

Regulatory Amendment to Implement Guideline Harvest Level Measures in the Halibut Charter Fisheries in International Pacific Halibut Commission Regulatory Area 2C

Regulatory Impact Review/Final Regulatory Flexibility Analysis/ Environmental Assessment

Date: March 2009

Lead Agency: National Marine Fisheries Service
P. O. Box 21668
Juneau, Alaska 99802

Responsible Official: Robert D. Mecum, Acting Alaska Regional Administrator
National Marine Fisheries Service, Alaska Region
709 W. 9th St.
Juneau, Alaska 99802-1668

Information Contact: Ben Muse
National Marine Fisheries Service, Alaska Region
709 W. 9th St.
Juneau, Alaska 99802-1668
907-586-7225

Abstract: This Regulatory Impact Review/Final Regulatory Flexibility Analysis/Environmental Assessment (RIR/FRFA/EA) analyzes the environmental and economic impacts of a proposed rule to create a one-halibut daily bag limit for persons fishing for halibut from guided charter vessels in waters in and off of Southeast Alaska (International Pacific Halibut Commission Area 2C). This action is being proposed to reduce guided sport charter harvests of halibut to approximately the guideline harvest level established for Area 2C. The analyses in this report address the requirements of the National Environmental Policy Act, Presidential Executive Order 12866 (as amended), and the Regulatory Flexibility Act.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	ix
Background	ix
Purpose and need.....	x
Alternatives	x
Regulatory Impact Review.....	xi
Final Regulatory Flexibility Analysis.....	xiii
Environmental Assessment.....	xv
1.0 Introduction.....	1
1.1 History of this action	1
1.2 Problem Statement	2
1.3 Purpose and Need.....	3
1.4 Description of the Alternatives.....	3
1.5 Alternatives considered but not subjected to additional analysis.....	4
1.6 Action Area	6
1.7 Relationship of this action to Federal law	6
2.0 REGULATORY IMPACT REVIEW	7
2.1 Purpose of the Regulatory Impact Review.....	7
2.2 Alternatives	7
2.3 Description of the Fishery	8
2.3.1 Determination of harvest limits in IPHC Area 2C	8
2.3.2 The Commercial Longline Sector	12
2.3.3 The Guided Charter Vessel Sector	13
2.3.4 Other Removals.....	24
2.3.5 Fisheries and regional communities	27
2.3.6 Limited Entry and the Catch Sharing Plan.....	29
2.4 Statement of the Problem	30
2.5 Economic Impacts of Alternatives	31
2.5.1 Guided charter clients.....	31
2.5.2 Half-day charter operations and crew	34
2.5.3 Full- and multi-day charter operations and crew.....	36
2.5.4 Commercial longline operations and crew	38
2.5.5 Local communities	43
2.5.6 Halibut consumers.....	44
2.5.7 Management and enforcement costs	45
2.5.8 Summary of the costs and benefits of the two alternatives	47
3.0 FINAL REGULATORY FLEXIBILITY ANALYSIS	50
3.1 Introduction	50
3.2 The purpose of an FRFA.....	50
3.3 What is required in an FRFA?.....	51
3.4 What is a small entity?	51
3.5 The action	53
3.6 Objectives and Reasons for Considering the Action.....	53
3.7 Legal Basis of the Action.....	53
3.8 Comments.....	53
3.9 Number and Description of the Small Entities Directly Regulated by this Action.....	59
3.10 Recordkeeping and Reporting Requirements.....	60
3.11 Federal rules that may duplicate, overlap, or conflict with the action.....	60
3.12 Description of Significant Alternatives.....	61

4.0	Environmental assessment	62
4.1	Alternatives	62
4.2	Reasonably Foreseeable Future Actions	63
4.3	Environmental Impacts.....	63
4.3.1	Halibut.....	63
4.3.2	Groundfish and salmon	65
4.3.3	Seabirds	68
4.3.4	Marine Mammals	70
4.3.5	Habitat	72
4.3.6	Ecosystem.....	73
4.3.7	Social and Economic Environment	74
4.4	Cumulative Effects	74
4.5	Conclusions	75
5.0	REFERENCES.....	78
6.0	LIST OF PREPARERS	82
7.0	INDIVIDUALS CONSULTED	82
8.0	Appendix A: The ARIMA Model	83

LIST OF TABLES

Table 1	IPHC Area 2C history of halibut removals (in millions of pounds), 1995-2007.	11
Table 2	Charter Operations in Southeast Alaska. Summary results of a 2006 survey on nature-based tourism in Southeast Alaska	18
Table 3	Anecdotal information on lodge operations from public comments submitted in 2008 ..	20
Table 4	IPHC Area 2C Guided Charter Summary Statistic Estimates; bottomfish charter activity and charter harvest	21
Table 5	Example to illustrate the difference in commercial longline catch limits based on 2007 guided angler harvests, and on the 2008 GHL (measured in millions of dollars and millions of pounds)38	
Table 6	Average Weight per Harvested Halibut in the Area 2C Charter Fishery 1999-2006	40
Table 7	Estimated Charter Halibut Harvest Levels Under a One-halibut Bag Limit (Mlb)- 2007 Conditions	41
Table 8	Estimated Charter Halibut Harvest Levels Under a One-halibut Bag Limit as a Percentage of the 0.931 GHL- 2007 Conditions	42
Table 9	Comparative Summary of the costs and benefits of the Area 2C one-halibut bag limit halibut charter alternatives	48
Table 10	Estimated rockfish and lingcod harvest by charter anglers by area and year.	66
Table 11	Brief summary of projected biomass removal of Demersal Shelf Rockfish in the outer coast of SE Alaska and history of daily bag and annual limit of non-pelagic rockfish.	67
Table 12	ARIMA Model Projections	85

LIST OF FIGURES

Figure 1	Area 2C Guided Sport Halibut Guideline Harvest Level (GHL) and Guided Sport Harvest (based on the Statewide Harvest Survey), 1995 - 2009.....	2
Figure 2	IPHC regulatory areas in the northern Pacific Ocean and Bering Sea	6
Figure 3a	IPHC Area 2C Total CEY, Fishery CEY, and Commercial Catch Limit from 1997-2009.....	10
Figure 4	Number of halibut harvested by charter clients, by region of Southeast Alaska and by year, 2003-2007. Source: ADF&G Statewide Harvest Survey	14
Figure 5	Trends in Cruise Passenger Arrivals in Alaska	14
Figure 6	Cruise ship visits by Southeast Alaska port from 1990 to 2004.....	15
Figure 7	Year to year percentage change in measures of bottomfish charter activity in Area 2C..	16
Figure 8	Cumulative percentage change in measures of bottomfish charter activity in Area 2C...	16
Figure 9	Semi-monthly chartered halibut harvest per angler-hour of bottomfishing effort (CPUE) in sampled ports of IPHC Area 2C during 2007.....	24
Figure 10	Trends in halibut takes for purposes other than commercial longline or guided sport fishing	25
Figure 11	Sources of fishing halibut mortality from 2003-2007	25
Figure 12	Estimated guided sport harvest of halibut under alternative assumptions about fish weight and demand.....	43
Figure 13	Estimated guided charter halibut and rockfish landings from 1998 to 2007.....	66
Figure 14	ARIMA Model for Area 2C	84

ABBREVIATIONS

ABC	Acceptable Biological Catch
ADF&G	Alaska Department of Fish and Game
ADPS	Alaska Department of Public Safety
BOF	State of Alaska Board of Fisheries
CEQ	Council on Environmental Quality
CEY	Constant Exploitation Yield
DSR	Demersal Shelf Rockfish
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
E.O.	Presidential Executive Order
ESA	Endangered Species Act
FRFA	Final Regulatory Flexibility Analysis
GHL	Guideline Harvest Level
IFQ	Individual Fishing Quota
IPHC	International Pacific Halibut Commission
IRFA	Initial Regulatory Flexibility Analysis
ISER	University of Alaska, Anchorage Institute for Social and Economic Research
lb	Pounds
Mlb	Million lb
NEPA	National Environmental Policy Act
NPFMC	North Pacific Fishery Management Council
OFL	Overfishing Level
OLE	NOAA Office for Law Enforcement
OMB	Office of Management and Budget
PSC	Prohibited Species Catch
QS	Quota Share
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SBA	U.S. Small Business Administration
SWHS	Statewide Harvest Survey
TAC	Total Allowable Catch
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service

Blank page

EXECUTIVE SUMMARY

Background

This analysis assesses the potential biological and economic impacts of imposing a one fish daily halibut bag limit on clients of guided sport charter operators fishing in and off Southeast Alaska (International Pacific Halibut Commission (IPHC) Area 2C).

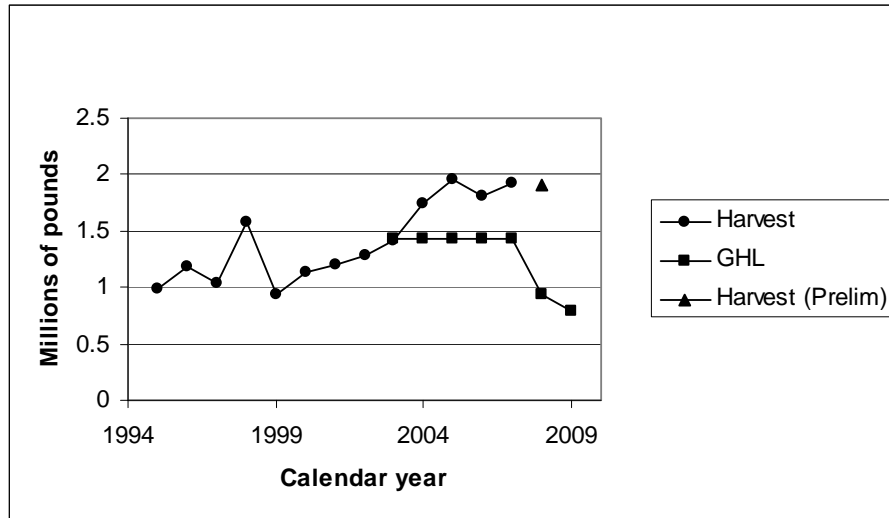
In addition to providing the Secretary with the factual basis for making a decision on this action, this document complies with Presidential Executive Order 12866 (requiring, among other things, a cost and benefit analysis of proposed Federal regulatory actions), the Regulatory Flexibility Act (which requires an analysis of any the impacts of a proposed action accruing uniquely or disproportionately to small entities), and the National Environmental Policy Act (NEPA).

As shown in the figure below, harvests of halibut by the guided sport charter vessel fishing sector have, since 2004, been exceeding the North Pacific Fishery Management Council's determined guideline harvest level (GHL). From 2000 to 2007, the GHL was 1.432 Mlb of halibut. In 2008, the GHL dropped to 0.931 Mlb of halibut, and in 2009 it dropped to 0.788 Mlb. This GHL, while not a binding "cap", was established by the Council to promote stability in the region's halibut fishing industry and the regional economy.

In 2007, NMFS attempted to control the guided sport harvest while minimizing adverse impacts on the demand for guided sport fishing by imposing a size limit on one of the halibut that could be retained under the existing two fish daily bag limit. In 2007, guided sport clients who caught two halibut could only have one halibut in possession that was greater than 32 inches in length.

This measure was not successful in restricting guided sport harvests in 2007 to the GHL. The Alaska Department of Fish and Game (ADF&G) estimates that the guided sport charter vessel fishery harvested 1.918 Mlb of halibut in 2007. This was an increase in harvest over the preceding year, and is over twice the size of the current GHL. In November 2008, the ADF&G provided preliminary estimates of the harvest in 2008, based on information from logbooks and creel surveys. The preliminary estimate of guided angler harvest for 2008 was 1.914 million pounds, 0.983 million pounds above the 2008 GHL.

NMFS expects that, if the existing regulatory structure continues unchanged, the harvest of the guided charter fishery will substantially exceed the GHL again in 2009.



Area 2C Guided Sport Halibut Guideline Harvest Level (GHL) and Guided Sport Harvest, 1995-2008

Purpose and need

As indicated in the proposed rule for this action (73 FR 78276, December 22, 2008), NMFS is implementing a one-halibut daily bag limit in Area 2C to give effect to the Council's intent to keep the harvest of charter vessel anglers to approximately the GHL. In the years 2003 through 2007, the GHL was 1,432,000 pounds (649.5 mt). In 2008, the GHL was reduced to 931,000 pounds (422.3 mt), and in 2009, the GHL was further reduced to 788,000 pounds (357.4 mt).

Harvests by charter vessel anglers were below the GHL in 2003 and above the GHL in 2004 through 2008. Figure 1 shows the GHL for each year and the specific amounts of charter vessel angler harvest. Table 7 shows that implementation of a one-halibut daily bag limit would reduce charter vessel angler catch to a range of 1,495,000 pounds (678.1 mt) to 602,000 pounds (273.1 mt), depending on various average weight scenarios and assumptions about reductions in demand.

NMFS determined that the one-halibut daily bag limit was the best alternative to bring charter vessel angler harvest close to the 931,000 pound (422.3 mt) level, after comparing it with other options and reviewing the range of potential harvests under the one-halibut daily bag limit based on various weight scenarios and demand reduction assumptions. Taking this action is consistent with the action proposed at 73 FR 78276. Also, it will bring the harvest of halibut by charter vessel anglers in Area 2C closer to the 788,000 pound (357.4 mt) level than will the status quo, consistent with the Council's intent.

Alternatives

The Secretary is considering two alternatives for this action:

Alternative 1: No action

- Two fish daily bag limit, with one fish less than or equal to 32 inches.
- No Federal rule prohibiting skippers and crew from retaining halibut. In the recent past, this has been a State requirement imposed by emergency order (Em. O.). However, the State does not currently (September 2008) have an effective Em.O. prohibiting skipper and crew from

retaining fish while carrying clients in Area 2C. The Em.O. issued on January 26, 2007, was effective from May 1, 2007, through December 31, 2007, and no Em.O. was issued for 2008. The Commissioner of the Alaska Department of Fish and Game has the authority to issue a new Em.O. in 2009, and subsequent years (under 5 AAC 75.003), and has shown a willingness to do so in past years.

- No Federal rule would regulate the number of lines that may be fished from a vessel. However, a State regulation (at 5 AAC 47.030(b) and (g)) would continue to impose a requirement limiting the number of lines to six, or the number of clients, whichever was fewer. Thus, as a practical matter, this restriction would be the same under both alternatives.
- Filleted halibut may be possessed onboard the charter vessel, provided that the entire carcass, with the head and tail connected as a single piece, is retained onboard until all fillets are offloaded.

Alternative 2: Preferred Alternative. The preferred alternative contains the following elements:

- The number of halibut caught and retained by each charter vessel angler in Area 2C is limited to no more than one halibut of any size, per calendar day.
- A charter vessel guide, a charter vessel operator, and a crewmember of a charter vessel must not catch and retain halibut during a charter vessel fishing trip;
- The number of lines used to fish for halibut must not exceed six or the number of charter vessel anglers onboard the charter vessel, whichever is fewer; and
- Repeal the current rule that requires retention of halibut carcasses.

Regulatory Impact Review

The Regulatory Impact Review (RIR) examined the impacts of this action on the following categories of persons: (a) guided charter clients, (b) half-day charter providers and crew, (c) full- and multi-day charter providers and crew, (d) commercial longline operations and crew, (e) local communities serving as bases for commercial longline and/or charter operations, (f) halibut consumers, and (g) management and enforcement agencies and their costs. The results of that analysis are summarized in the following table:

	Alternative 1	Alternative 2
Description	This is the status quo: a two fish daily bag limit, one of which must be less than or equal to 32 inches long.	Preferred alternative: one fish daily bag limit.
Does this alternative meet the objectives of this action?	No. This alternative was in place starting in 2007. Harvest estimates for 2007, which became available in September 2008 show that this alternative did not succeed in reducing guided halibut charter harvest between 2006 and 2007, and that the 2007 harvest was more than twice the size of the current GHL (0.788 Mlb).	This alternative is expected to reduce the harvest of halibut by guided sport fishermen and, to the extent that it does, it will meet the action's objective, at least in part. Under reasonable assumptions it reduces the harvest to the GHL, fulfilling the primary objective for this action.
Charter operation clients	This alternative was in place in 2007, and the harvest information from that year provides no evidence that the status quo led to a reduction in demand for guided charters, or a significant decrease in consumers' surplus for clients. The number of clients served and their associated consumers' surplus could rise under this alternative if other demand conditions permit. On	This alternative is expected to reduce the demand for guided halibut charters, and to reduce the consumers' surplus enjoyed by guided charter clients fishing for halibut in Area 2C.

	<p>the other hand, the uncertainty associated with the U.S. financial crisis of 2007-08, the international financial crisis in the fall of 2008, and the relatively high possibility of an economic recession in 2008-09, may have adverse effects on consumer spending and recreational travel. Fuel prices have varied considerably recently, but are currently (October 2008) down from the highs reached in the summer of 2008. Should these rise again, they may also dampen demand by increasing the cost of traveling to Alaska, and of operating charter fishing vessels.</p>	
Half-day charter operators	<p>Charter operators are expected to obtain producers' surplus levels similar to those in the 2007 baseline under this alternative, all else equal. This caveat especially reflects the macroeconomic issues described under "charter operation clients."</p>	<p>There may be a decline in the business they receive from permanent or temporary local residents, as these individuals substitute other ways of fishing for halibut. There may be a decline in the business they receive from clients on cruise ships, although this is likely to be a smaller decline, as these clients currently have somewhat limited opportunities to catch two halibut because of their short visits and tightly scheduled port calls.</p>
Full- and multi-day charter operators	<p>Charter operators are expected to obtain producers' surplus levels similar to those in the 2007 baseline under this alternative, all else equal.</p>	<p>These operations are expected to see a reduction in client demand as a result of the one-fish bag limit. The reduction in demand and consequent welfare losses are likely to be greater than for half-day charter operations for this sector as a group, although the impacts may vary among the diverse operations in the sector. The impacts may be somewhat less for more competitive small-scale segments and somewhat more for specialized lodges.</p>
Commercial longline operations	<p>Unless other demand shifters (income, the costs of visits to Alaska) reduce the demand for guided charters, it appears that guided charter harvests will remain at levels significantly above the current guideline harvest level of 0.788 Mlb. This will continue the shift in the effective share of IPHC removal limits from the commercial longline to the guided sport charter fishery. This may result in reduced gross revenues and lower quota share prices in this fishery. The greatest impact will fall on persons already in the fishery. Persons who subsequently buy in to the IFQ fishery would pay an amount that reflected the prevailing resource split. That price should capture market expectations concerning future division of the halibut catch.</p>	<p>The one fish daily bag limit should lead to a considerable reduction in guided sport halibut harvests compared to the baseline and status quo, and is likely to lead to a reduction in the demand for guided sport fishing in Southeast Alaska. In the absence of a large reduction in the quantity of guided sport fishing demanded, a decline on the order of 30% from 2007 levels, this alternative is unlikely to reduce guided sport harvests to the GHL level. In general the beneficiaries of the change will be current quota share holders in the commercial longline fishery, and not persons who subsequently purchase quota share.</p>
Local communities	<p>Both commercial longline and guided charter operations contribute local economic impacts. Available models can't evaluate the tradeoffs in income and employment associated with shifts of production between sectors. Income and employment impacts are not measures of economic costs and benefits and cannot be interpreted as such. Shifts between these two sectors would be expected to have minimal net benefit consequences from a national cost and benefit accounting stance, although this remains an empirical question.</p>	
Seafood consumers	<p>On-going shifts in the effective share of IPHC removal limits from the commercial longline to the guided sport charter fishery may result in some associated loss of consumers' surplus under this alternative. The size and distribution of consumers' surplus changes will depend on a</p>	<p>Reduction in guided sport halibut harvest could lead to reversion of halibut to the commercial longline fishery and thus, to consumer markets (minus waste). Increases in consumers' surplus would be expected, although, the size and distribution of consumers' surplus changes will</p>

	number of factors (e.g., supply from alternative sources, identity of final market), none of which are readily amenable to evaluation here. If demand for guided halibut charter fishing increases, this impact would increase, all other things equal.	depend on a number of factors (e.g., supply from alternative sources, identity of final market), none of which are readily amenable to evaluation here.
General public	The general public may be affected by this action through changes in management and enforcement costs. Management and enforcement costs under this alternative are expected to be similar to those seen under the 2007 and 2008 baseline.	The general public may be affected by this action through changes in management and enforcement costs. Management and enforcement costs under this alternative could be similar to those seen under the 2007 and 2008 baseline. Costs could be greater if a more restrictive one-fish daily bag limit increases the incentive to violate harvest rules and it becomes more difficult to enforce a one fish daily bag limit than a two fish bag limit. Costs could be smaller if declining demand reduces the number of operations that must be monitored.
Net impact to the Nation	It is impossible at this time to provide a quantitative estimate of the impact of this action on net benefits. The problem statement identifies a need to address distributional objectives and stabilize the halibut fishery in Area 2C. On these criteria, this action falls short of meeting the objectives of this action. It, therefore, would not be expected to increase the net benefit to the Nation	It is impossible at this time to provide a quantitative estimate of the impact of this action on net benefits. The primary objective of this action is to meet distributional objectives and re-establish stability in the 2C halibut fishery. On these criteria, this action is closer to meeting the stated objectives of this action, and would be expected to increase the net benefit to the Nation, over that of the status quo. The precise size and nature of that net benefit gain remains an empirical question.

