question F1, 54.4% of item respondents indicated the program was "not helpful at all" (Table 39). However, while the majority indicated they viewed the potential to own GAF unhelpful, a combined 37.3% of item respondents indicated a GAF ownership program would be either "extremely helpful," "very helpful," or "somewhat helpful." Item respondents from Area 2C found the potential to own GAF more helpful than those from Area 3A. A Mann-Whitney *U* test of equal response distributions was rejected at the 90% confidence level (P = 0.051). This result suggests item respondents' views about how helpful the CATCH Project differ statistically between Area 2C and Area 3A. Item respondents from Area 3A more frequently indicated (by about 12 percentage points) that GAF ownership would be "not helpful at all" compared to Area 2C item respondents. Conversely, more Area 2C item respondents indicated they believed the GAF ownership program was either "extremely helpful," "very helpful" or "somewhat helpful" when compared to those from Area 3A (a difference of 12 percentage points).

		2C		,	3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all likely	55	45.83	51.89	83	54.97	61.94	138	50.92	57.5	
A little likely	9	7.5	8.49	18	11.92	13.43	27	9.96	11.25	
Somewhat likely	22	18.33	20.75	13	8.61	9.7	35	12.92	14.58	
Very likely	11	9.17	10.38	8	5.3	5.97	19	7.01	7.92	
Extremely likely	9	7.5	8.49	12	7.95	8.96	21	7.75	8.75	
Blank	14	11.67	-	17	11.26	-	31	11.44	-	
Total	106	88.33	100	134	88.74	100	240	88.56	100	

Table 40. -- If this GAF ownership program were put into place, how likely are you to purchase halibut IFQ? (Question F2).

In all areas, only 16.67% of item respondents indicated they were "extremely likely" or "very likely" to purchase halibut IFQ (see summary of question F2 responses in Table 40). Another 25.8% indicated they were as "a little likely" or "somewhat likely," while 57.5% indicated they were "not at all likely" to purchase halibut IFQ. A Mann-Whitney *U* test of equal response distributions was rejected at the 90% confidence level (P = 0.086), suggesting item respondents' likeliness to purchase halibut IFQ differed statistically between Areas 2C and 3A. Item respondents from Area 2C tended to indicate that they were more likely to purchase IFQ as compared to those from Area 3A. In particular, item respondents from Area 2C indicated they were "not at all likely" or "a little likely" to purchase IFQ in lower proportion than those from Area 3A. Similarly, a greater proportion of item respondents from Area 2C indicated that they were "somewhat likely" or "very likely" to purchase IFQ compared to those in Area 3A.

		2C			3A		All areas			
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all supportive	40	33.33	40.00	66	43.71	50.38	106	39.11	45.89	
A little supportive	17	14.17	17.00	18	11.92	13.74	35	12.92	15.15	
Somewhat supportive	14	11.67	14.00	25	16.56	19.08	39	14.39	16.88	
Very supportive	7	5.83	7.00	5	3.31	3.82	12	4.43	5.19	
Extremely supportive	22	18.33	22.00	17	11.26	12.98	39	14.39	16.88	
Blank	20	16.67	-	20	13.25	-	40	14.76	-	
Total	100	83.33	100	131	86.75	100	231	85.24	100	

Table 41. -- How supportive, if at all, are you of the CATCH Project? (Question F3).

Question F3 asks the respondent to indicate how supportive they are of the CATCH Project, with 54.1% of item respondents in all areas being at least "a little supportive" of the CATCH project

compared to 45.9% that were "not at all supportive" (see Table 41). 16.9% of item respondents were "extremely supportive," In particular, 5.19% of item respondents were "very supportive," 16.9% were "somewhat supportive" and 15.15% were "a little supportive." A Mann-Whitney U test of equal response distributions was rejected at the 90% confidence level (P = 0.066). This suggests item respondents' support for the CATCH Project differed statistically between Areas 2C and 3A. Item respondents in Area 3A tended to be less supportive than those in Area 2C. In particular, a larger proportion of respondents in Area 3A indicated they were "not at all supportive" of the CATCH Project compared to those from Area 2C. Similarly, item respondents from Area 3A indicated they were "extremely supportive" in lower proportions compared to those from Area 2C.