Final Regulatory Flexibility Analysis

An Final Regulatory Flexibility Analysis (FRFA) was prepared, as required by section 603 of the Regulatory Flexibility Act, to describe the impact of this rule on directly regulated small entities and compare that impact to the impacts of other alternatives that were considered.

In 2007, 403 businesses operated 724 active charter vessels in Area 2C. All of these operations are assumed to be small entities, with annual gross revenues of less than the limit of \$7.0 million established by the Small Business Administration (SBA) for charter vessels. The largest companies involved in the fishery, lodges or resorts that offer accommodations, as well as an assortment of visitor activities, may be large entities under the SBA size standard, but data are insufficient for this analysis to estimate the number of large entities. The number of small entities may thus be overestimated because of the limited information on vessel ownership and operator revenues and operational affiliations. However, it is likely that most entities qualify as small businesses for RFA purposes.

The proposed action imposes new recordkeeping and reporting requirements on the directly regulated small entities. The Council, NMFS, and ADF&G stressed the importance of minimizing any reporting burden on the charter vessel industry and developed a proposed information collection program that would allow for the recording of necessary information in the existing ADF&G Saltwater Sport Fishing Charter Trip Logbook (logbook).

The new logbook information that would be required to be provided for this proposed action includes the regulatory area in which halibut were caught and kept during the fishing trip, the printed name of the charter

vessel angler, including youth anglers under 16 years of age, and the signature of the angler on the back of the logbook sheet to verify that the number of halibut caught and recorded is accurate.

As currently required by the State, the charter vessel guide also would be required under the proposed regulations to provide (1) the business license number issued by ADF&G, (2) the charter vessel guide license number issued by ADF&G, (3) the date the charter vessel fishing trip was taken, (4) the Alaska Sport Fishing License number of each charter vessel angler, and (5) the number of halibut retained. At the end of each fishing trip, each charter vessel guide would be required to confirm that the information recorded in the logbook is correct, by signing the logbook data sheet.

The professional skills that are necessary for each charter vessel guide to record the required logbook information vessel include the ability to read and write in English.

The collection of information has been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act (PRA).

An FRFA should include an identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule. This analysis did not reveal any Federal rules that duplicate, overlap, or conflict with the proposed action.

An FRFA is required to describe any significant alternatives to the proposed rule that accomplish the stated objectives of the proposed action, consistent with applicable statutes, and that would minimize any significant adverse economic impact of the proposed rule on small entities.

This analysis examined two alternatives, the status quo and a one-halibut bag limit. The objective of this action is to reduce the guided charter sport harvest as explained in Section 1.3.

The status quo alternative was introduced in 2007, with the intent of reducing harvest with minimal impact on demand for guided sport fishing. While the alternative may have reduced harvest below what it would otherwise have been, it did not reduce the harvest from the levels seen in recent years. Instead, both the number of bottomfish charter customers and the volume of halibut harvested rose to their highest recorded levels. In 2007, the Area 2C GHL was 1.432 Mlb. Since that time the GHL in Area 2C has been reduced to 0.788 Mlb. The preliminary estimate of 2008 guided angler harvests is 1.914 Mlb. If the harvest in 2009 is approximately at this level, it will exceed the 2009 GHL.

A range of harvest results are possible under the preferred alternative. It appears that, under reasonable assumptions about changes in demand, the harvest in the guided sport fishery may be reduced to the GHL. Thus, this alternative is capable of achieving the primary objective of this action.

Although the status quo would have a smaller impact on directly regulated small entities, it will not achieve the objectives of this action. The preferred alternative has a much higher likelihood of achieving the objectives of this action.

NMFS considered numerous alternatives to achieve the objectives of this action in 2007 and 2008. These and their respective analyses may be found in the April 2008 *Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level Measures in the Halibut Charter Fisheries in International Pacific Halibut Commission Regulatory Area 2C*, included here by reference. These earlier analyses found that only the present action's preferred alternative, the one-halibut daily bag limit, was capable of achieving the objectives of this action. Thus, these alternatives have not undergone further consideration at this time, based upon the best available information and scientific data.

Environmental Assessment

The EA addresses the requirements of the National Environmental Policy Act (NEPA). The purpose of an EA is to evaluate the environmental impacts of an action to determine if any are significant.

This EA evaluated the impacts of this action on the following parts of the environment: (a) halibut stocks, (b) groundfish stocks, (c) seabirds, (d) marine mammals, (e) habitat, and (f) the ecosystem.

- The proposed alternatives are not expected to have a significant impact on the halibut stocks. This action will not affect the overall harvest levels determined by the IPHC or the ability of the IPHC, NMFS, and the Council to constrain overall harvests within those limits, over time. It is designed to affect the allocation of given halibut yields between two user groups. The action may increase discard mortality in the full- and multi-day segment of the guided sport fishery if that sector highgrades; however, the discard rate in that fishery is believed to be small (about 5%). Highgrading is not expected to have a significant adverse impact on stocks. The action is not expected to have a significant effect on halibut biomass or mortality, spatial or temporal distribution of harvest, or halibut prey availability.
- Some groundfish species are taken as incidental catch or targeted catch in the guided sport fishery. These species include species of rockfish, lingcod, and a miscellany of other species. Restrictions on client halibut retention may cause clients and guides to substitute other species. However, reductions in the halibut bag limit may also reduce the demand for halibut fishing and with it the demand for stocks taken incidentally or targeted as well as halibut. The key groundfish species which guides and clients might substitute for halibut, rockfish and lingcod, are managed by State of Alaska and by NMFS to prevent overharvests. There has been little targeted fishing for other stocks in the past. For these reasons, the alternatives are not expected to have significant impacts with respect to the issues discussed for halibut.
- These alternatives are not expected to have significant impacts on seabirds. The halibut fishery operates under reasonable and prudent measures to protect Short-tailed albatross that were imposed by the U.S. Fish and Wildlife Service. For reasons described above, these alternatives are not likely to impact sea bird prey. Incidental takes are also not expected to be significant under these alternatives; rod-and-reel gear used in the charter fishery is unlikely to take seabirds, seabirds are relatively limited in the inside waters of Southeast Alaska, and commercial longline operations in outside and transitional waters are subject to strict seabird avoidance requirements. Benthic impacts are expected to be within the range observed in the past, and not to have a significant impact on bottom-feeding seabirds.
- This action is not expected to have a significant impact on marine mammals. The analysis examined the impacts of the alternatives on humpback, killer, and sperm whales, and on Steller sea lions. Halibut are not an important prey species for these mammals, and these alternatives are not expected to have a large impact on biomass of halibut or related fish species. NMFS does not expect an increase in vessel strikes associated with this action. Sperm and killer whales may be attracted to halibut gear to harvest incidental sablefish catches. However, NMFS data sets indicate that entanglement in halibut gear appears to be relatively uncommon in the GOA. Disturbance does not appear to be common in this fishery.
- Increased use of commercial longline gear may have an adverse impact on bottom habitat. The maximum potential change in gear usage associated with a one-fish limit is relatively small with respect the year-to-year changes observed under the status quo. NMFS does not expect the action to have significant impacts on the complexity, benthic biodiversity, or habitat suitability of benthic habitat.

- Given the nature of this action, a change in the distribution of a fixed overall harvest between two fishing fleets, this action is not expected to have significant impacts on the ecosystem. This action is expected to have modest impacts on the overall harvest mortality for halibut, groundfish, and salmon. These changes are not expected to lead to significant impacts on predator-prey relationships, on energy flow and balance through the ecosystem, or on species or functional diversity within the ecosystem.

Cumulative effects are linked to incremental policy changes that individually may have small outcomes, but that in the aggregate and in combination with other factors can result in major resource trends. This action would not interact synergistically with other actions or with natural trends to significantly affect environmental impacts. Possible future actions currently under consideration by the Council include the guided charter vessel limited entry system, and the catch sharing plan to reallocate Area 2C halibut stocks between the commercial longline fishery and the guided sport charter vessel fishery. These actions tend to reinforce control over the guided sport harvest, and to regularize the allocation of the fixed overall harvest between the two fleet sectors. Neither action is expected to change the conclusions of the analysis of direct and indirect impacts of the one-halibut bag limit action considered alone. No reasonably foreseeable future actions would have impacts that would cause significant cumulative effects when combined with the effects from this action.

1.0 INTRODUCTION

This analysis assesses the potential biological and economic impacts of imposing a one fish daily halibut bag limit on clients of guided sport charter vessels fishing in Southeast Alaska (International Pacific Halibut Commission (IPHC) Area 2C).

In addition to providing the Secretary with the factual basis for making a decision on this action, this document complies with the National Environmental Policy Act (NEPA), Presidential Executive Order 12866 which requires a cost and benefit analysis of Federal actions, and the Regulatory Flexibility Act which requires an analysis of the impacts of actions on directly regulated small entities.

1.1 History of this action

The proposed rule and the supporting analysis for the current two halibut daily bag limit, with one retained halibut required to be under 32", thoroughly described the management history for the guided sport charter vessel fishery for halibut in Area 2C (72 FR 17071) and this history is not repeated here (NMFS, 2007b).

On May 28, 2008, NMFS published a final rule that imposed a one-halibut daily bag limit on charter vessel anglers effective June 1, 2008 (73 FR 30504). The rule was promulgated based on a recommendation from the North Pacific Fishery Management Council, to limit the catch of halibut by charter vessel anglers to the guideline harvest level (GHL) determined by NMFS, based on regulations found at 50 CFR 300.65(c). When these regulations were promulgated in 2003, NMFS explained in the preamble that management measures would be implemented by notice and comment rulemaking. This explanation included statements that management measures could be implemented to limit charter vessel angler halibut catch after the sector's catch exceeded the GHL.

A group of charter halibut lodge and vessel owners (Plaintiffs), challenged the 2008 final rule in a law suit on the basis that the explanation in the 2003 preamble precluded NMFS from limiting charter anglers to a GHL before the GHL had been exceeded. NMFS presented evidence that the agency properly issued the final rule in 2008, under the authority of the Northern Pacific Halibut Act of 1982 (Halibut Act) and was not bound by the "purported" agency process from the 2003 preamble. The Plaintiffs conceded that NMFS had authority to take action under the Halibut Act, but argued that because NMFS referenced the 2003 rule in its 2008 rule, NMFS was bound to follow the process outlined in the 2003 preamble. According to the Plaintiffs' argument, this process from the 2003 preamble prevented NMFS from taking prospective action; hence, the 2008 action was arbitrary and capricious under the Administrative Procedure Act.

On June 10, 2008, the Court issued a Temporary Restraining Order (TRO) on the one-halibut daily bag limit, after determining that the Plaintiffs met their burden for issuance of a TRO. A hearing was held on June 20, 2008, to determine whether a preliminary injunction (PI) should be issued pending resolution on the merits. The Plaintiffs and NMFS (through the Department of Justice (DOJ)) provided further memoranda in support of their respective positions.

On June 20, 2008, the Court ruled in the Plaintiffs' favor and issued the PI and denied the government's request to continue the preliminary injunction hearing to provide NMFS more time to respond to the determination that the Plaintiffs had met their burden for a TRO/PI. The Court found that the government did not provide sufficient support for the explanation of why NMFS should not be bound by the process explained in the 2003 preamble and that the Plaintiffs had met their burden for the issuance of a PI.

1.2 Problem Statement

In 2003, NMFS approved and established (at 50 CFR 300.65(c)(1)) the Council's recommended guideline harvest level (GHL) policy to serve as a benchmark for monitoring the charter vessel fishery's harvests of Pacific halibut. The GHL does not limit harvests by charter vessel anglers, however. Subsequent regulatory action, such as this action, is necessary to control the charter vessel fishery's harvests to the GHL. From 2004 through 2007, the GHL was 1.432 Mlb; in 2008, in response to a reduction in the fishery constant exploitation yield (Fishery CEY) estimated by the IPHC, the GHL was reduced to 0.931 Mlb; in 2009 it was reduced again to 0.788 Mlb.

Harvests by charter vessel anglers exceeded the GHL in Area 2C each year from 2004 to 2007, and preliminary estimates indicate that the 2008 GHL also was exceeded (Figure 1).

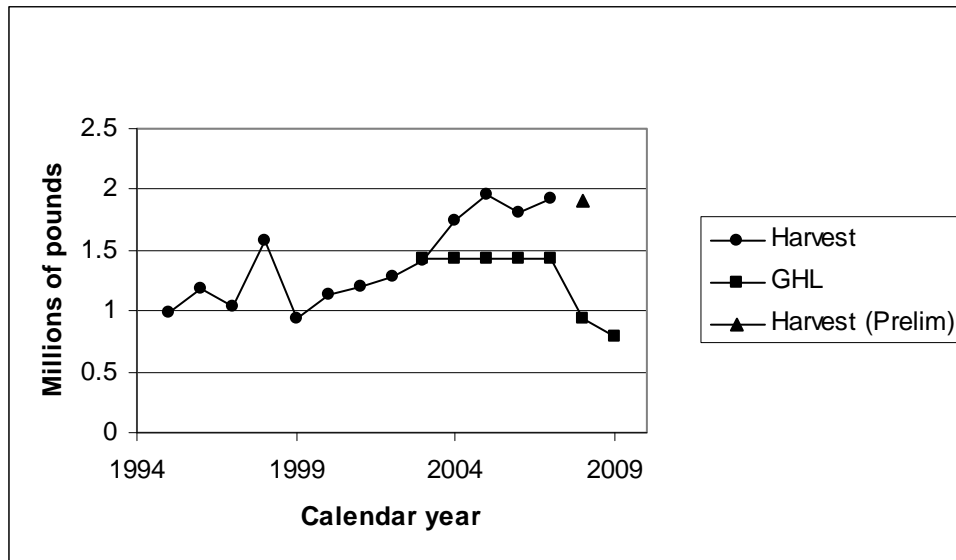


Figure 1 Area 2C Guided Sport Halibut Guideline Harvest Level (GHL) and Guided Sport Harvest (based on the Statewide Harvest Survey), 1995 - 2009

Harvests of halibut by the charter sector above its GHL reduce the amount of fish available to the commercial sector and thus create an allocation concern (the details of the IPHC process for determining the Area 2C catch limit are described in more detail in Section 2.3.1). Charter removals should be close to the GHL or the methodology used by the IPHC to determine the commercial catch limit is undermined and results in a *de facto* reallocation from the commercial sector in subsequent years.

Charter vessel harvests in excess of the GHL also create a conservation concern by compromising the overall harvest strategy developed by the IPHC to conserve the halibut resource. The Total CEY has decreased each year since 2004, reflecting declines in the estimated halibut biomass. As the Total CEY decreases, harvests of halibut should decrease to help conserve the resource. Hence, the GHL is linked to the Total CEY so that the GHL decreases in a stepwise fashion as the Total CEY decreases. Despite a decrease in Total CEY and the GHL in recent years, charter vessel harvests have remained high and in excess of the GHL. As conservation of the halibut resource is the overarching goal of the IPHC, the magnitude of charter vessel harvests over the GHL in Area 2C has raised concern that such excessive harvests by the charter sector pose a conservation risk, with the potential to undermine the IPHC's conservation and management goals for the overall halibut stock. Therefore, restraining charter sector harvests to approximately the GHL would contribute to the conservation of the halibut resource.

In 2007, NMFS attempted to control the guided sport harvest with minimal adverse impact on the demand for guided sport fishing, by imposing a size limit on one of the halibut that could be retained under the existing two fish daily bag limit. In 2007, guided sport clients who caught two halibut could only have one in possession that was greater than 32 inches in length.

This measure was not successful in reducing guided sport harvests in 2007 (or in 2008, based on preliminary estimates of guided angler harvest). The Alaska Department of Fish and Game (ADF&G) estimates that the guided charter fishery harvested 1.918 Milb of halibut in 2007. Harvest increased from 2006 to 2007.

In November 2008, the ADF&G provided the IPHC with preliminary estimates of guided halibut production for 2008. These are based on logbook and creel survey information, and are replaced with estimates based on the statewide harvest survey and creel survey, when these become available in August or September. The preliminary estimate for the guided 2008 harvest was 1.914 Milbs. ADF&G tested the 2008 preliminary estimation procedure on 2007 data and found the resulting estimate was 17.5% lower than the 2007 final harvest survey result, underscoring that there is considerable uncertainty associated with this preliminary estimate. (Meyer, pers. comm) The 2008 GHL was 0.931 Milbs.

NMFS expects that if the existing regulatory structure continues unchanged, the harvest of the guided charter fishery will exceed the GHL again in 2009.

1.3 Purpose and Need

As indicated in the proposed rule for this action (73 FR 78276, December 22, 2008), NMFS is implementing a one-halibut daily bag limit in Area 2C to give effect to the Council's intent to keep the harvest of charter vessel anglers to approximately the GHL. In the years 2003 through 2007, the GHL was 1,432,000 pounds (649.5 mt). In 2008, the GHL was reduced to 931,000 pounds (422.3 mt), and in 2009, the GHL was further reduced to 788,000 pounds (357.4 mt).

Harvests by charter vessel anglers were below the GHL in 2003 and above the GHL in 2004 through 2008. Figure 1 shows the GHL for each year and the specific amounts of charter vessel angler harvest. Table 7 shows that implementation of a one-halibut daily bag limit would reduce charter vessel angler catch to a range of 1,495,000 pounds (678.1 mt) to 602,000 pounds (273.1 mt), depending on various average weight scenarios and assumptions about reductions in demand.

NMFS determined that the one-halibut daily bag limit was the best alternative to bring charter vessel angler harvest close to the 931,000 pound (422.3 mt) level, after comparing it with other options and reviewing the range of potential harvests under the one-halibut daily bag limit based on various weight scenarios and demand reduction assumptions. Taking this action is consistent with the action proposed at 73 FR 78276. Also, it will bring the harvest of halibut by charter vessel anglers in Area 2C closer to the 788,000 pound (357.4 mt) level than will the status quo, consistent with the Council's intent.

1.4 Description of the Alternatives

The Secretary is considering two alternatives for this action:

Alternative 1: No action

- Two halibut daily bag limit, with one fish less than or equal to 32 inches in length.

- No Federal rule prohibiting skippers and crew from retaining halibut while paying clients are aboard. In the recent past, this has been a State prohibition imposed by emergency order (Em. O.). However, the State does not currently (September 2008) have an effective Em.O. prohibiting skipper and crew retention of halibut, while clients are aboard, in Area 2C. The Em.O. issued on January 26, 2007, was effective from May 1, 2007, through December 31, 2007, and no Em.O. was issued for 2008. The Commissioner of the Alaska Department of Fish and Game has the authority to issue a new Em.O. in 2009, and subsequent years (under 5 AAC 75.003), and has shown a willingness to do so in past years.
- No Federal rule would regulate the number of lines that may be fished from a vessel. However, a State regulation (at 5 AAC 47.030(b) and (g)) would continue to impose a requirement limiting the number of lines to six, or the number of clients, whichever is fewer. Thus, as a practical matter, this restriction would be the same under both alternatives.
- Filleted halibut may be possessed onboard the charter vessel, provided that the entire carcass, with the head and tail connected as a single piece, is retained onboard until all fillets are offloaded.

Alternative 2: Preferred Alternative. The preferred alternative contains the following elements:

- The number of halibut caught and retained by each charter vessel angler in Area 2C is limited to no more than one halibut of any size, per calendar day.
- A charter vessel guide, a charter vessel operator, and a crewmember of a charter vessel must not catch and retain halibut during a charter vessel fishing trip;
- The number of lines used to fish for halibut must not exceed six or the number of charter vessel anglers onboard the charter vessel, whichever is fewer; and
- Repeal the current rule that requires retention of halibut carcasses.

Taking no action would result in no new measures to reduce charter halibut harvests to the Area 2C GHL or to repeal the carcass retention rule. Alternative 1 includes current Federal and State regulations that would otherwise remain unchanged. Emergency orders were issued by ADF&G in 2006 and 2007, to prohibit a sport fishing guide and sport fishing crewmember on a charter vessel in Southeast Alaska from retaining halibut while clients are onboard the vessel during the fishing season. The analysis that follows assumes the EM.O. will be adopted in 2009, unless the preferred alternative to this action is adopted. State regulations for Southeast Alaska also limit the number of lines in the water to the number of paying clients, with a maximum of six.

These two measures (prohibition on skipper and crew halibut retention and line limits) are also included under Alternative 2, but would be implemented under Federal regulations. The effect of Federal implementation would be to allow the State to lift its regulations, which under State law also affect salmon, lingcod, and rockfish charter operations. The status quo includes a Federal regulation imposing a two-fish daily bag limit, with one of the two fish required to be 32 inches or less in length (72 FR 30714).

1.5 Alternatives considered but not subjected to additional analysis

Seven management measures, combined into 11 specific options, were considered for this analysis, but were ultimately rejected without being subjected to detailed analysis. These measures were analyzed for the final rule published by the Secretary on May 28, 2008 (73 FR 30504), but prevented from taking effect in 2008 by an injunction issued by the U.S. District Court, District of Columbia. These alternatives were thoroughly analyzed at that time (NMFS 2008a), and rejected by the Council and Secretary for a number of reasons. Perhaps the most salient was that none of these alternatives were as effective as the one-halibut daily bag limit to reduce the guided charter halibut harvest to approximately the GHL.

Additional reasons for rejecting these alternatives included: 1) the economic effect of an option falling on too few businesses; 2) the option being easily diluted by changes in angler behavior; and 3) the difficulty in measuring large fish before bringing them onboard vessels. A detailed discussion of the impacts of these alternatives may be found in NMFS (2008).

The seven measures are as follows: (1) No more than one trip per vessel per day; (2) No harvest of halibut by skipper and crew while clients are onboard; (3) A limit on the number of lines fished on a charter vessel of six, not to exceed the number of paying clients; (4) Annual limits of four halibut taken aboard a chartered vessel, or (4a) five fish, or (4b) six fish per angler; (5) Reduced bag limits of one halibut per day (5a) in May, or (5b) in June, or (5c) in July, or (5d) in August, or (5e) in September, or (5f) for the entire season; (6) Requiring one of two halibut in a daily bag to be (6a) larger than 45 inches, or (6b) larger than 50 inches; and (7) A reverse slot limit requiring one of two halibut in a daily bag limit to measure (7a) 32 inches or less, **or** (7b) longer than 45 inches, or (7c) longer than 50 inches.

The 11 options included:

- Option 1. No more than one trip per vessel per day.
- Option 2.
 - i. No halibut harvest by skipper and crew while clients are onboard; and
 - ii. Line limits of six per vessel, not to exceed the number of paying clients onboard.
- Option 3. Annual limits of four, five, or six halibut per angler taken while aboard a charter.
- Option 4. One-halibut daily bag limit in May, or June, or July, or August, or September, or for the entire season.
- Option 5. Two-halibut daily bag limit, with one of the two fish larger than 45 inches or larger than 50 inches.
- Option 6. Two-halibut daily bag limit, with one fish of any size and one fish 32 inches or less in length, or larger than 45 inches, or larger than 50 inches
- Option 7.
 - i. No more than one halibut charter trip per vessel per day;
 - ii. No halibut harvest by skipper and crew while clients are onboard;
 - iii. Line limits of six per vessel, not to exceed the number of paying clients onboard; and
 - iv. Two-halibut daily bag limit, with one of the two fish larger than 45 inches or larger than 50 inches.
- Option 8.
 - i. Two-halibut daily bag limit, with one of the two fish less than or equal to 32 inches;
 - ii. No more than one halibut charter trip per vessel per day;
 - iii. No halibut harvest by skipper and crew while clients are onboard; and
 - iv. Line limits of six per vessel, not to exceed the number of paying clients onboard.
- Option 9.
 - i. Two-halibut daily bag limit, with one fish of any size and one fish 32 inches or less in length, or larger than 45 inches, or larger than 50 inches;
 - ii. No more than one halibut charter trip per vessel per day;
 - iii. No halibut harvest by skipper and crew while clients are onboard; and
 - iv. Line limits of six per vessel, not to exceed the number of paying clients onboard.
- Option 10.
 - i. No more than one halibut charter trip per vessel per day;
 - ii. No halibut harvest by skipper and crew while clients are onboard;
 - iii. Line limits of six per vessel, not to exceed the number of paying clients onboard;
 - iii. Two-halibut daily bag limit, with one of two fish larger than 45 inches or larger than 50 inches; and
 - iv. Annual halibut limits while fishing aboard a guided charter vessel of four, five, or six fish for charter anglers.
- Option 11.
 - i. No more than one halibut charter trip per vessel per day;
 - ii. No halibut harvest by skipper and crew while clients are onboard;

- iii. Line limits of six per vessel, not to exceed the number of paying clients onboard;
- iv. Two-halibut daily bag limit, with one fish of any size and one fish 32 inches or less in length or larger than 45 inches or larger than 50 inches; and
- v. Annual halibut limits while fishing aboard a guided charter vessel of four, five, or six fish for charter anglers.

Options 4 and 8 have been retained in the current analysis. The full-season version of Option 4 is the preferred alternative and Option 8 is the status quo alternative.

1.6 Action Area

The action considered in this analysis would occur in IPHC regulatory Area 2C (Figure 2).

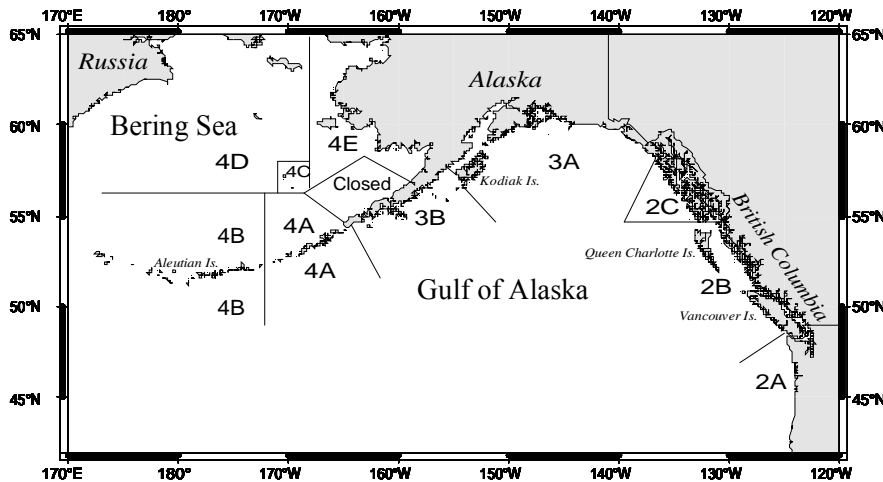


Figure 2 IPHC regulatory areas in the northern Pacific Ocean and Bering Sea

1.7 Relationship of this action to Federal law

While NEPA and the Regulatory Flexibility Act (RFA) are the primary laws directing the preparation of this document, a variety of other Federal laws and policies require environmental, economic, and socioeconomic analyses of proposed Federal actions. This document contains the required analysis of the proposed Federal action to ensure that the action complies with these additional Federal laws and Executive Orders:

- Convention between the United States and Canada for the Preservation of the Halibut Fishery of the North Pacific Ocean and Bering Sea (Convention)
- Northern Pacific Halibut Act (Halibut Act, 16 U.S.C. 773-773k)
- Endangered Species Act
- Marine Mammal Protection Act
- Administrative Procedure Act
- Information Quality Act

2.0 REGULATORY IMPACT REVIEW

This Regulatory Impact Review (RIR) evaluates the costs and benefits of an action to impose a one-halibut daily bag limit on clients of guided sport charters in IPHC Area 2C. This RIR addresses the requirements of Presidential Executive Order 12866, as amended by Executive Order 13497.

2.1 Purpose of the Regulatory Impact Review

The preparation of a Regulatory Impact Review (RIR) is required under Presidential Executive Order (E.O.) 12866 (58 FR 51735: October 4, 1993). The requirements for all regulatory actions specified in E.O. 12866 are summarized in the following statement from the E.O.:

In deciding whether and how to regulate, agencies should assess all costs and benefits of available regulatory options, including the alternative of not regulating. Costs and Benefits shall be understood to include both quantifiable options (to the fullest extent that these can be usefully estimated) and qualitative options of costs and benefits that are difficult to quantify, but nonetheless essential to consider. Further, in choosing among alternative regulatory approaches, agencies should select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

E.O. 12866 requires that the Office of Management and Budget (OMB) review proposed regulatory programs that are considered to be “significant.” A “significant regulatory action” is one likely to:

- Have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in this Executive Order.

2.2 Alternatives

The Secretary is considering two alternatives for this action:

Alternative 1: No action

- Two halibut daily bag limit, with one fish less than or equal to 32 inches in length.
- No Federal rule prohibiting skippers and crew from retaining halibut while paying clients are aboard. In the recent past, this has been a State prohibition imposed by emergency order (Em. O.). However, the State does not currently (September 2008) have an effective Em.O. prohibiting skipper and crew retention of halibut, while clients are aboard, in Area 2C. The Em.O. issued on January 26, 2007, was effective from May 1, 2007, through December 31, 2007, and no Em.O. was issued for 2008. The Commissioner of the Alaska Department of Fish and Game has the authority to issue a new Em.O. in 2009, and subsequent years (under 5 AAC 75.003), and has shown a willingness to do so in past years.

- No Federal rule would regulate the number of lines that may be fished from a vessel. However, a State regulation (at 5 AAC 47.030(b) and (g)) would continue to impose a requirement limiting the number of lines to six, or the number of clients, whichever is fewer. Thus, as a practical matter, this restriction would be the same under both alternatives.
- Filleted halibut may be possessed onboard the charter vessel, provided that the entire carcass, with the head and tail connected as a single piece, is retained onboard until all fillets are offloaded.

Alternative 2: Preferred Alternative. The preferred alternative contains the following elements:

- The number of halibut caught and retained by each charter vessel angler in Area 2C is limited to no more than one halibut of any size, per calendar day.
- A charter vessel guide, a charter vessel operator, and a crewmember of a charter vessel must not catch and retain halibut during a charter vessel fishing trip;
- The number of lines used to fish for halibut must not exceed six or the number of charter vessel anglers onboard the charter vessel, whichever is fewer; and
- Repeal the current rule that requires retention of halibut carcasses.

More detail is available in Section 1.4 of the Introduction.

2.3 Description of the Fishery

2.3.1 Determination of harvest limits in IPHC Area 2C

Halibut in IPHC Area 2C are targeted by several fisheries, including the commercial longline fishery, guided and unguided sport fisheries, and subsistence fisheries. In addition, halibut are subject to fishing mortality from other sources, including bycatches by vessels targeting other species (especially groundfish), waste in the halibut longline fisheries, and takes for research purposes. Of these different fisheries, only the commercial longline fishery operates within an annual limit on harvest of Area 2C halibut. The limit on commercial longline harvests does not extend to discard mortality or mortality from lost or abandoned gear.

The determination of the annual commercial longline catch limits begins with the estimate of the annual exploitable biomass.

Recently the IPHC has shifted from a “closed-area” to a “coast wide” approach to biomass determination. This has been associated with a drop in the Area 2C biomass estimate. Growing concerns about net migration from the western to the eastern Gulf of Alaska led the IPHC to doubt the accuracy of the “closed-area” biomass assessments that had been done for many years (Clark and Hare 2006). In 2006, IPHC staff changed the orientation of its stock assessment, because of new scientific information that conflicted with previous model assumptions about migration between regulatory areas. The new assessment approach considered tagging data and mortality rates which suggested that a larger fraction of halibut beyond eight years of age continue to migrate eastward than previously assumed.

Clark and Hare reported that a comparison of total yield between the coastwide assessment with survey apportionment and the sum of the individual closed-area assessments produced a similar coastwide biomass estimate, but the distribution of yield among regulatory areas was much different. The coastwide assessment indicated more biomass was available in Areas 3B and 4 and less in Area 2 than the levels calculated using the closed area approach. This drop in the Area 2 biomass estimate led to a large reduction in the commercial catch limit and guided sport fishery GHL in Area 2C when they were adopted in 2008.

In 2008, the Commission staff reported on the 2007 Pacific halibut stock assessment which implemented the coastwide estimation of biomass. Although this approach had been introduced for the 2006 stock assessment, it was not endorsed by the Commission at its 2007 Annual Meeting. Following a June 2007 stock assessment workshop and external peer review of the assessment, the Commission and its advisory bodies endorsed the coastwide approach to the assessment of halibut stock abundance at the 2008 Annual Meeting. While the staff's catch limit recommendations, arising from IPHC survey-based apportionment of the coastwide biomass estimates, were accepted for most areas, the Commission requested additional investigation of apportionment methods during 2008.

With a known biomass, the IPHC can calculate an overall harvest target for the various fisheries in Area 2C. This is called the "total constant exploitation yield" (Total CEY) and is calculated by applying a target harvest rate to the estimate of exploitable biomass. With the new coastwide assessment approach, the IPHC staff has concluded that a 20% harvest rate is more appropriate than the 22.5 percent rate used in the past.

A constant exploitation yield for the commercial longline fishery (Fishery CEY) is then calculated by subtracting estimates of expected removals by other unregulated resource users (including legal-sized bycatch in groundfish fisheries, legal-sized wastage, personal use, and guided and non-guided sport catches) from the Total CEY. The IPHC uses harvest estimates from the previous year as an estimate for the current year for the personal use and wastage categories. In contrast, groundfish fishery bycatch of halibut estimates for the current year are used. However, in most cases, removal numbers are relatively stable between years for the aforementioned categories.

Because guided sport harvests have grown over the last decade, a projection method provided by ADF&G, and based on historical harvest levels, has been used to estimate harvest for the year in which the commercial catch limit is established. In 2008 and 2009, the IPHC, anticipating regulatory changes to impose a one-fish halibut bag limit and constrain guided sport harvests to the GHL, used the GHL itself as the estimate of harvests.

The commercial catch limit is based on the Fishery CEY. In setting the commercial catch limit, the IPHC considers area-specific harvest policy objectives and also applies what it terms the "Slow Up/Fast Down" (SUFDD) policy. Under the SUFDD policy, there is a slow rate of increase in catch limits when estimated Fishery CEY is increasing and a more rapid reduction of catch limits when Fishery CEY is decreasing. Because of this, the commercial catch limit shows less year-to-year variability than the Fishery CEY; this is illustrated in Figure 3 below.

Thus, as shown in Figure 3a, the commercial catch limit may be greater than or less than, and not necessarily equal, the Fishery CEY. The Fishery CEY is not used by the IPHC as a commercial catch limit or as a permissible commercial harvest. A change in the guided sport harvest would affect the commercial catch limit through its impact on the Fishery CEY and through IPHC decisions based on the relationship between the Fishery CEY and the catch limit from the preceding year. Figure 3b shows the difference between the Fishery CEY and the catch limit during the same period; if the points in the figure take positive values in a year, the Fishery CEY was larger than the catch limit, if the points take negative values, the Fishery CEY was smaller than the catch limit.

The annual commercial catch limit is determined by the Commission at its annual meeting in January. Once NMFS learns the size of the aggregate quotas, it is in a position to allocate individual fishing quotas (IFQ) to individual quota share (QS) holders in the commercial fishery. These assignments are completed in time for the annual commercial fishery opening date, which has typically been in late February or early March. During the year, the harvest of each IFQ holder is limited to the IFQ they have been assigned (although sometimes fishermen do exceed their quotas; regulations require offsetting quota reductions in the following year within certain allowances.).

Table 1, below, summarizes information on the history of halibut removals in Area 2C. Table 1 ends in 2007, and thus does not include information about the Total CEY, Fishery CEY, or catch limit for 2008 and 2009. In 2008, the Total CEY was 6.5 Mlb, the Fishery CEY was 3.92 Mlb, and the commercial catch limit was 6.21 Mlb. In 2009, the Fishery CEY was 5.57 Mlb, the Fishery CEY was 2.86 Mlbs, and the catch limit was 5.02 Mlbs. (Williams, pers. comm., September 15, 2008; March 17, 2009).

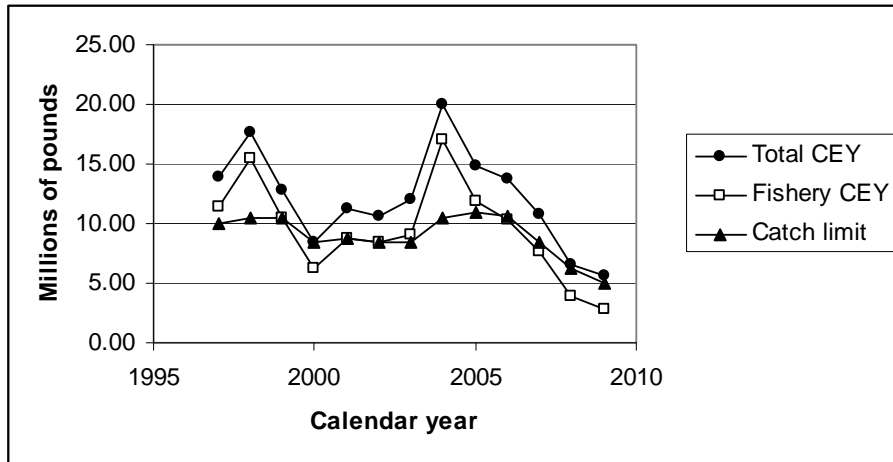


Figure 3a IPHC Area 2C Total CEY, Fishery CEY, and Commercial Catch Limit from 1997-2009
Source: Table 1.