		2C			3A			All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all supportive	48	40.00	48.00	74	49.01	56.92	122	45.02	53.04	
A little supportive	18	15.00	18.00	21	13.91	16.15	39	14.39	16.96	
Somewhat supportive	19	15.83	19.00	17	11.26	13.08	36	13.28	15.65	
Very supportive	9	7.50	9.00	8	5.3	6.15	17	6.27	7.39	
Extremely supportive	6	5.00	6.00	10	6.62	7.69	16	5.9	6.96	
Blank	20	16.67	-	21	13.91	-	41	15.13	-	
Total	100	83.33	100	130	86.09	100	230	84.87	100	

Table 42. -- How supportive, if at all, are you of relaxing restrictions in GAF leasing program? (Question F3).

Question F3 also asked respondents for their level of support for relaxing restrictions in the GAF leasing program. A majority of item respondents (53.0%,) were "not at all supportive" of a GAF leasing program with relaxed restrictions, the highest percentage in this category for all three programs (see Table 42). Another 17.0% of item respondents were "a little supportive," also the highest percentage in this category across all three programs. A total of 30% of item respondents were either "somewhat supportive," "very supportive" or "extremely supportive." A Mann-Whitney *U* test rejected a null hypothesis of equal distributions at the 90% confidence level (P = 0.224), suggesting that item respondents' support of a halibut leasing program with relaxed restrictions does not differ statistically across Areas 2C and 3A. Despite this, we note that a higher proportion of item respondents from 3A indicated being "not at all supportive" compared to those in 2C. A greater proportion of item respondents from 3A also indicated they were "extremely supportive" of such halibut leasing programs compared to item respondents from 3A. In this sense, item respondents from Area 2C tended to indicate less strong opinions about halibut leasing programs with relaxed restrictions than those from Area 3A.

		2C			3A			All areas		
	Count	% resp	% item	Count	% resp	% item	Count	% resp	% item	
Not at all supportive	51	42.5	49.51	67	44.37	51.15	118	43.54	50.43	
A little supportive	10	8.33	9.71	21	13.91	16.03	31	11.44	13.25	
Somewhat supportive	22	18.33	21.36	25	16.56	19.08	47	17.34	20.09	
Very supportive	10	8.33	9.71	6	3.97	4.58	16	5.9	6.84	
Extremely supportive	10	8.33	9.71	12	7.95	9.16	22	8.12	9.4	
Blank	17	14.17	-	20	13.25	-	37	13.65	-	
Total	103	85.83	100	131	86.75	100	234	86.35	100	

Table 43. -- How supportive, if at all, are you of a GAF ownership program? (Question F3).

The final program asked about in F3 is the GAF ownership program. A slight majority of item respondents were "not at all supportive" (50.4%) of the GAF ownership program (see Table 43), while 13.3% were "a little supportive," 20.1% were "somewhat supportive," 6.9% were "very supportive" and 9.4% were "extremely supportive." A Mann-Whitney *U* test of equal response distributions between Area 2C and Area 3A respondents could not be rejected at the 90% confidence level (P = 0.453). This result suggests item respondents' level of support for a GAF ownership program did not differ between Areas 3A and 2C, although a slightly higher proportion of item respondents from Area 3A indicated being "a little" or "not supportive" compared to those from Area 2C.

While these questions did not pose a direct comparison of the programs to respondents, the fact they are evaluated on the same scale allows for basic comparisons in item respondents' support for the programs. Of the three programs, the CATCH project tended to garner the highest level of support, the relaxed GAF leasing program garnered the lowest level, with the level of support for the GAF ownership program falling in between (see Tables 41-43). Comparing the response distribution of support for the CATCH project and the leasing program, a Mann-Whitney *U* test of equal response distributions is rejected at the 95% confidence level (P = 0.026). This suggests a statistical difference in support among item respondents for the CATCH Project as opposed to the leasing program. However, similar tests comparing the response distributions of support for the GAF ownership program, and the GAF ownership program to the GAF leasing program, were not rejected at the 90% level (P = 0.191 and P = 0.345, respectively).

DISCUSSION

The survey results suggest that CHP holders generally had a negative view of the CSP and the GAF leasing program, with the majority believing that the GAF leasing program negatively impacts their business. However, only a small percentage of respondents had participated in the program during 2014. In the survey 7% of item respondents indicated they leased GAF during 2014, which matches up well with the actual percentage of CHP holders who leased GAF.

According to Scheurer and Kotlarov (2014), 43 CHP holders (7.6%) actually leased GAF during 2014. Among those who indicated they had not leased GAF in 2014, the costs to lease GAF and generally opposing the GAF leasing program were cited by the most CHP holders as the primary reason for not participating in the program. Only about 8% of respondents planned on leasing GAF in 2015, which lines up fairly well with the estimate of 40 CHP holders (about 7%) who actually leased GAF during 2015 (Scheurer 2015).

The majority of respondents felt that relaxing restrictions on how GAF could be used (lease terms and transferability) was not likely to be helpful to their business. When asked about their knowledge of, and attitudes toward, the CATCH Proposal, which aims to create a recreational quota entity that can buy and sell commercial halibut IFQ, about 32% indicated they were not at all familiar with it, and over three-quarters of respondents indicated that they were not supportive of funding the proposal through a fee based on the number of endorsements held by CHP holders or a charter halibut tax per fish based on charter logbook records. Instead, the favored funding mechanism in terms of support was a charter halibut stamp, which would be purchased directly by charter anglers (70% were at least a little supportive). Respondents were split on whose responsibility (angler clients, charter businesses, or both) it was to fund the CATCH Proposal, but the majority indicated that they did not feel the cost should be borne solely by charter businesses (about 68%).

There were several differences between responses from CHP holders in International Pacific Halibut Commission (IPHC) regulatory Areas 2C and 3A. Specifically, Area 3A respondents viewed the CSP, the GAF leasing program, and how the current CSP would affect their businesses more negatively than those in Area 2C. They also differed in terms of their support for the CATCH Proposal, with Area 3A respondents being less supportive on average than Area 2C respondents. Area 2C and 3A respondents also seemed to feel differently about how supportive they would be of alternative programs, such as a GAF ownership program (that would allow individual charter businesses to buy and sell commercial fishing quota as GAF) and GAF leasing programs that were more flexible than the current program. In general, Area 2C respondents were a little more supportive than 3A respondents of these alternative programs. However, Area 2C and 3A respondents were similar in their statements about whose responsibility they felt it was to pay for the CATCH Proposal (charter anglers, charter businesses, or shared by both charter anglers and businesses) and their beliefs about how effective it would be if implemented.

As a whole, the survey results suggest most CHP holders have a negative view of both the CSP and GAF leasing programs and are not very supportive of alternatives to the current GAF leasing program, specifically modified GAF leasing programs that provide additional flexibility to how the GAF can be used and transferred, an individual GAF ownership program, and the CATCH Proposal.

We close with a few caveats. First, the data for the analysis was based on a census of all CHP holders in Alaska, which is the population eligible to offer halibut fishing trips to clients and that can lease GAF. The response rate of 52% is considered reasonable, particularly for this specialized population of primarily small businesses. Compared to other recent surveys of similar populations in Alaska (e.g., Lew et al. 2015b), this response rate is quite good. However, whenever response rates are less than 100 percent, there is the possibility of sampling biases, in particular non-response bias (see Lew et al. 2015a). The data analyzed here have not been

adjusted for potential non-response bias, so the conclusions may not be fully generalizable to the population to the extent non-response bias is present.¹¹

Second, this survey serves as a snapshot of the attitudes and preferences that CHP holders have towards the CSP, GAF leasing program, CATCH Proposal, and other alternative programs. However, we note that the CSP has not been in place long and the survey was conducted during the second year that the CSP had been in place. As CHP holders become more familiar and used to the various components of the CSP, including the GAF leasing program, some may change their opinions about the program. In addition, CHPs can be transferred, meaning the population may change over time. Whether or not attitudes and preferences change over time is an empirical question and one that will require additional data be collected in the future.

And finally, this report does not include a formal analysis of the stated preference questions in Sections D and E. However, the pattern of responses to the stated preference question about funding the CATCH Proposal through a charter halibut fee paid by charter businesses on endorsements suggests it would have little financial support (over 92% indicated they would not pay the halibut CHP fee to fund the CATCH Proposal in question E3), although more rigorous econometric analysis will be conducted to confirm this in future work. Additionally, stated preference questions related to the alternative GAF leasing programs (questions D1, D3, and D5) will be examined in an econometric framework to determine charter businesses' willingness to pay for GAF with fewer restrictions.

¹¹ To evaluate non-response bias, auxiliary data on the entire population are needed. Such data would enable an assessment of respondents' characteristics and non-respondents' characteristics with respect to one or more variables within the auxiliary data. At this time, we have been unable to link the survey data to an external data source that would allow for this analysis.