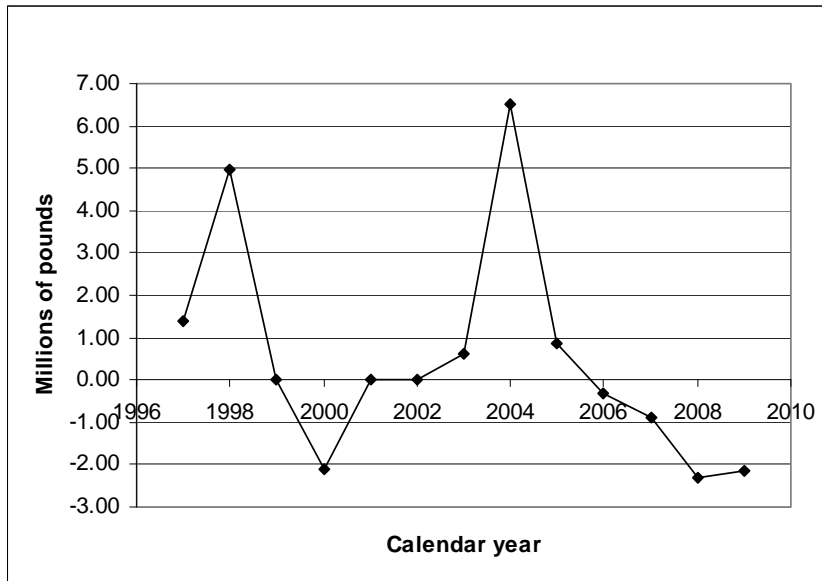


Figure 3b IPHC Area 2C: Fishery CEY minus the Commercial Catch Limit
Source: Table 1.

Table 1 IPHC Area 2C history of halibut removals (in millions of pounds), 1995-2007.

	Total CEY	Fishery CEY	Commercial Catch Limit	Commercial Catch	Subsistence catch	Sport			Bycatch Mortality		Wastage		Research catch***	Total CEY removals
						Guided	Non-guided sport	Total	Legal sized fish	Sublegal size fish***	Legal sized fish	Sublegal sized fish***		
1995			9.00	7.761									0.000	7.761
1996			9.00	8.737									0.123	8.737
1997	13.92	11.41	10.00	9.753	n/a	1.034	1.139	2.172	0.260	0.100	0.040	0.142	0.166	12.225
1998	17.70	15.48	10.50	9.666	0.170	1.584	0.917	2.501	0.218	0.143	0.051	0.180	0.526	12.606
1999	12.80	10.49	10.49	9.902	0.170	0.939	0.904	1.843	0.233	0.120	0.072	0.162	0.266	12.220
2000	8.44	6.31	8.40	8.266	0.170	1.132	1.126	2.258	0.230	0.120	0.042	0.134	0.179	10.966
2001	11.20	8.78	8.78	8.273	0.170	1.202	0.723	1.925	0.220	0.121	0.037	0.155	0.130	10.625
2002	10.66	8.50	8.50	8.455	0.170	1.275	0.814	2.090	0.180	0.160	0.034	0.110	0.147	10.929
2003	12.00	9.11	8.50	8.286	0.628	1.412	0.846	2.258	0.167	0.174	0.029	0.101	0.124	11.368
2004	20.00	17.00	10.50	10.116	0.699	1.750	1.187	2.937	0.149	0.205	0.026	0.276	0.117	13.927
2005	14.90	11.80	10.93	10.489	0.600	1.952	0.845	2.798	0.140	0.200	0.043	0.234	0.136	14.070
2006	13.73	10.33	10.63	10.397	0.592	1.804	0.723	2.526	0.216	0.197	0.021	0.284	0.095	13.752
2007	10.80	7.61	8.51	8.343	0.532	1.918	1.131	3.049	0.210	0.130	0.025	0.267	0.145	12.159

Sources: 1) Guided Sport, 1999-2006: ADF&G table dated Nov. 20, 2006 titled "Charter Halibut Harvests in IPHC Area 2C and 3A"; 2) Unguided Sport 1999-2004: Scott Meyer (ADF&G), worksheet titled "2C-3A_HarvestTables.xls"; 3) Unguided Sport 2005-2006: ADF&G letter to IPHC dated Oct. 23, 2006; 4) All sport 2007: ADF&G estimates of 2007 sport catches dated September 5, 2008; 5) Commercial catch, 1995-2006: IPHC Annual Reports, Appendix I, Table 5. Does not include research catch.; 6) Commercial catch, 2007: IPHC Bluebook for 2007. Data are preliminary.; 7) Subsistence, 1998-2002, IPHC estimates based on ADF&G community surveys, 2003-2007 from ADF&G subsistence survey reports; 8) All other categories, 1995-2006: IPHC Bluebooks for the respective year; 9) All other categories, 2007: Gregg Williams (pers. comm.) and IPHC Bluebooks.

*** Not deducted from Total CEY to calculate Fishery CEY

2.3.2 The Commercial Longline Sector

The commercial halibut fleet operating off of Southeast Alaska (harvesting the IPHC Area 2C halibut resource) is a diverse small boat fleet fishing for halibut with longline gear. The number of vessels with IFQ harvests in 2007 was smaller than the number of persons who held QS; 653 vessels made landings that year. The number of vessels with Area 2C landings has been gradually declining over the last 10 years. In 2007, these vessels made 2,675 landings and took about 98% of their 2007 quotas. (NMFS, 2008b)

Halibut begin recruiting to longline gear at approximately 24 inches (60 cm) in length, but the commercial minimum size limit is 32 inches (82 cm). The fishery ranges from shallow inshore waters, to as deep as 902 ft (275 meters) along the continental shelf. The directed catch consists of individuals chiefly from 15.4 lbs to 267 lbs (7 kg to 121 kg). The average size in the commercial catch in 1996 was between 19.8 lbs and 44 lbs (9 kg and 20 kg) depending on the area in which the halibut was caught; the average age was 12 years (Forsberg, J., Unpub 1997).

Since 1995, the fishermen in this fishery have operated under an individual quota program. Fishermen active in the fishery are required to hold quota shares to fish in it. Each quota share represents a fixed percentage of the overall annual harvest. Early each calendar year, after the IPHC determines the commercial catch limit for that year, the NMFS Restricted Access Management program determines the actual poundage of halibut that may be harvested for each quota share. This poundage is referred to as an individual fishing quota or IFQ. Fishermen are required to hold IFQ for the poundage of halibut they harvest.

The IFQ program has kept retained harvests within annual limits, reduced the amount of lost gear and wastage due to “ghost fishing,” extended the annual fishing season from a few days each year, to about nine months, and substantially changed the economic picture facing individual operations. Fishermen have more flexibility to operate in a cost effective manner, and more opportunities to deliver the most profitable product form at the most profitable time.

The quota shares are transferable. Originally fishermen were awarded QS based on a number of criteria. However, since then fishermen have had to purchase quota share in the market. The price of QS, translated into dollars per pound of individual quota in Area 2C, has been rising in recent years. Prices averaged \$8.20 for a pound of individual quota in 2000 and rose to average \$18.43 in 2006. (NMFS, 2009)

At the end of 2007 there were 1,302 halibut QS holders in Area 2C. About 583 held QS with a 2007 IFQ equivalent of 3,000 pounds of halibut or less, 441 held QS with IFQ equivalents of 3,001 to 10,000 pounds, 229 held QS with an IFQ equivalent of 10,001 to 25,000 pounds, and 49 held QS with an IFQ equivalent greater than 25,000 pounds. At the end of 2007, 797 of these held QS that did not allow processing onboard, while 505 held QS that did allow it. (NMFS, 2008b).

Halibut longline harvesting employment in Southeast varies over the course of the year. Alaska Department of Labor estimates for the years from 2000 to 2006 show that the fishery runs from February to November. There are no jobs in January or December, and only a few in February. Employment begins to pick up in March, with an average of about 550 persons employed in this month. The peak of the season runs from May to September, when average employment exceeds 800 persons a month. The one monthly exception to this is a slight dip in July when employment averages about 740 persons. The monthly employment figures are not additive across months. Annual employment for the period from 2000 through 2004 averaged about 1,100 persons fished permits each year, and the estimated average annual workforce was about 2,000 persons. Typically, about 84% of the persons who fished permits were Alaska residents, and about 16% were residents of other states. (All estimates from the Alaska Department of Labor and Workforce

Development Seafood Industry Workforce Info webpage,
<http://laborstats.alaska.gov/?PAGEID=67&SUBID=299>)

Harvest from the commercial halibut longline fishery is tracked by NMFS using a catch accounting system that deducts harvest from an IFQ holder's account. This information is also used to enforce the total annual commercial halibut quota as well as individual IFQ accounts. Thus, since the IFQ program, annual harvest limits have not been exceeded by a significant margin. The IFQ program has an overage/underage provision that balances an IFQ holder's account, year to year. This regulation results in a long-term balance of harvest at the catch limit and allows IFQ holders to move small amounts of halibut between years.

2.3.3 The Guided Charter Vessel Sector

For the purposes of this analysis, two segments of the guided charter business are distinguished. One segment provides short term trips primarily for cruise ship visitors and another segment provides full and multi-day trips for persons spending more than a few hours in any given port in Southeast Alaska. Clients of these latter operations may spend the night in a bed-and-breakfast owned by the guide, in a separately owned bed-and-breakfast or hotel, in a lodge located near a community, at a remote site, onboard the charter vessels, or in some combination of these.

The first group of businesses will be called half-day charters, and the other group will be called full- and multi-day charters. While there is no clear-cut threshold between the two types of businesses, this distinction appears to be a useful one for analytical purposes. This distinction matters, because a one-halibut daily bag limit may affect these types of operations very differently.

The charter vessels themselves are fairly homogeneous, with similar operating characteristics and vessel sizes. The exceptions are a few larger, "headboat" vessels, and several vessels that are operated by lodges, which offer onboard accommodations, as well as an assortment of visitor activities. Nearly all of the vessels are 25 ft to 50 ft in length and carry up to six paying anglers each. Larger vessels can carry a dozen passengers or more (NPFMC 2005). Halibut fishing practices are described at <http://www.sf.adfg.state.ak.us/statewide/halibut.cfm#manage>.

Sport fishing for halibut in Southeast Alaska is an important recreational activity for both resident and non-resident anglers. A portion of the marine sport fishing effort is directed toward State-managed groundfish species, including rockfishes, lingcod, and sharks. As shown in Figure 4, charter halibut fishing takes place throughout Southeast Alaska. Harvests appear to be especially large in the area of Prince of Wales Island, and near Sitka. The Ketchikan, Petersburg-Wrangell, Juneau, and Glacier Bay areas appear to account for significant additional harvests. Harvests appear to be relatively small in the Haines and Skagway area.

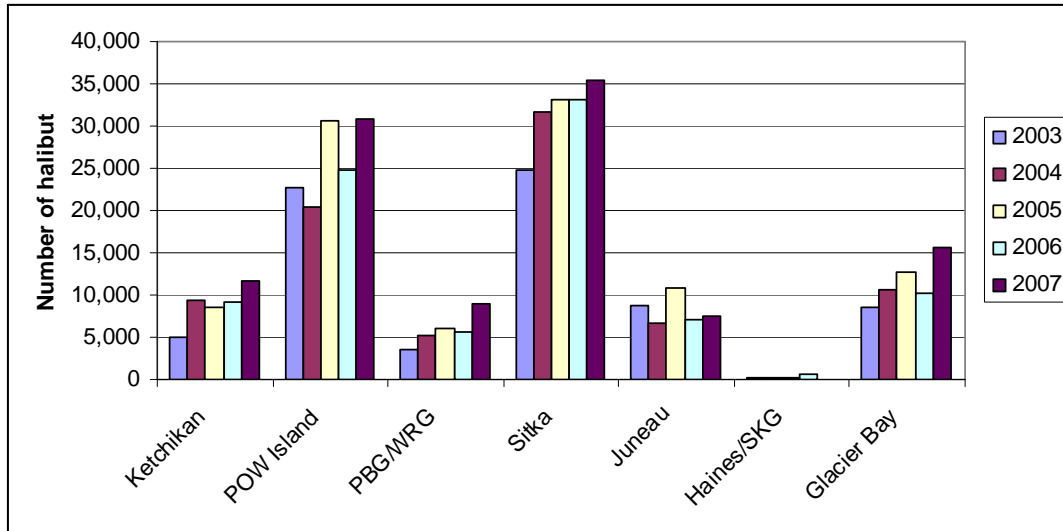


Figure 4 Number of halibut harvested by charter clients, by region of Southeast Alaska and by year, 2003-2007. Source: ADF&G Statewide Harvest Survey

An important segment of the guided charter business provides partial day trips of four to six hours that accommodate cruise ship clients with short port visits. For many years, the number of tourists visiting Alaska has been increasing, although the annual percentage increase in visits has been declining. Annual passenger arrivals have risen from somewhat over 200,000 per year in 1992, to approximately 1,000,000 visitors in 2007 (Figure 5). Within Southeast Alaska, the cruise ship tourism trends have been different in different communities (Figure 6).

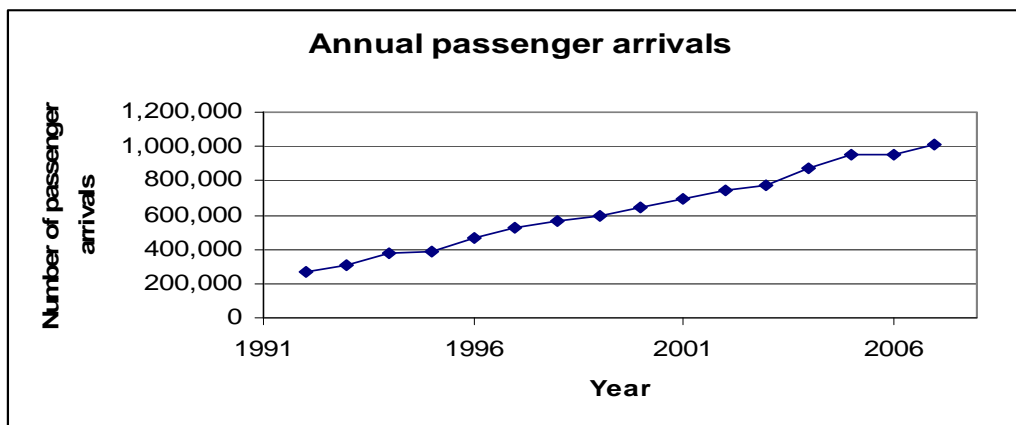


Figure 5 Trends in Cruise Passenger Arrivals in Alaska

Source: 1992-2003 from ISER, 2007; 2004-2007 from Alaska Cruise Association website accessed at <http://akcruise.org/group.cfm?menuId=160> on September 18, 2008.

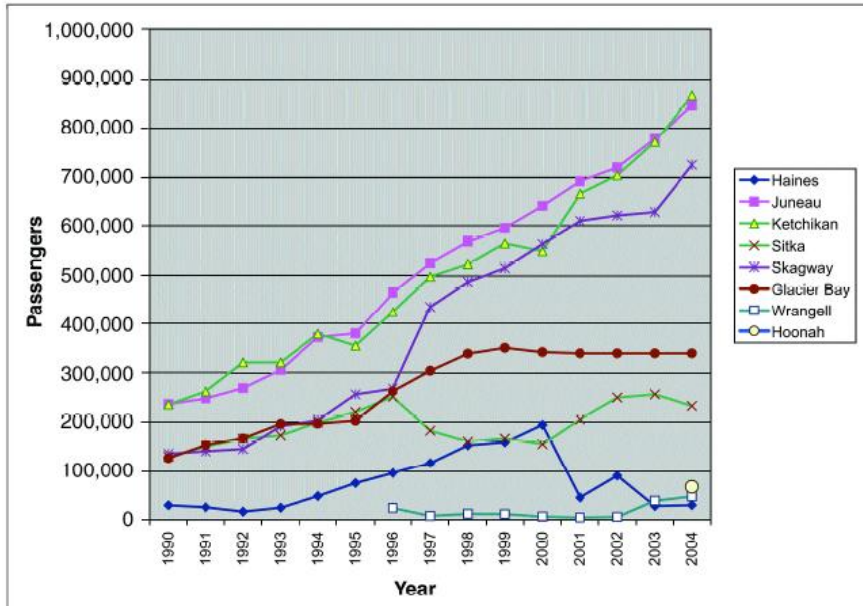


Figure 6 Cruise ship visits by Southeast Alaska port from 1990 to 2004

Source: (Cervený 2005)

Table 4 and Figures 7 and 8, provide information on bottomfish charter activity (as measured by the number of active bottomfish charter businesses and vessels, and the number of bottomfish charter trips, clients, clients per trip, and average number of trips per vessel). These measures of activity appear to have increased in the last several years. Bottomfish charter businesses, vessels, trips, and clients are identified from ADF&G vessel logs, which indicated that “bottomfish” rod-and-reel gear was used, or the number of hours that were spent fishing for bottomfish. “Bottomfish charter trips” are not synonymous with “halibut charter trips”, within the ADF&G data. These data have not, historically, distinguished charter “bottomfish” from charter “halibut” effort.

Halibut may have been harvested on non-bottomfish trips, as well. ADF&G has identified vessel logs that do not record the use of bottomfish rod-and-reel gear or indicate bottomfish hours, but that still report halibut harvest. These may be trips targeting salmon, on which halibut were taken as an incidental catch. Alternative approaches might have counted trips in which halibut were caught, but not retained, or caught and retained by charter clients. Saltwater logbook data have been used to make these estimates for 2007. In this case, the number of active vessels in 2007 was 709, the implied number of trips was 23,929, and the number of anglers was 94,887 (ADF&G, 2008). This is six fewer vessels, 1,674 fewer trips, and 5,446 fewer anglers than reported for the bottomfish based trip measures in Table 4.

A vessel log may indicate that no halibut were retained on a bottomfish trip. In these cases halibut may have been targeted, but not caught or retained, or another bottomfish species may have been targeted. In 2006, 20 percent of bottomfish trips did not report halibut harvests, and in 2007, 16 percent of trips did not report halibut harvest. (Powers, pers. comm.)

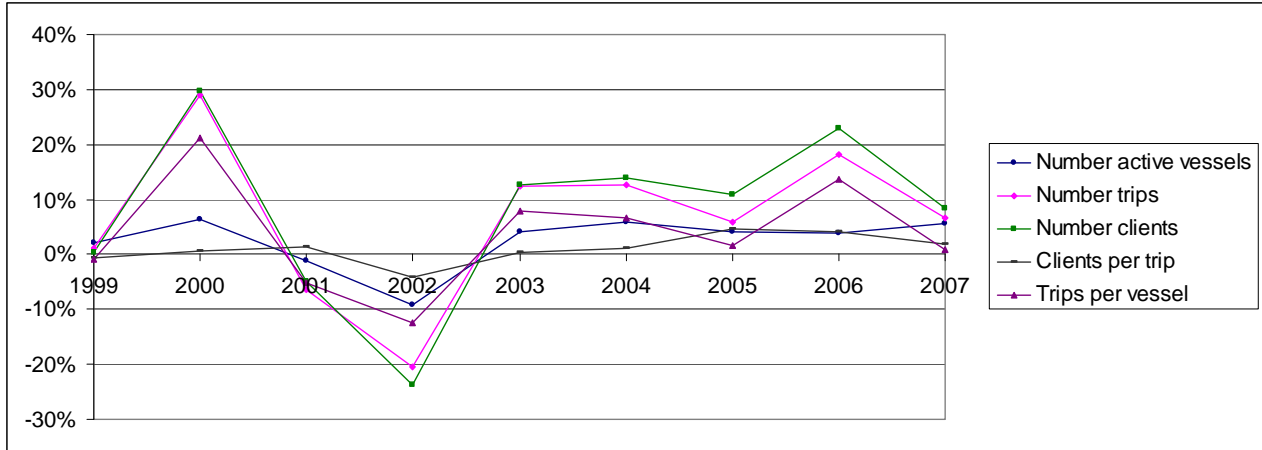


Figure 7 Year to year percentage change in measures of bottomfish charter activity in Area 2C

Source: Table 4.