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CITATIONS

- Bateman, I. J., R. T. Carson, B. Day, M. Hanemann, N. Hanley, T. Hett, M. Jones-Lee, G. Loomes, S. Mourato, E. Ozdemiroglu, D.W. Pearce, R. Sugden, J. Swanson. 2002. Economic Valuation with Stated Preference Technique: A Manual. Edward Elgar, Cheltenham, U.K. 458 pp.
- Call, I. L., and D. K. Lew. 2015. Tradable permit programs: What are the lessons for the new Alaska Halibut catch sharing plan? Mar. Pol. 52: 125-137.

Davis, S., G. Sylvia, and C. Cusack. 2013. Economic Implications of a Strategy to Purchase Alaska Halibut Fishery Commercial Fishing Sector Quota Shares to Create a Recreational Guided Angler Sector Harvest Common Pool. Prepared by The Research Group, LLC, Corvallis, Oregon, for the CATCH Project, Auke Bay, Alaska. 127 p. Available online at: <u>https://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/52301/Alaska%20CATCH</u> <u>%20asset%20value%20Final.pdf?sequence=1</u>

- Dillman, D. A., J. D. Smyth, and L. M. Christian. 2009. Internet, Mail, and Mixed-mode Surveys: The Tailored Design Method. Wiley, Hoboken, N.J. 509 p.
- Freeman, A. M., J. A. Herriges, and C. L. Kling. 2014. The Measurement of Environmental and Resource Values: Theory and Methods, 3rd edition. Resources for the Future, Washington, D.C. 478 p.
- Jennings, G. B., K. Sundet, and A. E. Bingham. 2015. Estimates of Participation, Catch, and Harvest in Alaska Sport Fisheries During 2011. Alaska Department of Fish and Game, Division of Sport Fish, Fisheries Data Series No. 15-04. 178 p.
- Kroetz, K., J. N. Sanchirico, and D. K. Lew. 2015. Efficiency costs of social objectives in tradable permit programs. J. Assn. Env. Res. Econ. 2(3): 339-366.
- Lew, D. K., A. Himes-Cornell, and J. Lee. 2015a. Weighting and data imputation for missing data in a cost and earnings fishery survey. Mar. Res. Econ. 30(2): 219-230.
- Lew, D. K., G. Sampson, A. Himes-Cornell, J. Lee, and B. Garber-Yonts. 2015b. Costs, earnings, and employment in the Alaska saltwater sport fishing charter sector, 2011-2013. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-299, 134 p.
- Louviere, J. J., D. A. Hensher and J. D. Swait. 2000. Stated Choice Methods: Analysis and Application. Cambridge University Press, Cambridge, UK.
- Scheurer, J. 2015. Guided Angler Fish (GAF) Program 2015 Annual Report. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Region. Available online at: <u>http://www.npfmc.org/wp-</u> <u>content/PDFdocuments/halibut/Implementation/GAFreportFinal2015.pdf</u>

- Scheurer, J., and A. Kotlarov. 2014. Guided Angler Fish (GAF) Program Final 2014 Report. National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Alaska Region. Available online at: <u>https://alaskafisheries.noaa.gov/sites/default/files/reports/gaf-report2014.pdf</u>
- Yamada, R., and S. Flumerfelt. 2014. Integrating a Recreational Fishery into a Catch Share Program: Case Study of Alaska's Guided Halibut Sport Fishery. Report prepared for the Catch Accountability through Compensated Halibut (CATCH) Project. Available online at:

http://www.alaskacharter.org/docs/Catch%20Alaska%20Report%20Final%202014.pdf

APPENDIX

Survey Instrument

Your Opinions About GAF in the Halibut Catch Sharing Plan



Photo credit: R. Yamada



This survey is funded by the National Oceanic and Atmospheric Administration, a U.S. government agency charged with management of federal fisheries.

Public reporting burden for this collection of information is estimated at 30 minutes, including time for reviewing instructions, reviewing existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other suggestions for reducing this burden to Dan Lew, NOAA Fisheries, Alaska Fisheries Science Center, Dan.Lew@noaa.gov. Notwithstanding any other provision of the law, no person is required to respond to, nor shall any person be subject to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.

OMB Control #: 0648-0705 Expiration Date: 11/30/2017 We are seeking your opinions about the recently implemented Halibut Catch Sharing Plan (<u>http://alaskafisheries.noaa.gov/frules/78fr75844.pdf</u>). Please answer all questions as best as you can.

SECTION A: Your Views on the Catch Sharing Plan

- A1 A main purpose of the <u>Catch Sharing Plan</u> (**CSP**) is to establish how much of the total allowable catch of Pacific halibut is allocated between the recreational charter and commercial fisheries. In general, how positively or negatively do you view the CSP as a whole?
 - □ Very positively
 - □ Somewhat positively
 - □ Neither positively nor negatively
 - □ Somewhat negatively
 - □ Very negatively
- A2 The CSP allows charter halibut permit (CHP) holders to lease Individual Fishing Quota (IFQ) from commercial fishermen holding quota shares for Pacific halibut. When leased, the IFQ, which are measured in pounds, are converted to guided angler fish (GAF) using an area-specific conversion factor based on the previous year's average weight of GAF. (CHP holders owning commercial IFQ may convert a portion of their IFQ into GAF as well.) GAF can be used by charter clients to harvest up to two fish of any size per person per day, regardless of charter-specific bag and size limits.

In general, how positively or negatively do you view the <u>GAF component</u> of the Catch Sharing Plan?

- □ Very positively
- □ Somewhat positively
- □ Neither positively nor negatively
- □ Somewhat negatively
- □ Very negatively

A3 How positively or negatively do you believe the ability to use GAF will affect your business?

- □ Very positively
- □ Somewhat positively
- □ Neither positively nor negatively
- □ Somewhat negatively
- □ Very negatively

Please explain your answer:

SECTION B: Your Participation in the GAF Lease Market

- **B1** Did you lease GAF during 2014?
 - □ Yes \rightarrow Continue to the next question (B2)

□ 1es → Conunue to the next question (B2)

- □ No → What were your main reasons for not leasing GAF during 2014? Please check all that apply.
 - □ Leasing GAF was too expensive
 - □ The leasing process was too difficult
 - □ My business did not need any GAF
 - □ I do not support the GAF leasing program
 - □ I did not want to conduct business with commercial fishing businesses
 - □ The program was too new and there was too much uncertainty
 - □ I did not know about the GAF leasing program
 - Other (please specify):

Skip to question B10

B2 How many GAF did you lease during 2014?

_____ guided angler fish (GAF) during 2014

- **B3** Did you use a broker to facilitate the leasing of GAF?
 - □ Yes
 - 🛛 No
- **B4** From whom did you lease GAF? *Please check all that apply.*
 - □ Someone I did not know personally prior to leasing
 - □ Someone I knew personally who held halibut IFQ (friend or family)
 - □ Myself (you hold both commercial IFQ and a CHP and leased to yourself)

- **B5** How difficult was the leasing process in general?
 - □ Not at all difficult
 - □ Somewhat difficult
 - Difficult
 - □ Very difficult
 - □ Extremely difficult
- **B6** Returns of unused GAF occur automatically 15 days before the end of the commercial fishing season or voluntarily before then (on or after September 1). During 2014, did you return any unused GAF?
 - □ Yes, I voluntarily returned unused GAF before the end of the season
 - □ Yes, my unused GAF was returned automatically
 - 🛛 No
- **B7** In your lease agreement, was there a provision that allowed you to get a refund (or partial refund) for GAF that are unused and returned?
 - □ Yes
 - 🛛 No
- **B8** How much of an impact, positive or negative, do you believe having GAF during 2014 had on your business?
 - □ Very positive
 - □ Somewhat positive
 - □ Neither positive nor negative
 - □ Somewhat negative
 - □ Very negative
- **B9** What were the main reasons you decided to lease GAF during 2014?
- **B10** Do you plan to lease GAF <u>during 2015</u>?
 - □ Yes
 - □ No
 - Don't know

SECTION C: Guided Angler Fish (GAF) Restrictions

Under the current GAF leasing program, there are several restrictions on the use of GAF, including:

- 1. **Single-season use**. GAF must be used before the end of the season for which it is leased, with automatic returns if the GAF is unused by a certain date (15 days before the end of the commercial fishing season).
- 2. No transfers. GAF can't be transferred between CHP holders during the season.

The restrictions listed above are features that are <u>sometimes relaxed in other IFQ (or tradable permit)</u> <u>programs</u> to increase flexibility for participants.