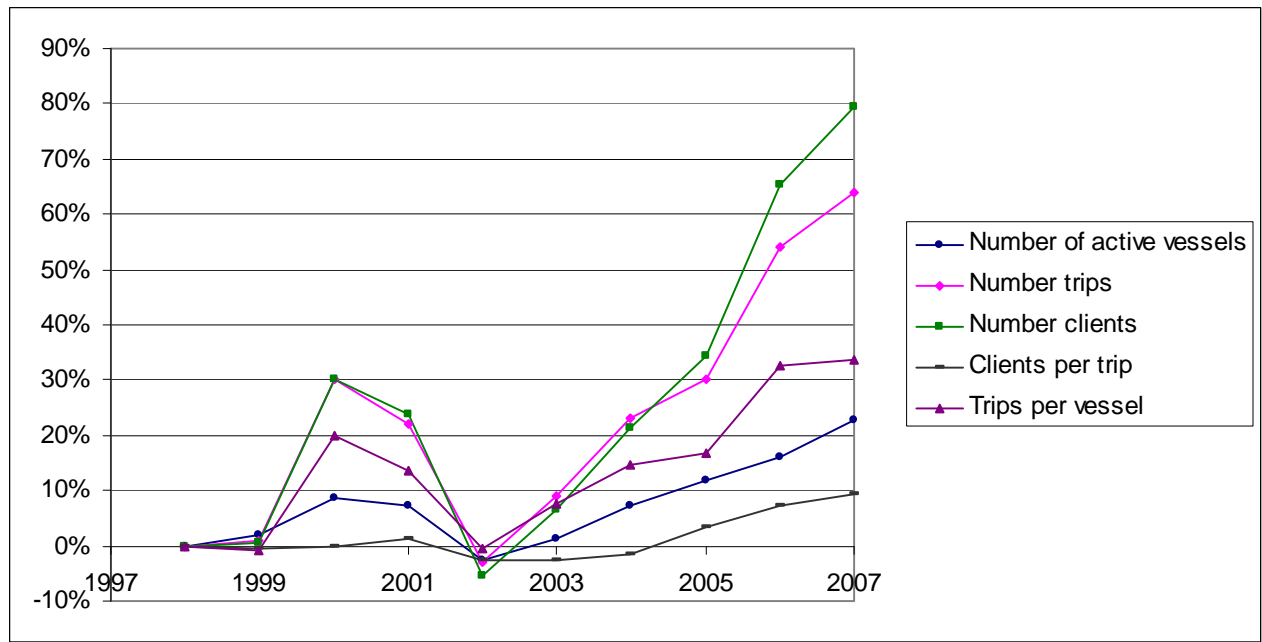


Figure 8 Cumulative percentage change in measures of bottomfish charter activity in Area 2C

Source: Table 4.

The total weight of charter harvested halibut increased in Area 2C between 1995 and 2007, as shown in Figure 1 in Section 1.2. The figure shows that the total weight in recent years exceeds the GHL that was in effect through 2007 (1.432 Mlb), is approximately double the GHL that came into effect in 2008 (0.931 Mlb), and is more than double the GHL for 2009 (0.788 Mlb). It also shows that the total weight was not reduced below the 2006 level by the 32 inch size limit adopted in 2007.

A study of sport fishing in Alaska, prepared by Southwick Associates, a consulting firm specializing in the analysis of outdoor recreation, was released by the ADF&G in December 2008 (Southwick Associates et al). The study was based in part on survey research on sport fishing activity and spending during 2007. The analysis did not focus on, or provide special information about, trips targeting halibut. The study found

that saltwater anglers spent about 435 thousand angler days in Southeast in 2007; about 162 thousand of these were guided. Non-residents are reported to have spent 255 thousand angler days in Southeast; about 147 thousand of these were guided. Residents spent 179 thousand days; about 15 thousand of these were guided. Expenditures were reported for trips, packages, equipment, and real estate related to sport fishing. Total non-resident guided saltwater angler expenditures on trips and packages were about \$85 million. Spending on equipment and real estate are not disaggregated in this way in the study and would add an unknown amount to this sum. (These estimates reported here were obtained from Tables 29 and 33.)

The study provides impact estimates based on information obtained from input-output analysis. The study distinguishes between angler expenditures and the direct output effect. The direct effects reflect economic activity associated with angler spending captured within the regional economy (consumer retail spending less the value of goods imported from outside the region). The direct effect of non-resident guided angler spending on trips and packages was estimated to be about \$76 million. The analysis also looked at indirect and induced effects caused by additional spending (indirect impacts on regional non-fishing sectors as the fishing sector purchases goods and services, and impacts induced as income earners spend their income in the region) associated with the direct expenditures. These, combined with the direct effects, totaled about \$109 million. The study also reported estimates for the income associated with the fishing (significantly less than the total output impacts) and for employment. (The estimates reported here were obtained from Appendix tables N3 and N4.)

This study has several limitations for analyzing the action under consideration. It does not discriminate between guided halibut fishing and other types of guided sport fishing. It is driven by changes in the quantity of days of fishing time demanded. It does not provide the information that would make it possible to estimate how this action would change the quantity of days demanded. This is a serious shortcoming for the purpose of analyzing this action since there is great uncertainty about the impact of this action on days of guided sport fishing demanded (although it was not the intent of this research project to provide that information). The study assigns impacts based on the location where the fishing activity takes place, and not on the place of residence of the individuals earning incomes. Thus, for example, the impacts for a charter guide or longline crewmember from Washington State or South Central Alaska are attributed to Southeast Alaska, where the activity took place. However, in each case, the individual in question may have had very limited contact with the Southeast economy and may have spent all their income outside of the region. Finally, this is an impact study and not designed for cost benefit analysis.

In 2005 and 2006, researchers from the Institute of Social and Economic Research (ISER) at the University of Alaska in Anchorage surveyed guide operations in many areas of Southeast Alaska, as part of a wider study of nature-based tourism in the area (Dugan et al., 2006). The study did not systematically cover Southeast; the researchers focused on Ketchikan, as a gateway community, and on Chichagof Island, as a destination. The communities covered included Ketchikan, Elfin Cove, Hoonah, Pelican, Tenakee Springs, Sitka, and Juneau. Important sport fishing areas of Southeast Alaska, such as Prince of Wales Island and the Petersburg-Wrangell area were not included. As shown above, Prince of Wales Island is a very important location for guided halibut fishing. However, the report provides a useful overview by independent observers of business practices of different classes of charter operations (half-day, and full- and multi-day guided charters) and information on regional variation. The account of guided charter operations from the report is summarized in Table 2 below. Table 3, which follows, summarizes information on lodge based operations on Prince of Wales Island that was submitted as comments on a proposed rule, published on December 31, 2007 (72 FR 74257).

Table 2 Charter Operations in Southeast Alaska. Summary results of a 2006 survey on nature-based tourism in Southeast Alaska

Town	Day boat	Charter and lodging	General comments
Ketchikan	<p>Significant number of independent sportfish charter operations with one boat and one captain. Many of these companies are affiliated with one of four larger booking agencies which allocated cruise ship passengers among 20 or so captains who provide similar half-day tours. Three of these four companies had 20,000 clients in 2005 summer season and generated \$4.2 to \$4.4 in gross revenue. Booking agent affiliated captains may also take charters that arrive as walk-ups or via web sites. Rate per person is \$250 a day/ \$175 for six hours/\$135 for a half day. Unaffiliated captains depend on the web, word of mouth or representatives at the Visitors Bureau or on the dock to solicit clients. One captain says he tries to plan trips so as to gross at least \$400 a trip.</p>	<p>Some are lodges.</p>	<p>ADF&G issues permits to 120 different marine sportfish charter companies. Some are marine sightseeing businesses for which fishing is only part of business. Cruise ship passengers make up the overwhelming majority of marine charter clients.</p>
Juneau	<p>The researchers were told by respondents that a large - perhaps 40% - proportion of the day boats with permits had them for the tax advantages or to establish a limited entry record and were not true charter businesses. Four entities operated as sport fishing brokers. The typical four hour trip which is popular among cruise visitors ranges in price from \$199 to \$249. The cruise ship typically takes about 30%, the captain gets \$88 per client, and the broker takes the residual. A full day of sport fishing typically costs \$250 to \$300 per client. Average group size used to be four but has grown to five or six. During the busiest part of the summer season captains may make two to four trips a day, five days a week, taking perhaps 450 clients a year. Full time captains are estimated to generate business worth between \$50,000 and \$70,000. The researchers don't make the estimate, but 450 clients at \$88 each for the skipper comes to about \$40,000 for the summer. The researchers do estimate that 29,000 clients pay about \$7.4 million for Juneau charters.</p>	<p>Six lodges in Juneau offer all-inclusive packages. Prices run from \$400 to \$500 per night. Although the lodges declined to be interviewed, the researches estimated, by analogy with Sitka, about 3,400 clients and a total gross of about \$9.4 million.</p>	<p>53 Juneau entities have charter sportfishing permits in 2005.</p>
Sitka	<p>Most cruise visitors who go sport fishing choose a four hour cruise because of the limited amount of time the ships spend in port. Most reservations are made through one of two brokers. Each broker works with 10 to 20 captains. Prices for a four hour charter range from \$169 a person to \$194. Brokers expedited 1,500 clients for an estimated value of \$270,000. Many other operators do not use a broker. As in Juneau, may persons who have salt-water guide permits may have them for tax purposes, or to provide a record in case of limited entry. Researchers estimated that a third of the registered guides did day fishing operations, averaging</p>	<p>Researchers found 32 operators providing multi-day fishing packages. Some were bed-and-breakfast packages operated from a charter operator's home, other charter operators put their clients up in hotels and separate bed-and-breakfasts, others appear to be fishing lodges. Packages typically provide three or four days of fishing, lodging and meals. Fishing days generally run about 10 hours with four clients per boat. A package that provided four days of fishing and five days lodging in a local hotel (double occupancy) cost \$1,700 to \$1,900. Fishing lodge costs of three to four days averaged \$2,400 per person. The researchers estimate that annual revenues might be about \$35 million.</p>	<p>ADF&G records show 214 registered saltwater charter sport fishing guides in 2005.</p>

	425 clients a season, and altogether grossing \$5.7 million.		
Elfin Cove	The researchers do not mention day boat operations out of Elfin Cove.	There are eight fishing lodges in the cove and one on a nearby island. They serve about 1,500 clients and gross perhaps \$4.5 to \$5.2 million in a season. They employ about 54 people, 95% of whom are non-local to the cove (whose population fluctuates from 12 in the winter to 200 in the summer). A significant proportion of lodge owners and employees maintain a primary residence in another state. Supplies are generally purchased in Juneau or Seattle. One lodge owner estimated that 40% of the income to his lodge was spent on supplies in Juneau. Fuel is purchased locally in the cove.	
Pelican	Day trips cost \$200 a person. Charter operators buy their fuel in Pelican. One captain estimated he used about 30-55 gallons for a day of fishing; this would have been \$95 to \$175 at 2005 Pelican fuel prices.	12 marine charterers operate out of Pelican, offering a wide range of activities, including sport fishing. Seven of the charterers offer their own lodging and the others use a new 40 person lodge, or drop clients off to camp. An overnight visit averages about \$300 per day; most visitors stayed four or five days. They serviced 740 clients in 2005, generating an estimated \$720,000 to \$840,000. Transportation from Juneau would add another \$185,000 to this. Most supplies for lodges come from Juneau.	
Tenakee Springs		Two charter operators service about 100 clients a year with total revenues estimated to be about \$120,000 to \$155,000 a season. Prices are about \$300 to \$425 a night and trips last four to five days. One charter operates from a live-aboard boat. The other returns to Tenakee at night where clients may shop in local stores or the local bakery, or get a massage. One company got 80% of its supplies from Juneau and Seattle, the other uses its own garden for supplies and purchases much of its food in the local store.	
Hoonah	The researchers believe all four companies take cruise passengers who have booked independently.	Four charter operations are based in Hoonah. These provide fishing as well as other services. At least two make arrangements for overnight accommodations. The gross revenue estimates provided are difficult to interpret. At one point the researchers estimate revenues of \$185,000 to \$215,000 and at another they note 1,060 clients and revenues of \$840,320.	
Source: Dugan et al., 2006.			

Table 3 Anecdotal information on lodge operations from public comments submitted in 2008

<p>The lodge typically accommodates 620 clients during the summer. Clients typically stay at the Lodge for three days. The lodge is their only destination in Alaska. He has a summer season lasting about 100 days. Each of the last five years seasons have been 85% booked by the previous September and 100% booked by December. 85% to 90% of his guests are return clients. Halibut and salmon are the big draws for his clients; rockfish and lingcod are much less significant. The opportunity to take two fish a day or six during a visit is important to his clients. This, along with the client estimate implies that visitors to the lodge account for about 3,720 halibut a year. As evidence he notes that on January 2 he had \$100,000 worth of booking cancellation for 2008 based on the possibility of a one-halibut limit. Clients cancelling had indicated an intent to fish in Homer or B.C. or to go to other states and fish other species. Profit margins, at 15%, are a low percentage of gross sales. The lodge employees 22 staff members. He estimates that each year the lodge generates about 600 round trips on Alaska Airlines between Seattle and Ketchikan, 620 room nights at the Narrows Inn Hotel in Ketchikan, 175 round trip seaplane charters from Ketchikan to the lodge, 45,000 gallons of fuel purchases from Petro Marine, and about 150,000 to 200,000 pounds of freight on Alaska Marine Lines or Northland Services. In addition, the lodge or its clients purchase restaurant meals, ground transportation, and food, beverage and maintenance supplies from local vendors.</p>
<p>Waterfall Resort has been in business for 26 years. The lodge caters to about 92 guests a day and 2,300 per season. Guests typically spend four days and about \$3,500 at the resort. The numbers of guests and the length of stay imply that guests of the lodge harvest about 18,400 halibut in a year. The lodge operates 27 guided charter boats and employs over 100 persons. About 90% of the clients are repeat/referrals. Competition exists within Alaska and British Columbia, but in Mexico and elsewhere in the world as well. Fixed costs are high and the lodge has been operating at or near capacity. The lodge spends over \$5 million on payroll and operating expenses in a year, much of which is spent locally. All guests fly in and out of Ketchikan on Alaska Air, and then take a local charter flight to the lodge. Many also spend a night in Ketchikan.</p>
<p>The lodge has been in operation on the eastern side of Prince of Wales Island for 17 years. It operates in Clarence Strait from the southern tip of Prince of Wales Island in the south to Union Bay in the north. It hosts about 30 guests a day for about 100 days each summer, for a total of about 3000 angler days. There are about 800 guests with an average stay of 3.5 days. Guests come on either a three day or four day package. The affidavit indicates that at least some clients make more than one visit to the lodge during a season, or that they visit this lodge and another one during the season. 85% of the guests are repeat clients or have been referred by another client. If each angler takes two halibut a day, the total harvest by the guests of this lodge may be about 6,000 halibut. The lodge operates a fleet of seven 37 foot "six-pack" boats. It has about 50 employees during the course of a season, although the text implies that these are separate persons over the course of a season, and not the number on site on a given day. The lodge operates at close to maximum capacity out of necessity. The marketing goal is to be entirely sold out on June 1, but last minute cancellations are hard to fill and normally they operate at 95% of capacity. Guests are typically spending \$1,000/day. The operation spends about \$1.5 to \$1.75 million in the Ketchikan area each year, and spends additional money for supplies that are brought from Seattle by barge. Outbound guests normally spend a night in Ketchikan, which entails purchase of a hotel room, dinner and breakfast. Many guests spend additional time and money in Ketchikan.</p>
<p>Business began in Sitka in 1993 as a small subcontractor to a local lodge and grew to the current eight boat and two lodge building operation. Currently they serve about 1,000 clients a year between mid-May and Labor Day. Must be at least 85% booked to turn a profit. At the end of January 2008 they were 80% booked for the 2008 season. Among their costs in 2007 were \$130,000 in bed taxes paid to the Borough of Sitka, sales taxes and fish box tax. The business spends about \$1 million a year for food, fuel, payroll, insurance, repairs, maintenance, supplies, and other expenses. Clients fly to Sitka from Seattle on Alaska Airlines. Clients paid \$59,000 in fishing licenses and salmon stamp fees to the State of Alaska. The lodge's business model does not include meals, which guests must buy for themselves in Sitka. Moreover, guests typically spend one night in a local hotel in Sitka.</p>
<p>The business is a four guest lodge in the owner's home on Shelter Island near Juneau. The lodge operates from 50 to 70 days a year, providing 200 to 280 angler days of fishing and taking 150 to 250 halibut. Gross revenues are about \$100,000. The owner describes the target client base as "working people." Clients have a strong desire to harvest both salmon and halibut. Client base is described as people returning from previous visits, and people taking once in a lifetime dream trips to Alaska. Core clients book for three to five days. Notes that 2007 the 32 inch limit on one fish led to a fall in business of 30%, mainly from once in a lifetime category of guests. Guests must book at least one night in a Juneau hotel and fish are processed at Jerry's Meats, a small local processor.</p>
<p>Source: comment submitted in response to the proposed rule published in the Federal Register in December 2007 (72 FR 74257; December 31, 2007).</p>

Table 4 IPHC Area 2C Guided Charter Summary Statistic Estimates; bottomfish charter activity and charter harvest

Year	Data derived from logbooks completed by guides							Date derived from ADF&G statewide harvest survey of anglers and dockside monitoring		
	Active Bottomfish charter	Active bottomfish charter	Trips by active bottomfish	Total bottomfish clients	Average bottomfish clients per trip	Average bottomfish trips per		Charter halibut harvest	Average net weight per halibut	Total charter harvest (millions of
1995	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		49,615	19.9	0.986
1996	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		53,590	22.1	1.187
1997	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.		51,181	20.2	1.034
1998	n.a.	583	15,541	55,922	3.60	26.66		54,364	29.1	1.584
1999	388	595	15,700	56,173	3.58	26.39		52,735	17.8	0.939
2000	411	633	20,241	72,803	3.60	31.98		57,208	19.8	1.132
2001	385	626	18,965	69,222	3.65	30.30		66,435	18.1	1.202
2002	351	568	15,085	52,809	3.50	26.56		64,614	19.7	1.275
2003	353	591	16,948	59,498	3.51	28.68		73,784	19.1	1.412
2004	363	625	19,111	67,803	3.55	30.58		84,327	20.7	1.750
2005	380	651	20,248	75,195	3.71	31.10		102,206	19.1	1.952
2006	395	677	23,932	93,740	3.92	35.35		90,471	19.9	1.804
2007	401	715	25,503	100,777	3.95	35.67		109,835	17.5	1.918

Source: Data on businesses, vessels, trips, and clients are based on logbook data from ADF&G. Prior to 2007 these data represented trips for which a logbook reported non-zero bottomfish rods used or non-zero bottomfishing hours; in 2007 the data only represent trips with non-zero bottomfishing hours. Only logbooks with bottomfishing activity have been used to prepare this table. A trip with salmon reported, but no bottomfish, would not be included. Moreover, there appear to be trips on which halibut is harvested, but no bottomfish rod-and-reel hours or bottomfish hours are reported. These may involve trips targeted salmon in which halibut are taken incidentally. While a large proportion of the bottomfish trips had halibut harvests, many did not. In 2006 about 20 percent of the trips did not harvest halibut, while in 2007 16 percent of the trips did not harvest halibut. Some of the trips without halibut may represent trips that targeted but failed to retain halibut, while others may reflect trips that targeted other bottomfish. Prior to 2006, "total clients" data are defined as clients who fished; in 2006 and 2007 "total clients" is defined as anglers. The change reflects a change in the way questions were asked. In 2007, ADF&G began to report client/angler estimates that include "comps." Comps is an industry term for non-paying persons who behave like client/anglers, but are not charged for the charter. Separate data on comps became available in 2007 when 153 persons were reported as comps. It is impossible to determine how guides treated comps in reports in prior years. Unidentified records occur in 2006 and 2007 if the operator did not mark anything for the type of angler. If crew fishing prohibitions were effective in 2006 and 2007, these should be clients or comps. Unknowns and comps are included in the totals for 2006 and 2007. This is a revision to the table since it was originally distributed in this analysis in November 2008. Data on harvest in numbers of fish comes from the statewide harvest survey except of 2008. Data on the average weight comes from on-site sampling. Number and weight estimates as reported by ADF&G on September 5, 2008. 2008 estimates are preliminary log book data based on February 2009 communications with ADF&G.

The Forest Service's Pacific Northwest Research Station has published a report on tourism and its effect on Southeast Alaska communities (Cervený, 2005). The report provides in-depth analysis of the tourism industry, including the guided sport charter operations, in three communities in Southeast Alaska: Haines, Craig, and Hoonah. The following excerpts provide more context on the nature of the guided charter fishery.

Region-wide:

A significant portion of charter fishing activity is associated with lodges, typically located in remote areas. Guests typically fly in to the lodge and spend 3 to 5 days fishing for salmon, halibut, and other groundfish, as well as for freshwater species. Lodges typically offer full-service experience, including comfortable rooms, gourmet Alaska fare, and customized service. Most guests return home with two or three 18-kilogram boxes of fish, according to lodgeowners interviewed. Although direct visitor spending in the local community may be limited, lodgeowners contribute to the local economy through purchases of fuel, supplies, and groceries. Lodgeowners are a mix of long-time Alaskans and newcomers, with the larger facilities owned by nonlocal corporate entities and Native corporations. Many lodges employ local fishing guides; however, the larger lodges often import professional fishing guides from outside Alaska. In addition to fishing lodges, independent charter operators also work with local accommodations, such as bed and breakfast establishments or camp resorts to provide fishing packages for guests. And, some charter operators have accommodations for sleeping and eating right on their boats. Day-fishing also is popular, especially in busy cruise ports such as Juneau, where there is a ready audience of visitors looking for a way to spend time while in port. Although corporations have invested in larger lodge facilities, this sector of the tourism industry has largely maintained its "home-spun" Alaska character.

The growth in popularity of charter fishing has implications for natural resources. Charter fishing guests compete for salmon and halibut with commercial fishers who rely on fish for their livelihood. In addition, the charter fleet competes for fish with sport and subsistence fishers, who rely on fish for their quality of life and economic survival. Competition for fish has created tension within communities with sizeable charter fishing fleets, such as Craig and Sitka. In addition to frustration about harvest levels, some residents have expressed dismay about the minimal economic benefits of charter fishing lodges to the local economy.

The report describes the charter industry on Prince of Wales Island in somewhat more detail than it does for Hoonah and Haines. Full- and multi-day charter activity has been more important for Prince of Wales Island than half-day cruise ship based charters:

The tourism industry gained momentum in the 1980s when an historic cannery at Waterfall, located 16 kilometers south of Craig, was purchased by a group of investors and converted into a successful fishing lodge. Waterfall Lodge offered charter fishing, gourmet cuisine, and comfortable accommodations to wellheeled customers. By 1990, they were running 20 charter boats with capacity for 80 guests at one time. In nearby Craig, fishing enthusiasts began appearing in the 1980s. By 1990, seven local charter operators advertised fishing services. Craig's first full-service lodge was built in 1992 by former fishing guides from Waterfall. Soon after, other charter operators began building their own lodges, and by 2001, there were 11 lodges and more than 40 charter fishing operators based in Craig and Klawock... Lodge ownership was divided among long-time Craig residents, including former loggers, seasonal residents to Craig, former Waterfall guides, and corporate entities, including Craig's village corporation, Shaan-seet.

...Over the 1990s, the Craig area cultivated a reputation in the sportfishing world as a top destination for king salmon and halibut, attracting thousands of fishermen each summer. As new

charter operators entered the marketplace and existing lodgeowners expanded their fleets, the number of registered charter boats operating in Craig and Klawock increased from 11 in 1990 to 115 in 2001... In addition, another 29 charter boats were registered at Waterfall Resort. Between 1980 and 1999, the Prince of Wales Island's share of total southeast Alaska sport harvest of halibut increased from 4 percent to 26 percent, while the island's share of southeast Alaska's sport king salmon harvest increased from 6 percent to 15 percent... The harvest of king salmon on Prince of Wales Island increased from 811 in 1977 to nearly 9,000 in 1999, the most recent figures available...

Fishing lodges and charter operations contributed modestly to the Craig economy. Many area lodge owners interviewed spent some money locally on fuel, parts, food, hardware, and labor; however, they were more likely to purchase bulk supplies and large ticket items in Ketchikan because of competitive pricing. Although most guest activities were contained within the lodges, charter guests also spent locally on transportation to and from the island, as well as local transportation, gifts, and to some extent food and beverages. Guests staying at Waterfall Lodge, however, did not typically spend money in Craig, as they were not given opportunities to visit town. The growth of charter fishing was a boost to the local economy in 2001, creating a small number of jobs for residents as guides, fish cleaners, maids, cooks, food servers, and bartenders. In 2002, there were 134 full-time jobs in the leisure and hospitality industry on Prince of Wales Island, representing 7 percent of employment... Waterfall Resort alone employed more than 94 workers in the summer of 2002, with 75 percent of them from outside Alaska... According to a report on nonresident workers, an estimated 56 percent of all guiding jobs and 35 percent of jobs in accommodations were held by nonresidents....

...Finally, the charter fishing industry in 2001 consisted of a combination of "mom and pop" fishing lodges and larger corporate-owned ventures. Many of the larger lodges were owned by guides turned entrepreneurs. As they build capacity and expand their products and services, when it comes time to sell, these businesses may be too expensive for most Alaskans. An increase in corporate ownership of the larger lodges is perhaps inevitable.

Figure 9, below, provides information about charter catch per unit of effort (CPUE). Charter halibut harvests per hour of bottomfish fishing in 2007, ranged from a low of a tenth of a fish per hour in Ketchikan in the first half of June, to a high of just over a half fish per hour in Juneau and in Craig/Klawock, in the first half of August. Rates in any one community fluctuated through the summer, and there were periods when the catch rate in Ketchikan exceeded the rates in Juneau and Craig/Klawock. Rates tended to increase over the summer. As noted in earlier in this Section, some bottomfish trips may not have targeted halibut. Therefore, these estimates may understate halibut catch per hour of targeted halibut fishing to an unknown extent.

A rate of 0.10 halibut per hour suggests that it takes 10 hours to catch a halibut; a rate of 0.50 per hour suggests that it takes two hours to catch one. The lower limit for CPUE for most times and places appears to be 0.20 per hour, or about five hours per halibut; the upper limit is may be in the vicinity of 0.5, or one halibut every two hours. As noted, these estimates would overstate the halibut catch per hour to an unknown extent.

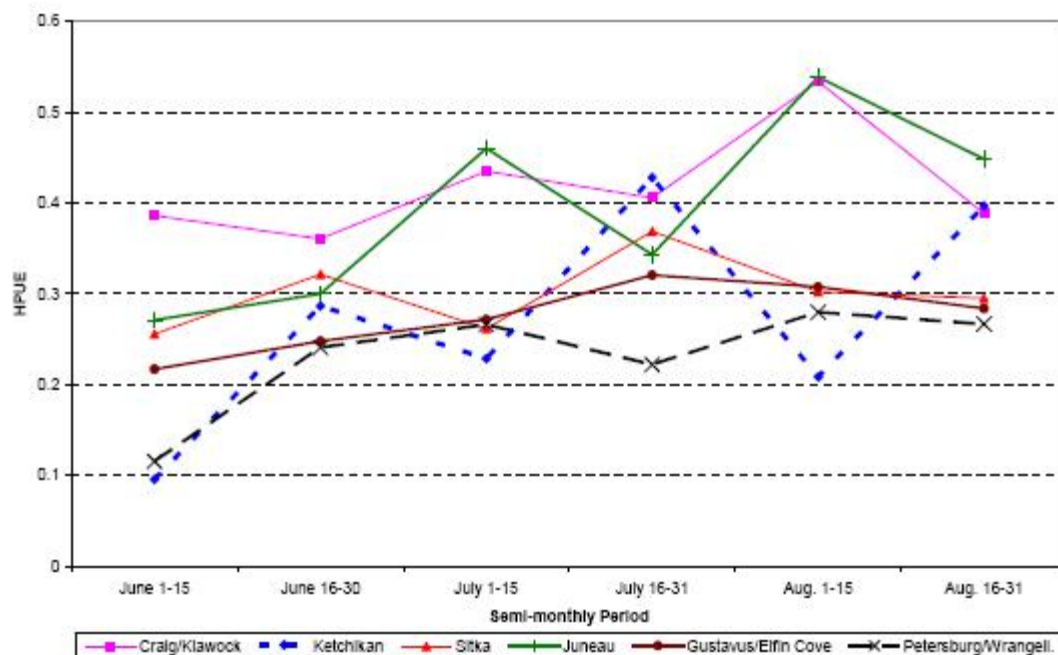


Figure 9 Semi-monthly chartered halibut harvest per angler-hour of bottomfishing effort (CPUE) in sampled ports of IPHC Area 2C during 2007

Source: Tersteeg and Jaenicke.

Sport fish related catch-and-release mortality results from injury, stress, or handling. The level of mortality depends on several factors, including the hooking location, handling time, type of gear used, environmental characteristics (e.g., warm water), and species physiology. Meyer (2007) briefly discusses release mortality as it relates to halibut. Meyer estimated that the release mortality rate for halibut hooked and released in the sport fishery was approximately 5 percent in Area 2C, which means approximately 5 percent of the halibut caught and released die of handling injuries soon after release.

2.3.4 Other Removals

In addition to commercial longline and guided sport harvests, halibut from Area 2C are taken for several other reasons:

- Subsistence harvests
- Bycatch mortality in other commercial fisheries
- Unguided sport harvests
- Wastage
- Research takes

Figure 10 shows trends in takes for other purposes. Figure 11 shows the proportions of halibut mortality over the period 2003 through 2007 that are attributable to the sources listed above, and to the commercial longline and guided charter fisheries.

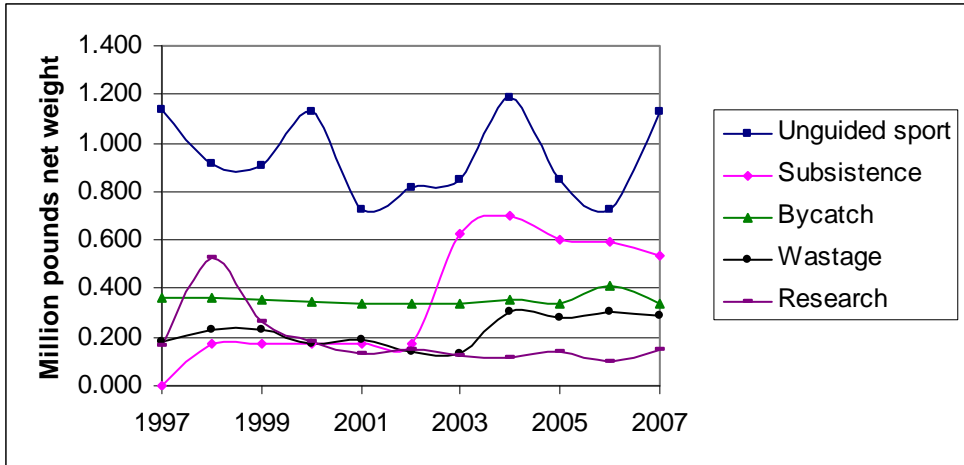


Figure 10 Trends in halibut takes for purposes other than commercial longline or guided sport fishing

Source: Table 1.

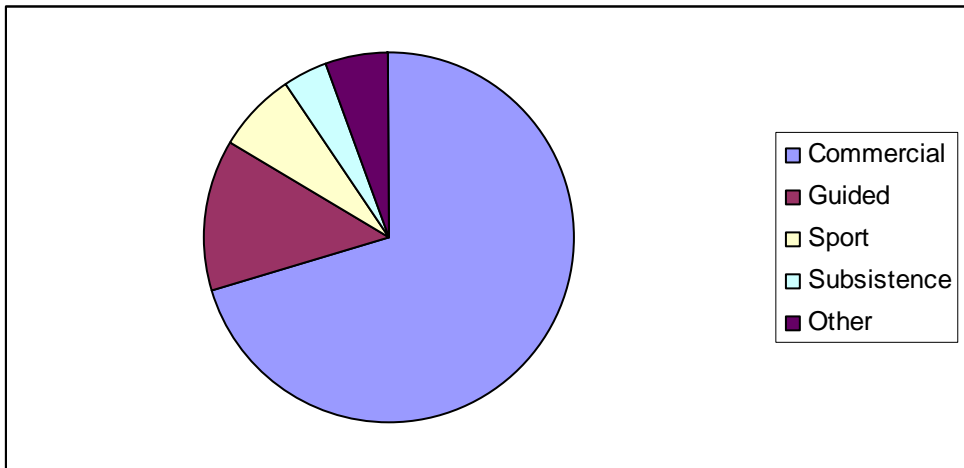


Figure 11 Sources of fishing halibut mortality from 2003-2007

Source: Table 1.

Detailed discussions of takes for these purposes may be found in earlier analyses of Area 2C actions. For example, see pages 15 to 20 of the March 2007 Draft EA/RIR/IRFA for a Regulatory Amendment to Modify the Halibut Bag Limit in the Halibut Charter Fisheries in IPHC Regulatory Area 2C (NMFS, 2007b).

Subsistence

Subsistence harvests of fish, game, and plants are an important traditional activity for Native Alaskan residents of Southeast Alaska. Subsistence harvests provide an important source of food and materials for many persons, and subsistence activity and distribution is culturally important.

Halibut have traditionally been harvested for subsistence purposes in Southeast Alaska. Eighteenth and nineteenth century accounts describe existing Native technologies and practices for catching halibut

(Cohen). Jonaitis notes the technical efficiency of the Tlingit halibut hook design and also the artistic quality of the decorations on the hooks; the Tlingit did not decorate salmon gear, for example, in the same elaborate way. On the basis of her analysis she argues that halibut fishing has important cultural significance to the Tlingit, transcending the use of halibut for food or trade goods. (Jonaitis)

Data on subsistence harvests is limited prior to 2003. The estimates of aggregate harvest in Table 1 were prepared by IPHC staff on the basis of intermittent ADF&G Division of Subsistence community surveys. As noted below, survey research published since 2004 suggests that the estimates prior to 2003 are below actual harvests.

In 2003 NMFS implemented a subsistence fishery registration system. At this time, NMFS entered into a five year contract with the ADF&G Division of Subsistence to survey subsistence halibut fishermen. This project has generated information on subsistence halibut fishing activity and production for the years 2003 to 2007. Table 1 summarizes aggregate subsistence harvests in Area 2C. The data show a discontinuity between 2003 and 2004. This is believed to reflect the better information gathered through the ADF&G survey, and not to reflect an actual increase in subsistence harvests.

Between 2003 and 2007, the number of subsistence anglers averaged about 3,300 per year. Subsistence harvests ranged between 532,000 and 699,000 dressed pounds per year. The weight of subsistence harvests trended down somewhat between 2004 and 2007. (Fall et al, 2004, 2005, 2006, 2007, 2008).¹

The distinctions between sport and subsistence are clouded by differing legal and cultural interpretations by both resource managers and users, and since rod and reel gear is legal in the subsistence fishery. The IPHC did not have a formal regulatory definition of subsistence prior to 2002; however, it did attempt to track subsistence harvest taken under a personal use category, leaving only sport harvests under the sportfishing category. In 2002, the IPHC adopted regulatory language defining subsistence (“Customary and Traditional Fishing in Alaska”), based on a recommendation by the Council. Federal regulations now recognize and define a legal subsistence fishery for halibut in Alaska (70 FR 16742, April 1, 2005). Subsistence fishery regulations are found at 50 CFR 300.60–300.66.

Bycatch in groundfish fisheries

Halibut are taken incidentally in commercial trawl fisheries in the Gulf of Alaska and the Bering Sea and Aleutian Islands areas. They must be returned to the water; hence they are called a “prohibited species.” Halibut bycatch mortality allowances for groundfish trawl fisheries off Alaska are adopted by the Council each year, during its specifications process. These require that management measures be taken when halibut bycatch reaches certain levels. NMFS Inseason Management monitors halibut takes during the year, and takes appropriate management actions when the limits in specifications are reached. Groundfish fisheries, especially in the Gulf of Alaska, are closed each year when the halibut bycatch limits are reached.

Incidental catch of halibut in the groundfish fisheries results in a decline in the standing stock biomass, a lowering of the reproductive potential of the stock, and reduced short- and long-term yields to the directed hook-and-line fisheries.

Beginning in 1997 the IPHC divided the halibut bycatch mortality into two size groups, legal-sized halibut (greater than 32 inches in length) and sublegal-sized halibut (less than 32 inches in length); these groupings are based on length samples collected by groundfish observers onboard vessels or at processing plants each

¹ These estimates are based on data in Table 4 of each annual report. There are some discrepancies between reports for individual annual estimates in these reports. These have not been resolved for this analysis.

year. To compensate the halibut stock for these removals over the short term, the legal-sized halibut bycatch mortality in the groundfish fisheries is deducted on a pound for pound basis each year from the directed longline quota. The sublegal-sized halibut mortality results in further impacts on the long-term reproductive potential of the halibut stock. The impact of sublegal-sized halibut mortality is addressed within the target exploitation rate used by the IPHC to set harvest policy. In essence, the target harvest rate is reduced to account for the sublegal halibut mortality. Currently this amount is approximately 2 percent. Clark and Hare (1998) discuss this in greater detail.

In 2007, bycatch of halibut in the groundfish fishery accounted for about 13.8 Milb gross weight. Actual mortality was believed to be considerably less, since halibut are assumed to have a relatively high survival rate. As noted in Table 1, bycatch mortality of legal sized fish reduced the 2007 Fishery CEY directly by about 210,000 pounds net weight. Harvest of sublegal sized fish led to an additional, indirect reduction in the CEY through its role in the selection of the target exploitation rate.

Unguided sport harvests

IPHC estimates of unguided sport harvests are summarized in Table 1 and in Figure 10. Over the period from 1997 to 2007 these fluctuated between somewhat less than 0.8 Milbs and almost 1.2 Milbs. Figure 10 shows that the landings appeared to fluctuate over a four or five year cycle during that time, although a regression line fitted to the data over the period shows a statistically insignificant downward trend.

The recent Southwick study of sport fishing in Alaska provides some estimates of unguided saltwater sport fishing activity in Southeast Alaska in 2007. These are estimates for all types of saltwater angling, not just for halibut angling. The Southwick study does not provide enough information to identify target species. In 2007 survey respondents indicated that they spent about 273,153 unguided saltwater angling days in Southeast Alaska. Resident salt water anglers spent unguided 165,020 angler days, and non-resident anglers spent about 108,133 unguided angler days. Unguided fishing accounted for about 92% of total resident angler days, and for about 42% of total non-resident angler days. (Southwick).