C1 How helpful, if at all, would <u>relaxing</u> each of the restrictions listed above be to you? *Note that there are no proposals being considered currently for relaxing these restrictions, which may be administratively or politically infeasible under current laws and regulations. Even so, such changes could possibly occur in the future, and your opinion about them is valuable.*

	Not helpful at all	A little helpful	Somewhat helpful	Very helpful	Extremely helpful
Restriction	•	•	•	•	•
Single-season use					
No transfers between CHP holders					

- C2 Relaxing single-season use. <u>Multi-year leases</u> would specify more than one year the GAF could be used (e.g., a two year lease would allow the GAF to be used in either the year it was leased or the following year). If multi-year leases of GAF were allowed next year, how would your participation in the GAF leasing market change? *Assume all other program features remain the same*.
 - □ I would lease more GAF than I currently planned
 - □ I would lease the same amount of GAF that I currently planned (no change)
 - □ I would lease less GAF than I currently planned
 - □ I don't know

- C3 Allowing transfers between CHP holders. If you were allowed to <u>transfer a limited amount</u> (up to a specific amount) of GAF to other CHP holders during the season starting next year, how would your participation in the IFQ leasing market change? *Assume all other program features remain the same*.
 - □ I would lease more GAF than I currently planned
 - □ I would lease the same amount of GAF that I currently planned (no change)
 - □ I would lease less GAF than I currently planned
 - □ I don't know

SECTION D: What Programs Do You Prefer?

In the questions below, choose the program you prefer. Each question compares the **current leasing program** (**Program A**) to a different program (**Programs B, C,** and **D**) that relaxes one or more current GAF restrictions but have a higher GAF price. The prices listed for all programs use the 2015 conversion rate between commercial IFQ pounds and GAF. Some of the GAF prices may be more or less than those you have seen, but please use the ones listed in making your decision. *Your opinion about how these programs compare is important, even if some of their features may be administratively or politically infeasible currently.*

D1 Consider Programs A and B below for the International Pacific Halibut Commission (IPHC) area (Area 2C or 3A, or both) in which you operate. Which program do you prefer? *Please indicate your response below the table*.

	Program A Current program	Program B
Length of lease period	1 season only	1 season only
Ability to transfer to other CHP holders in-season	None	Yes
Price per pound of GAF	\$4	\$5
Price <u>per GAF</u> by IPHC Area	\$154 in 3A \$269 in 2C	\$192 in 3A \$337 in 2C
	Program A	Program B
Which program do you prefer? Check one box>		

D2 For each program in D1, how many GAF would you lease if the regulations for <u>only that</u> <u>program</u> were in place **next year**? *Assume that other regulations, such as angler bag and size limits and the GAF conversion rate, remain at current levels. If none, write "0".*

	<u>Program A</u>	<u>Program B</u>
Number of GAF I would lease		
under this program		

D3 Here is a second comparison between the current leasing program and a different program. As before, consider the programs for the IPHC area in which you operate. Which do you prefer? *Please indicate your response below the table.*

	Program A Current program	Program C
Length of lease period	1 season only	1 or 2 seasons
Ability to transfer to other CHP holders in-season	None	None
Price per pound of GAF	\$4	\$5
Price <u>per GAF</u> by IPHC Area	\$154 in 3A \$269 in 2C	\$192 in 3A \$337 in 2C
	Program A	Program C
Which program do you prefer? Check one box>		

D4 Regardless of your answer in D3, how many GAF would you lease under <u>**Program C**</u> if its regulations were in place **next year**? *Assume that other regulations, such as angler bag and size limits and the GAF conversion rate, remain at current levels. If none, write "0".*

_____ Number of GAF I'd lease under **Program C**

D5 Again, here is the current leasing program and a different program that relaxes the restrictions on GAF use, but results in a higher price for GAF in each IPHC area. Which do you prefer? *Please indicate your response below the table.*

	Program A Current program	Program D
Length of lease period	1 season only	1 or 2 seasons
Ability to transfer to other CHP holders in-season	None	Yes
Price <u>per pound</u> of GAF	\$4	\$6
Price <u>per GAF</u> by IPHC Area	\$154 in 3A \$269 in 2C	\$230 in 3A \$404 in 2C
	Program A	Program D
Which program do you prefer? Check one box>		

D6 Again, regardless of your answer to D5, how many GAF would you lease under <u>Program D</u> if the regulations for that program were in place **next year**? *Assume the angler bag and size limits, as well as the GAF conversion rate, remain at current levels. If none, write "0".*