The Southwick study doesn't describe the modes of unguided fishing, but this could take place in many ways. Saltwater fishing may take place from the shore; halibut fishing would not fall into this category. Anglers may have their own boats, or go out fishing with family and friends. Anglers may lease or charter boats. Boats may be supplied with bed and breakfast, RV, or other accommodations. Outfitted, but unguided, charters are offered by businesses in Southeast Alaska. ADF&G sources believe, on the basis of a comparison of logbook and statewide harvest survey information, that a high percentage of nonresident anglers use these outfitted services, and that this is reflected in the Southwick survey (Romberg, pers. com.).²

ADF&G SWH estimates for 2007 show unguided sport halibut harvests distributed throughout Southeast Alaska. Non-charter harvests appear to be largest in Glacier Bay, Juneau, and Prince of Wales Island. They tend to be relatively smaller around Sitka and in the Haines Skagway area. (ADF&G 2008)

2.3.5 Fisheries and regional communities

Many commercial longline fishermen and sport guides, as well as their employees, live in and operate out of the small towns and communities of Southeast Alaska. Because these operations are based in these

² William Romberg. Fishery Biologist III, Alaska Department of Fish and Game. Sport Fish Division. 333 Raspberry Road. Anchorage, AK 99518-1599. Romberg was a co-author of the Southwick Study cited above. Personal communication, March 19, 2009.

communities, or receive logistical support from these communities, they can have important local economic impacts.

Charter operations and commercial longline operations in Southeast Alaska are associated with additional business activity by other regional firms. Any firm that operates a vessel will purchase food, fuel, oil, grease, bait, ice, salt, longline and hooks, electronics and all the other capital equipment involved in maintenance and repairs, take out bank loans, buy insurance, buy miscellaneous supplies, incur expenses for shipyard work, and so on.

Clients for full- and multi-day charters fly in to Southeast Alaska on Alaska Airlines, and often travel from a local community to a remote lodge via a local air service. While in transit at local communities they often spend money in local hotels and restaurants, as well as on other activities. The lodges themselves purchase supplies and services to acquire, operate, and maintain their vessels, docks, buildings, and to accommodate their clients, from local firms. Local employees provide additional stimulus to the local economy.

While half-day charters primarily doing business with cruise ships will have an impact profile that differs from lodge based operations, they will generate business for ship chandlers and ship yards, local trip brokers, and fish processing services for their customers' convenience, and provide employment and incomes for regional residents. Both types of operations may make purchases from firms outside Southeast Alaska, and have purchases shipped in from Seattle. Employees may also be local or from outside Southeast Alaska, as well. Similar considerations apply to commercial halibut longline operations.

Commercial longline operations will also sell their harvest to buyers and processors inside Southeast Alaska. These firms also employ local labor and make local expenditures, although they will also hire labor and buy supplies from outside the region. As noted in Section 2.3.2, halibut fishing operations may originate and employ persons who live in other regions of the country.

Recent studies have provided some information on linkages between the fishing industries and regional economies. The Southwick study of sport fishing in Alaska was discussed in Section 2.3.3. In January 2009, the Marine Conservation Alliance issued a report prepared by the Northern Economics consulting firm on the role of the commercial fisheries in the Alaska economy. This took a large scale, highly aggregated perspective, and is of limited use for the purpose of describing the halibut fishery in Southeast Alaska, or of describing the impacts of this action. Another study is currently in press in the journal *Fisheries Research* (Seung and Waters). These authors propose the use of a supply driven social accounting matrix analysis to evaluate the linkages between commercial fisheries and the Alaskan economy. They illustrate their approach with an application to the pollock fishery in the Bering Sea. However, their model does not include a separate longline sector and might be adapted to an evaluation of the halibut fishery.

In the absence of detailed information on the composition and location of purchases and sales by the firms in these two industry sectors, it is not possible to identify the income and employment multiplier effects associated with shifts of halibut fishing opportunities between the two user groups. Two additional points may be relevant here. First, impact multipliers do not provide information that would be useful for a cost-benefit analysis. Impact multipliers measure gross changes in income and jobs. Regional impact multipliers might show regional income and job changes, but would be much less likely to show national income and job changes because income and jobs created in one region would come at the expense of income and jobs in other regions. The cleanup after the Exxon Valdez had large economic impacts in Alaska, but the accident which generated the need for those expenditures imposed large net costs on the nation. The clean-up and recovery expenditures in Alaska represented resources taken from other activities elsewhere in the country, and were associated with large opportunity costs. Second, input/output multipliers for Alaska tend to be lower than impact multiplier for many other regions of the country,

because of the limited depth of the economy in Alaska. For example, average output multipliers from 2006 IMPLAN data, for the U.S. as a whole, range between 1.82 and 5.268, with an average of 3.97, while the similar estimates for Alaska are a range of 1.38 to 2.64, with an average of 1.8. (L. Cuyno, Northern Economics, pers. comm., Feb. 2, 2008).

The Alaska Department of Revenue estimates that fisheries business taxes raised from the commercial longline fishery rose steadily in the period from 2003 to 2006. In 2003 they were about \$570,000 and in 2006 they had reached \$1,259,000 (McDowell Group, 2007). Charter operators and their clients also contribute to local and state tax bases, including receipts from the sale of non-resident fishing licenses, sales taxes paid on expenditures by visiting sport fishermen, and property taxes paid on buildings used to provide overnight accommodations and amenities to clients.

2.3.6 Limited Entry and the Catch Sharing Plan

At its April 2007 meeting, the North Pacific Fishery Management Council took final action to adopt a moratorium on new entry into the guided halibut charter fishery. This action is intended to limit the number of halibut charter businesses that can operate in Areas 2C and 3A in the future.

The moratorium program is comprised of several provisions, chief of which is a requirement that each licensed fishing guide business owner must have reported a minimum of 5 bottomfish trips on his or her logbooks during 2004 or 2005, and in a recent participation year, in order to qualify for a moratorium permit. A business owner would be issued a permit(s) based on the number of trips summed for all vessels in his/her best year of the qualification period, and would be limited to the number of permits equal to the highest number of vessels used in any one year during the qualifying period. In addition, individual vessels must meet a higher threshold of at least 15 bottomfish trips in order to receive a transferable permit; vessels that do not meet this threshold would receive a non-transferable permit. An estimated 25% of the moratorium permits would be non-transferable, using 2004 and 2005 logbook data (NPFMC, 2007b).

The Council approved a use cap of 5 permits, in order to limit permit consolidation, meaning an individual business owner could not own or control more than 5 permits, unless it was grandfathered in at a higher level. The Council also approved a permit endorsement that would limit the number of halibut clients a vessel operating under that permit could have onboard. A permit's endorsement would be equal to the highest number of bottomfish fishing clients on any trip in 2004 or 2005, with a minimum endorsement of 4. A business could also stack multiple permits on a single vessel, subject to the use cap and other limitations (such as a six pack license). This provision was intended to allow individual businesses to expand their operations, without increasing the total pool of permits allowed. The permits that would be issued under this program would not limit a business in terms of the number of trips or angler days (NPFMC, 2007b).

The Council motion also included a military hardship provision. This allows an individual who qualifies, to apply for a moratorium permit without having met all of the qualification requirements of the general program. To qualify under the military hardship provision a person must have been assigned to active military duty during 2004 or 2005; qualify as an "active" charter business owner during the year prior to the moratorium's implementation; and demonstrate an intent to participate in the charter fishery in Area 2C or 3A (prior to the qualifying period). Permits issued under the military hardship provision would receive a halibut client endorsement of 6 (NPFMC, 2007b).

Finally, as noted in the preceding section, the Council provided opportunities for a specified set of small, rural (not located on the road system) Gulf communities with under-developed charter industries to request and receive a limited number of permits, at no cost. These permits would be non-transferable and held only

by the Community Quota Entity representing the eligible community, and used to support halibut charter businesses operating out of those communities (NPFMC, 2007b).

The National Marine Fisheries Service is currently engaged in rulemaking to implement this program. If approved, NMFS will solicit applications for permits, evaluate permit qualifications, issue permits, and address appeals. If approved, this program is unlikely to be effective before 2010.

In October 2008, the Council adopted a final preferred alternative to replace the current guideline harvest level program for the charter halibut fisheries in Area 2C (Southeast) and Area 3A (Southcentral) with a catch sharing plan (Plan) between the charter sector and commercial longline IFQ fisheries in each of those areas. The purpose of the Plan is to establish a clear allocation, with sector accountability, between the halibut charter and commercial longline sectors in each area. (NPFMC, 2008c)

Under the plan, the Council would request that the International Pacific Halibut Commission (IPHC) annually set a combined charter and longline catch limit, to which an allocation percentage for each area automatically would be applied to establish domestic harvest targets for each sector. This action also would establish specific management measures for the charter sector that would be triggered at specified combined charter and commercial setline catch limits. (NPFMC, 2008c)

In Area 2C, the charter allocation would be 17.3 percent of the combined charter and commercial longline catch limit, when the combined catch limit is less than 5 million pounds. The allocation would be 15.1 percent, when the combined catch limit is 5 million pounds and above. At each combined catch level, there is a bag limit and fish size regulation combination that is effective if the projected charter catch is within 3.5% of its allocation, and rules to modify that combination of regulations, if the projected catch falls outside of the 3.5% range. The 3.5% range generally applies for projected halibut catches above and below the charter allocations. The halibut regulatory measures that may be used include: 1) a 2-fish bag limit, 2) a 2-fish bag limit with one fish \leq 32 inches; 3) a 1 fish bag limit and; 4) a 1 fish bag limit with a maximum size limit. (NPFMC, 2008c)

Supplemental individual use of commercial IFQs in the form of charter guided angler fish (GAFs) is also part of the Plan. The Council identified this market-based transferable system as a practical approach for an optimal allocation over time. Since these allocations are unlikely to precisely meet the needs of either sector, the use of GAFs would allow for some reallocation between sectors to increase the probability of a successful allocation. (NPFMC, 2008c)

GAFs would allow charter limited entry permit (LEP) holders to lease commercial halibut IFQ in order to provide anglers with additional harvesting opportunities, (although, strictly limited to the catch opportunities available for recreational unguided anglers). Commercial halibut QS holders (including community quota entities (CQEs)) may lease up to 1,500 pounds or 10 percent (whichever is greater) of their annual IFQ to LEP holders (including themselves) for use as LEPs. Any quota which a CQE holds, regardless of its origin, could be leased up to 100 percent to eligible residents of the CQE community. No more than 400 GAFs would be assigned to an LEP endorsed for 6 or fewer clients, and no more than 600 GAFs would be assigned to an LEP endorsed for more than 6 clients. (NPFMC, 2008c)

If approved, these measures are unlikely to be implemented before 2010.

2.4 Statement of the Problem

The problem statement for this action may be found in Section 1.2 of the Introduction, and a statement of the purpose and need may be found in Section 1.3. Guided anglers exceeded the fishery GHL each year from 2004 through 2007; preliminary harvest estimates for 2008 indicate that they exceeded the GHL again

that year. If harvests continue to remain close to the 2007 levels, guided anglers may exceed the GHL again in 2009.

2.5 Economic Impacts of Alternatives

The Secretary's action may affect the costs and benefits accruing to several categories of persons. For the purposes of this analysis, these have been grouped in the following categories: (a) guided charter clients, (b) half-day charter providers and crew, (c) full- and multi-day charter providers and crew, (d) commercial longline operators and crew, (e) local residents of communities serving as bases for commercial longline or charter operations, (f) halibut consumers, and (h) the general public, through the impact on administrative and enforcement costs.

The economic impacts of the alternatives must be measured against a baseline or standard. For the purpose of this analysis, the baseline is the current fishery. In the future, outcomes under the status quo may differ from this, because the situation appears to be in flux, and a given set of rules may eventually result in a situation that differs from its current state. Because of the limited amount of data available for 2008, data for 2007 are used as a proxy for the current baseline.

2.5.1 Guided charter clients

To quantitatively evaluate the impacts of this action on charter clients, it would be necessary to have a model of client demand for guided sport fishing in Southeast Alaska that showed how demand might change as different aspects of the quality of fishing trips (such as halibut catch rates, halibut bag limits, catch rates for other species such as Chinook salmon and rockfish, likelihood of rainy weather, opportunity to see breaching whales) changed. The client demand for guided charters is not a demand for fish per se, but for a fishing experience of which the opportunity to catch and retain halibut is a very important, although not the only, element. An empirical analysis like this is not currently available.

A study now underway at the Alaska Fisheries Science Center may provide models that can be used in the future for quantitative analysis of halibut sport fishing demand. (Lew, pers. comm.; Hiatt et al., 2007).³

Measures that restrict client opportunity to retain halibut are assumed to shift the demand curves and reduce the number of guided charter trips demanded at any given price. The 32 inch limit on the second fish presumably did this when it was introduced in 2007, and a one-halibut bag limit is expected to do this, if it is introduced. A one-halibut bag limit may affect both half-day fishermen and persons using guides on full-day or multi-day trips, although it is likely to have a greater impact on the latter because the longer trips increase the likelihood of harvesting two fish. Clients may respond to restrictions by changing their behavior and may experience less satisfaction from their recreational activity.

The appropriate measure for the impact of this action on charter client satisfaction is the loss of consumers' surplus from being denied the opportunity to harvest two halibut per day. A person's consumer surplus is the amount he or she would have been willing to pay to acquire something, over and above what they would have actually had to pay. For example, if a person had to pay \$450 for a day of charter halibut fishing in Area 2C, and they would have been willing to pay \$700, their consumer surplus is \$250.⁴ In the case

³ Dr. Dan Lew, Alaska Fisheries Science Center, National Marine Fisheries Service. Personal communication, September 4, 2008; March 16, 2009.

⁴ These numbers are hypothetical for the sake of the example. Consumers' surplus itself is actually an approximation to a more precise measure of the change in consumers' welfare, the change in their "willingness to pay". For the purposes of this qualitative discussion, the reference to consumers' surplus in the text is sufficient.

under consideration in this action, consumers' surplus is expected to decrease, although for the reasons noted above, it is impossible to provide a quantitative measure of this change.

The status quo of a two-halibut daily bag limit with a maximum size of 32 inches on one of the fish has been in place for two seasons, 2007 and 2008. The data on the guided charter fishery, summarized in Table 4, and preliminary estimates of the 2008 harvest, suggest that the two fish daily bag limit with a 32 inch limit on one of the halibut will not reduce the harvest by guided clients to the extent necessary.

When the size limit on one of the two halibut allowed under the daily bag limit was implemented in 2007, NMFS sought to restrict the harvest while impacting demand for guided charter fishing as little as possible (NMFS, 2007b). That action appears to have been successful in minimizing the adverse impacts in demand for halibut fishing charters, but unsuccessful in reducing the overall harvest of halibut in Area 2C. The number of bottomfish clients (used as a proxy for halibut charter clients) actually increased in 2007, reaching 100,777 clients, the highest level ever.⁵ The weight of the halibut harvested from charter vessels rose over the preceding year, reaching its second highest level ever, 1.918 Mlb. The average net weight per halibut landed dropped to its lowest level since at least 1995, suggesting that the limit may have resulted in smaller average halibut. The total pounds of halibut landed in 2007 rose, from 1.804 Mlb in 2006 to 1.918 Mlb in 2007.

It is possible that the status quo reduced client demand below what it might otherwise have been in 2007, and that this was associated with some loss of consumers' surplus. However, the increases in actual participation in the fishery suggest that these impacts were minor. It does not appear that the status quo imposes a strong constraint on halibut fishing activity or on guided sport halibut harvest. Activity and harvests may decrease, or increase, depending on non-regulatory demand shifters such as income changes and the attractiveness of other destinations and activities.

The preferred alternative is likely to have an impact on clients of guided halibut sport fishing operations, and is likely to affect clients of half-day and of longer charters in somewhat different ways:

- Half-day clients are believed to be predominately persons arriving in SE Alaska on cruise ships and using a port visit to spend half a day on a halibut fishing charter. Because the typical time required to catch a halibut in the sport fishery is on the order of two to five hours (although this varies by season and location), the people in this class of charter clientele are likely to suffer less of an affect under this action, than persons taking full- and multi-day charters. Because it might be possible to take two halibut on a half-day charter, there may be some inward shift in the demand curve for this group. Furthermore, charter halibut sport operators are marketing an "experience", not a halibut. In this respect, it may be the "opportunity" to catch two halibut during a charter trip that sustains demand at a higher level than a one halibut bag limit, even if the true probability of capturing that second halibut is near zero. In this circumstance, it is the loss of the "opportunity", not the second fish, which may more severely reduce demand for half-day halibut charter trips. In this circumstance, it is the loss of the "opportunity", not the second fish, which may more severely reduce demand for half-day halibut charter trips.

⁵ It is impossible to definitely infer from this that the size limit did not affect the demand for guided charter trips in Southeast Alaska, because the number of clients might have been larger in the absence of the limit. It is also possible, because of the business structure of charter fishing, wherein many fishing trips are marketed and purchased months (sometimes many months) in advance of the event, that there is a time lag that could delay the emergence of a demand contraction for one or more cycles. That is, if a client books a "package" of activities, say in 2007, in preparation for making the scheduled visit in 2009, then there could be a lag in demand adjustment in response to a rule change between 2007 and 2008. One could not see the full impact of the change until 2009 or later, depending on the nature and duration of the lag.

- Persons buying full- and multi-day guided charters may be most adversely affected by this action. A reduction in the daily halibut bag limit may reduce their expectations of retaining a second halibut on any given day (i.e., a loss of “opportunity”, as above, only amplified by the number of additional hours of fishing time), as well as their estimate of total “meat” retention over the course of the visit. This would reduce the quality of the experience they expect to enjoy, shift their demand curves inward, reducing the amount they would be willing to pay for a trip to Southeast Alaska, and lead them to spend their money on substitute goods and services (including, possibly, transferring their charter sport fishing effort to other areas, e.g., Area 3A, aggravating halibut management there).

Guided charter clients will respond to a one-halibut daily bag limit in a variety of ways, as they try to minimize its impact. Some persons will not take guided charter trips they otherwise would have; they will substitute other, less personally satisfying, activities. In some instances, this may involve persons substituting a half-day trip for a full-day trip, substituting a bare-boat or outfitted charter (from which they may retain two halibut per day per person) for a guided charter, substituting fishing for other species, such as salmon, lingcod, or rockfish for halibut fishing, or substituting fishing in other areas than Southeast Alaska. Clients fishing halibut on guided charters may release a larger number of smaller fish in order to maximize the size of the one halibut they are permitted to retain. The incentive to do this would be higher for clients on full- and multi-day trips, than for clients on half-day trips, because the former have more opportunities to hook additional halibut during a trip. In the aggregate, clients who continue to come to Southeast Alaska and go guided halibut charter fishing will experience a reduction in the satisfaction that they get from fishing, because of the foregone “opportunity” represented by a one halibut daily bag limit on retention.

Some information on halibut fishermen behavior in South Central Alaska is available and may provide insights for Southeast, although the results must be extrapolated to Southeast Alaska carefully since the sport fisheries and sports fishermen in the regions differ. Criddle et al. (2003) report results from a 1997 University of Alaska Fairbanks (UAF) study of saltwater sportfishing trips in Lower and Central Cook Inlet. They use data from this study to estimate how changing catch rates would reduce participation in fishing trips. They estimate that a 30 percent reduction in catch rates would reduce participation by 25.1 percent while a 50 percent reduction would reduce participation by about 50 percent. Catch rates, and retention under a bag limit, are not the same thing. It is possible that under a one-halibut daily bag limit, guided anglers would practice catch-and-release to a greater extent, so that the decline in harvest would be accompanied by a smaller decline in actual catch rate. Furthermore, “high grading,” to the extent it happens, may result in “premium” fish being retained, so although total retained catch is reduced by a one halibut daily bag limit, the halibut that is retained may be larger (or “better” on some alternative utility scale unique to the individual fisherman).