_____ Number of GAF I'd lease under **Program D**

D7 These questions were asked to obtain the opinion of industry members like you for decision makers to consider along with information from scientists and planners. How confident are you that your answers in D1 through D6 accurately reflect how you feel about the different programs for GAF use? *Please check only one box.*

Not at all confident	Slightly confident	Somewhat confident	Very confident	Extremely confident

SECTION E: The Catch Accountability Through Compensated Halibut (CATCH) Proposal

A recent proposal, called the **Catch Accountability Through Compensated Halibut (CATCH) Project**, proposes the creation of a recreational quota entity (RQE) that would be eligible to purchase commercial halibut IFQ that would be added to the charter sector's allocation that is determined annually under the CSP. The RQE would purchase IFQ with the goal of eventually accumulating enough to ensure that the charter boat sector would not have overly restrictive size and bag limits imposed upon it, thus benefiting all charter boat businesses who have clients fishing for halibut.

E1 How familiar are you, if at all, with the CATCH Project?

- □ Not at all familiar
- □ Somewhat familiar
- □ Familiar
- □ Very familiar
- □ Extremely familiar
- E2 How the purchase of IFQ would be funded by the CATCH Project has not yet been determined. One way to fund the CATCH Project would be to assess a <u>mandatory fee on CHPs</u> that would be paid by all CHP holders and be based on the number of angler endorsements (CHP fee). Another is to fund it with a <u>tax charged on each halibut harvested</u> by levying a fee per halibut harvested according to charter logbook records (charter halibut tax). A third way to fund it is with a halibut stamp program that would be similar to the Alaska king salmon stamp program, where all anglers would be required to purchase a halibut stamp to be able to catch and keep halibut.

The CHP fee and charter halibut tax funding mechanisms would cost your business money. The halibut stamp would be paid directly by anglers, which would make it more expensive for anglers to fish for halibut. Any of these funding mechanisms would be expected to minimize overly-restrictive fishing regulations on charter fishing clients.

If the CATCH Project were adopted, how supportive, if at all, would you be of each funding mechanism?

	Not at all supportive	A little supportive	Somewhat supportive	Very supportive	Extremely supportive
	\bullet	\bullet	\bullet	\checkmark	\bullet
CHP fee					
Charter halibut tax					
Halibut stamp					

- E3 Suppose you were asked to vote for or against the CATCH Project, and it would require an **annual CHP fee**. If a majority of CHP holders voted in favor of it, then you and all other CHP holders would be required to pay the fee if adopted by fishery managers. If the majority voted against it, it would not be proposed to fishery managers. Would you vote in favor of the CATCH Project if it required you to pay a **CHP fee of \$450 per angler endorsement you have each year**?
 - □ Yes
 - 🛛 No

Please explain your answer:

E4 For each statement below, check the one box that best represents your opinion.

	Neither Strongly Somewhat agree nor S disagree disagree disagree			Somewhat agree	Strongly agree
	\bullet	\bullet	\bullet	\checkmark	\bullet
I expect to pass on any fee to the customer					
I would support the CATCH Project no matter what the fee was					
If adopted, I believe the CATCH Project will be effective					
I should <u>not</u> have to fund the CATCH Project at all (it is the angler's responsibility)					
Charter businesses, like mine, should have to fund the CATCH Project (it is the industry's responsibility)					
Funding the CATCH Project is a responsibility that should be shared between charter businesses and anglers					

SECTION F: Owning GAF Instead of Leasing GAF

As an alternative to the GAF leasing program, consider a program in which all CHP holders were allowed to own commercial halibut IFQ (quota share). Under this **GAF ownership** program:

- You could buy, sell, and own commercial halibut IFQ
- Each year, any halibut IFQ you own (in pounds) would be converted to GAF using the areaspecific conversion factor based on the previous year's average weight of GAF
- There would be <u>no initial allocation</u> of IFQ to CHP holders (no IFQ would be allocated to you, so you would have to purchase IFQ to own GAF)

Note: There are no proposals like this program being considered currently, and it may be administratively or politically infeasible under current laws and regulations. Nevertheless, your opinions about it are important to share with fishery managers.

F1 How helpful, if at all, would this GAF ownership program be to you?

Not helpful at all	A little helpful	Somewhat helpful	Very helpful	Extremely helpful

F2 If this GAF ownership program were put into place, how likely are you to purchase halibut IFQ? *Check the box of the best answer.*

Not at all likely	A little likely	Somewhat likely	Very likely	Extremely likely

F3 We have asked you about programs to relax the GAF leasing program restrictions, the CATCH Project, and a GAF ownership program. How supportive, if at all, are you of each of these potential program changes?

	Not at all supportive	A little supportive	Somewhat supportive	Very supportive	Extremely supportive
	\bullet	\bullet	\bullet	\checkmark	▼
Relaxing GAF leasing restrictions					
CATCH Project proposal					
GAF ownership program					

YOUR PARTICIPATION IS GREATLY APPRECIATED!

Please feel free to provide us with any additional comments you may have. Thank you!

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AFSC-

- 325 von SZALAY, P. G., and N. W. RARING. 2016. Data report: 2015 Gulf of Alaska bottom trawl survey. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-325, 249 p. NTIS number pending.
- 324 RUTECKI, T. L., C. J. RODGVELLER, and C. R. LUNSFORD. 2016. National Marine Fisheries Service longline survey data report and survey history, 1990-2014, 329 p. NTIS number pending.
- 323 M. M. MUTO, V. T. HELKER, R. P. ANGLISS, B. A. ALLEN, P. L. BOVENG, J. M. BREIWICK, M. F. CAMERON, P. J. CLAPHAM, S. P. DAHLE, M. E. DAHLHEIM, B. S. FADELY, M. C. FERGISON, L. W. FRITZ, R. C. HOBBS, Y. V. IVASHCHENKO, A. S. KENNEDY, J. M. LONDON, S. A. MIZROCH, R. R. REAM, E. L. RICHMOND, K. E. W. SHELDEN, R. G. TOWELL, P. R. WADE, J. M. WAITE, and A. N. ZERBINI. 2016. Alaska marine mammal stock assessments, 2015, 300 p. NTIS number pending.
- 322 FAUNCE, C., J. GASPAR, J. CAHALAN, S. LOWE, S. BARBEAUX, and R. WEBSTER. 2016. Deployment performance review of the 2015 North Pacific Groundfish and Halibut Observer Program, 54 p. NTIS number pending.
- 321 FRITZ, L., K. SWEENEY, R. TOWELL, and T. GELATT. 2016. Aerial and ship-based surveys of Steller sea lions (*Eumetopias jubatus*) conducted in Alaska in June-July 2013 through 2015, and an update on the status and trend of the western distinct population segment in Alaska, 72 p. NTIS number pending.
- 320 ECHAVE, K. B. 2016. Feasibility of tagging sablefish, *Anoplopoma fimbria*, with pop-off satellite tags in the northeast Pacific Ocean, 38 p. NTIS number pending.
- 319 BARBEAUX, S. J., S. ROMAIN, E. LOGERWELL, and D. FRASER. 2016. Aleutian Islands Cooperative Acoustic Survey Study, 2007, 35 p. NTIS number pending.
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- 316 TESTA, J. W. (editor). 2016. Fur seal investigations, 2013-2014, 126 p. NTIS number pending.
- 315 HELKER, V. T., M. M. MUTO, and L. A. JEMISON. 2016. Human-caused injury and mortality of NMFS-managed Alaska marine mammal stocks, 2010-2014, 89 p. NTIS number pending.
- 314 KONDZELA, C. M., J. A. WHITTLE, D. YATES, S. C. VULSTEK, H. T. NGUYEN, and J. R. GUYON. 2016. Genetic stock composition analysis of chum salmon from the prohibited species catch of the 2014 Bering Sea walleye pollock trawl fishery and Gulf of Alaska groundfish fisheries, 49 p. NTIS No. PB2016-102777.
- 313 GODDARD, P., R. WILBORN, C. ROOPER, K. WILLIAMS, R. TOWLER, M. SIGLER, and P. MALECHA. 2016. Results of the 2014 underwater camera survey of the eastern Bering Slope and Outer Shelf, 304 p. NTIS number pending.
- 312 LAAKE, J. L., S. R. MELIN, A. J. ORR, D. J. GREIG, K. C. PRAGER, R. L. DeLONG, and J. D. HARRIS. 2016. California sea lion sex- and age-specific morphometry, 21 p. NTIS No. PB2016-102562.
- 311 GUTHRIE, C. M. III, HV. T. NGUYEN, and J. R. GUYON. 2016. Genetic stock composition analysis of the Chinook salmon bycatch samples from the 2014 Gulf of Alaska trawl fisheries, 31 p. NTIS No. PB2016-101398.