A survey of visitors to Sitka in 2005 indicated that the size of the daily halibut bag limit was a consideration for many clients. However, the ambiguity in the question led the analysts to note that at best this was only a general indication of future behavior (McDowell Group, 2005). Conversations with charter captains during an earlier analysis revealed “best guess” estimates of reduced participation rates as high as 50 percent among certain user groups, but that overall reduction in demand might be between 25 percent and 40 percent. This study also indicated that a combination of the UAF results and key-informant interviews suggested a maximum demand reduction of 30 percent for a shift to a one halibut daily bag limit. (NMFS, 2007d).

Comments received on the one fish daily bag limit rule in 2008 indicate that lodge owners believe that a one fish daily bag limit will reduce their bookings. Some of these comments indicated that clients were reconsidering and cancelling bookings in the light of the uncertainty about the likelihood of a one halibut daily bag limit that summer (Butler et al., 2008). Despite an injunction at the start of the season, which

prevented enforcement of the one fish daily bag limit for charter halibut clients, at least one operator said that loss of bookings led to early suspension of operations in 2008. (Bruckner, 2008). Guides providing comments on the proposed rule for the current action also indicated that bookings were down for 2009. Although bookings might be down because of the recession and the financial crisis that occurred in the Fall of 2008, a consideration some guides acknowledged, commenters expressed their belief – based on remarks by potential clients – that the proposed one-halibut limit played an important role in this. (Comments submitted to proposed rule).

The current rule elicited comments from guides in South Central Alaska that this action caused some lost business because some potential clients could not distinguish between the rules applying in different areas of Alaska. (comments submitted to proposed rule). This may have had some adverse impact on South Central businesses. However, numerous comments mention South Central Alaska as a potential substitute fishing area for anglers choosing not to fish in Southeast. The net impact on demand in South Central Alaska cannot be determined.

The public has indicated that restrictions on anglers could negatively impact public safety by inducing the substitution of bareboat charters for guided charters (NMFS, 2007d). USCG staff have reported to the Council that the Coast Guard is not convinced that a significant increase in the use of bareboat charters would occur and does not see an overarching safety concern with the proposed action. This is subject to unforeseen political and economic realities (Ragone, pers.com).⁶

In summary, as a result of the preferred alternative, some clients who would have chosen to go halibut fishing aboard a SE based guided charter might choose to do something else in the region, or could choose not to take a trip to Southeast Alaska (or Alaska) at all. Persons coming to Southeast, especially to charter a guided halibut fishing excursion are more likely to be adversely impacted, than persons taking half-day charter halibut fishing trips during the course of a cruise ship visit. Charter clients would tend to experience a greater loss of consumers' surplus under the preferred alternative, than they would under the status quo. A discussion of the impact of this on the different types of guided charters follows in subsequent sections.

The analysis in this section assumes that “all else is equal.” This caveat may be especially important in the current economic environment, since it reflects the uncertainty associated with the U.S. financial crisis of 2007-08, the international financial crisis in the fall of 2008, and the relatively high possibility of an economic recession in 2008-09. These events may have adverse effects on disposable income, on propensity to spend out of disposable income, and on recreational travel and guided sport fishing. Fuel prices have varied considerably recently, but are currently (October 2008) down from the highs reached in the summer of 2008. Should these rise again, they may also dampen demand for guided sport fishing by increasing the cost of traveling to Alaska, and of operating charter fishing vessels.

2.5.2 Half-day charter operations and crew

In general, there is limited information available on the economics of the half-day charter business. There is anecdotal information on revenues and cash operating expenses, some of which was reported in Section 2.3.3. However, there is no comprehensive information that would permit a determination of profitability in an economic, rather than an accounting sense⁷, no analysis of competitiveness within the industry, no analysis of the half-day trip supply curve, and no analysis of a half-day trip demand curve. Analysts at the

⁶ Lt. Cmdr Lisa A. Ragone, Chief, Fisheries Enforcement Branch (dre-2) U.S. Coast Guard, 17th Coast Guard District, Juneau, Alaska. Email to Ben Muse, Economist, National Marine Fisheries Service, Alaska Region, dated October 17, 2008 and February 27, 2009.

⁷ For instance, in a way that takes account of the opportunity costs of the labor involved.

Alaska Fisheries Science Center are conducting a scoping study as the initial step in a possible analysis, and have met with guides in Sitka and Homer, as a part of this study. A research plan has not yet been developed, and a research project has not been funded at this time (September 2008).⁸

This missing information is important because it would be useful for a quantitative cost-benefit analysis. Ideally, one could measure the impact on the industry by the change in its producer surplus.⁹ The change in the producer surplus would be the difference between the change in total revenues the industry earned and the change in its total variable costs as measured by the change in the area above its supply curve and below the market clearing price. In the absence of the information needed to examine these issues, a quantitative analysis is unavailable and the discussion must be qualitative.

It seems likely that the half-day trip sector of the guided sport charter business is very competitive. The operations are small and there are significant numbers of operations available in most of the major ports at which the cruise ships call. There are also large numbers of persons in these towns who can enter or leave the business at relatively low cost. Boat ownership is widespread in Southeast Alaska. Many Southeast residents fish for halibut recreationally or commercially, so local knowledge about halibut fishing conditions is widespread in the different towns. The State places few obstacles in the way of entry into this business, although Coast Guard and Jones Act requirements must be met prior to “hiring-out” as a legitimate charter vessel operator. As noted in Section 2.3.3, there appear to be a number of persons, in at least two large towns in SE Alaska, who obtain the charter fishing business license each year for tax benefits, or to create a record for a future limited access license, if such a program is ever created (Dugan, et al.). It is not clear if the limited number of cruise ship lines or brokers creates positions of market power. However, the large number of guides who operate outside that network, the fact that guides have created their own co-op broker in at least one town, and the inexpensive marketing opportunities available through the Internet, suggest that they do not. Guiding need not be a full time commitment; persons could guide part-time or on weekends or in evenings. Undoubtedly guides do differ somewhat in the fishing, business, and people skills they bring to the business. However, cruise ship clients are likely to be one-time clients and to have limited access to information about the quality of guides, and a limited basis on which to judge the quality of a guided trip. Under these conditions, it may be relatively difficult for high-quality guides to command a premium.

As discussed earlier, growth in the half-day charter segment of the industry may be closely tied to growth in cruise ship passenger visits to Southeast Alaska. The latter have grown considerably since the early 1990s. This growth has persisted during the period since the GHL was introduced. Growth in passenger visits by about 64,000 persons between 2006 and 2007 may have been associated with the increase in guided clients over the same period.

Given the relatively short trips taken by guides catering to cruise ship visitors during their port calls, the status quo alternative, which still offers the opportunity to harvest two halibut, albeit one less than or equal to 32 inches, may not have had a serious adverse impact on this industry sector given typical harvest rates in the region (see Figure 9). Because the half-day fleet segment is believed to be relatively competitive, modest changes in demand are likely to be met quickly by the entry and exit of guides into and from the market place. The additional costs of new entrants are likely to be very similar to those of people already in the business, and the costs of people leaving are also likely to be similar to those of the people that remain. The implication of this is that the supply curve for guides is likely to be very flat over the range of possible

⁸ Status of AFSC research based on a personal communication from Lew on September 5, 2008.

⁹ A change in a firm’s producer surplus is equal to the change in its profits (if it remains in business) or the change in its profits and the loss of some portion of its fixed costs (if its best option is to suspend operations and not even operate at a loss in order to recover some part of its fixed costs). A synonym is “quasi-rent.” (Just et al.)

demand levels. The further implication of this is that changes in the number of guides under the one fish daily halibut bag limit may have small impacts on producer surplus in this segment of the industry.¹⁰

The one halibut daily bag limit is likely to have a larger impact than the status quo on this fleet sector, although as noted in the preceding section, there is likely to be a smaller drop in the demand faced by the half-day segment of the guided charter business than the full- or multi-day segment. There are a couple of reasons for this. First, as noted above, persons buying half-day guided halibut charters may already have a lower expectation of taking two halibut, since their trips are relatively limited in time. Secondly, it is possible that there may be some substitution toward half-day trips, and away from full-day trips, since the one halibut daily bag limit is likely to make full-day trips look relatively less attractive compared to half day trips.

Because the shift in the demand curve for half-day charters is expected to be proportionately smaller than the shift for full- and multi-day charters, and because the industry is believed to be a competitive one, the impact of this action on the welfare of half-day operations is expected to be relatively less than that on the full- and multi-day charters.¹¹

The demand for crewmembers is likely to decline under the action alternative; fewer crewmembers and shorter hours may be demanded by charter operations at any given wage rate. The impact on crew wages would depend on the supply of crew members' labor. This may be relatively responsive to small changes in wages for the same reasons that the supply of guided charter operators may be. In that case, the impact on average wages may be relatively small. However, these results should not be as great, relatively, as those in the full- and multi-day charter segment of the industry.

Currently guided charter operations that fillet a halibut onboard are required to retain the carcass onboard until the fillets are offloaded. This is necessary to make it possible to check the length of the second fish and enforce the regulation. Under the preferred alternative this requirement would be lifted.

2.5.3 Full- and multi-day charter operations and crew

As described in Section 2.3.3, there are different types of full-day and multi-day charter businesses. In some cases, a charter operation may be a single person providing bed-and-breakfast accommodations in their own home, or arranging accommodations for their clients in local hotels and bed-and-breakfasts. In other cases, guided charter operations may be based on lodges remote from town with multiple boats and hired guides, or guides providing multi-day live-aboard guided fishing cruises.

As noted in Table 4 in Section 2.3.3, charter industry clients increased in 2007, the first year of the status quo, to their highest historical level. While the number might have been larger in the absence of the 32 inch restriction on one of the halibut retained, this result is not suggestive of a large adverse impact on demand.¹² It is not clear whether the increased number of clients was experienced in the half-day and full- and multi-day segments of the industry. It is not currently possible to identify participation by clients in

¹⁰ In a supply and demand diagram, the producers' surplus is measured by the area above the supply curve and below the price of the service. In a competitive market, the price is a constant number. If the supply curve is very flat, the producers' surplus changes will be very small.

¹¹ The pending moratorium permit will likely raise the cost of entering the market.

¹² As previously hypothesized, there may be a market lag effect that has not yet had an opportunity to fully emerge in the data set. This is an empirical question that merits consideration as subsequent halibut charter participation data become available for analysis.

these two segments from available information on client fishing activity (S. Meyer, ADFG, pers. comm., Sep. 17, 2008). The available information does not suggest that the status quo will impose a strong constraint on the demand faced by full- and multi-day charter operations. Demand may decrease, or increase, depending on non-regulatory demand shifters such as income changes, the attractiveness of other destinations and activities, and on marketing activity by the charter operators.

The impact of the one halibut daily bag limit on full- and multi-day guided operations may even differ, depending on the business plan for the specific operation. Small operators, who house their clients in hotels or bed-and-breakfasts, and take them fishing themselves in small boats, may approximate a competitive economic model. At the other end of the spectrum in this industry segment, the loss in income, economic stability, and sustained viability incurred by the proprietors of multi-day lodge-based guided charter operations may be greater. These operations tend to have unique locations, which may generate site rents because of their beauty, location with respect to town, and location with respect to unusually productive halibut grounds. If these firms are generating rents because of unique access to halibut resources with a relatively high catch per unit of effort, they may see these rents decline as a one halibut daily bag causes client demand declines. This could bring about a welfare loss. Rents would be capitalized into the value of the land or facilities. These are likely to decline in value. The halibut fishery is open to guided and unguided sport fishermen, commercial longline fishermen, and subsistence fishermen. An area with unusually good fishing may attract unusually heavy fishing effort. This may mean that a high catch per unit of effort would tend to decrease through time, all else equal.

While operations may experience something like a local “monopoly”, because they own a particular site providing unique access to a highly desirable fishing area, it is likely that the business, as a whole, is characterized by monopolistic competition. That is, there are a number of lodges in Southeast providing a similar service – guided halibut fishing – but the lodges are distinguished from each other by some relatively unique characteristics, such as location, facilities and amenities, and by promotional efforts. Whereas, in the short run, one of these lodges may earn above-normal profits, in the longer run, the entry of new lodges providing a similar service that is a substitute for its own would tend to cause its demand curve to shift until it was just breaking even (i.e., making normal profits). Short-run and long-run are relative terms that are defined differently in different situations. In Southeast Alaska, the rapid growth in charters may mean that the full-day and multi-day market segment has not reached its ultimate equilibrium, that the lodges are earning economic profits, and that there may be welfare losses associated with a demand decline.

There may be opportunities for some guided charter operations to substitute outfitted bare-boat charters for guided charters, since the proposed one halibut daily catch limit rule only applies to operations with guides on board. Some level of guide and support services might be provided, if a vessel monitoring unit is installed on a boat and fishing advice is provided by radio from shore. Alternatively, a larger “mothership” might accompany smaller boats, carrying two or three fishermen, but not a guide. If fishing takes place close to a lodge, it may be possible for a range of amenities and services to be “ferried” to the unguided charter boats location (e.g., food, beverages, tackle, fresh bait, as well as services to fillet the fish on a return to the lodge). This may represent a distinctly lower level of service than would be received on a fully-guided charter; or perhaps not. It is possible that this business approach would work better for salmon fishing than for halibut fishing, because of the heavier gear required for the latter, and because novice halibut fishermen may need more support if they need to bring a large halibut onboard. Numerous operations in Southeast Alaska, many of small scale, currently offer skiff rentals for unguided fishing by clients. If this action encourages charter operators to adopt this alternative business model, some anglers who fill out ADF&G statewide harvest surveys may report halibut harvests as unguided sport harvests rather than guided sport harvests.

In general, it is likely that operations offering full- and multi-day trips will experience a reduction in demand because of a one-halibut bag limit, and that this reduction in demand will be greater than that

experienced by the half-day charter segment. Such a reduction would reduce income received from site rents and from profits. Many of the comments from operators in Section 2.3.3, pointed to the high fixed costs and low operating margins incurred by lodge operations, suggesting that these operations could cease to be profitable because of the one halibut daily bag limit restriction. It seems likely that some could respond by leaving the business, while others would seek to restructure their operations to reduce their fixed costs and provide alternative types of nature based tourism.

The demand for crewmembers and staff is likely to decline under the action alternative; fewer crewmembers and lodge support staff of all kinds, as well as shorter hours, may be demanded by charter operations at any given wage rate. The impact on wages in this market would depend on the supply of staff and crewmembers' labor. This may be relatively responsive to small changes in wages for the same reasons that the supply of guided charter operators may be. In that case the impact on average wages may be relatively small.

Currently guided charter operations that fillet a halibut onboard are required to retain the full carcass onboard, until the fillets are offloaded. This is necessary to make it possible to check the length of the second fish and enforce the regulation. Under the preferred alternative this requirement would be lifted.

2.5.4 Commercial longline operations and crew

As noted earlier, the No Action alternative is unlikely to impose a serious constraint on the growth of the charter harvest if demand conditions continue to favor expansion of the industry. As shown by events in 2007, and by preliminary data in 2008, it alone won't reduce the halibut harvest of the guided sport fishery to approximately the guideline harvest level that prevailed prior to 2008 (1.432 Milb) much less to the lower GHLS since then. The potential magnitude of the reduction in the commercial longline fishery harvest associated with the guided charter fishery¹³ can be illustrated by the following numerical example. This example is not a forecast. It is used here to demonstrate how the reallocation may occur and contains a number of simplifying assumptions. In particular, the values for a number of variables are set to their levels in 2007 or 2008 and left unchanged.

Table 5 Example to illustrate the difference in commercial longline catch limits based on 2007 guided angler harvests, and on the 2008 GHL (measured in millions of dollars and millions of pounds)

year	Millions of pounds												Mill. of dollars
	Total CEY	By-catch	Subsistence	Sport (no guide)	Wastage	Guided sport	Fishery CEY	Est. Comm. Catch limit	GHL	GHL based fishery CEY	GHL based Comm. Catch limit	Lbs difference	Value difference
2007	10.8	0.210	0.580	1.131	0.025	1.918	6.936	8.510	1.432	7.422	8.510	0.000	0.00
2008	6.5	0.210	0.580	1.131	0.025	1.918	3.92	6.210	0.931	3.623	6.210	0.000	0.00
2009	6.5	0.210	0.580	1.131	0.025	1.918	2.636	4.423	0.931	3.623	4.917	0.494	1.88
2010	6.5	0.210	0.580	1.131	0.025	1.918	2.636	3.530	0.931	3.623	4.270	0.740	2.81
2011	6.5	0.210	0.580	1.131	0.025	1.918	2.636	3.083	0.931	3.623	3.946	0.864	3.28

Notes: All non-revenue estimates are in millions of pounds. Value estimates are in millions of dollars. Actual 2007 values used for

¹³ The original version of this text referred to the "expanding" guided charter fishery. The word "expands" also appeared in the table heading. While the fishery had expanded through 2005, its harvest appears to have stabilized since. Table 5 did not assume an expanding harvest, using the 2007 guided harvest for all years. This was also noted a paragraph on the next page. The table shows the different catch limit time paths associated with catch limits based on guided harvest and the guided GHL.

2007. In subsequent years, values were calculated as follows: Bycatch, subsistence, unguided sport, guided sport and wastage are set at 2007 levels for each year. Total CEY is set at 2008 level. Fishery CEY equals Total CEY minus bycatch, subsistence, sport, wastage, and guided sport harvests. Estimated commercial catch limit is set equal to the previous year's limit minus one half the difference between the previous year's harvest and the current Fishery CEY.; GHL is the 2008 GHL; GHL based Fishery CEY is a Total CEY calculated assuming the guided sport harvest was equal to the GHL; GHL based catch limit is calculated using similar adjustment procedure as that used for the estimated commercial catch limit above. Lbs difference is the difference between the two commercial catch limit estimates; value difference is a difference in dollars using a price of \$3.80 per pound.

The guided charter fishery limited entry program will become effective some time after 2009 if approved. However, while this program is likely to stabilize the number of operations in the guided charter fishery, it is unlikely to impose a serious check on increases in the guided sport harvest, if market conditions lead to increases in halibut charter demand. Similarly, the catch sharing plan should become effective if approved, sometime after the limited entry program. For these reasons, this projection has only been run out through 2011.

The difference in pounds over the three year period from 2009 to 2011 is about 2 million. The difference in gross revenues is about \$8 million. This total difference is summed over a three year period. To express it as one value at the start of the period, it is more appropriate to calculate the present value of the series of annual revenue amounts. Calculating this, assuming a discount rate of 5%, the series has a value of about \$7 million. The impact on profits would be less than this, because of the additional costs associated with harvesting the additional fish.

This analysis is simply meant to illustrate that the halibut in dispute could have a considerable value to the fishermen in the commercial longline fishery. The specific numbers that fall out of this discussion should not be the focus of too much attention. Note that the calculations assume no growth or decline in the guided halibut charter fishery, a reduction in commercial catch limits in response to the initial Fishery CEY change spread over many years, and new regulations that may become effective by the end of 2011. Changes to these, and many other assumptions, could change the specific numerical results.

The preferred alternative, a one-halibut daily bag limit, is expected to reduce the guided sport harvest from the 2007 and the status quo levels. First, even if there is no change in the demand for guided sport fishing opportunities, many persons who caught and retained a second fish in 2007 no longer be able to do so; second, it is likely that there would be reductions in demand for fishing trips if a one-halibut daily bag limit were adopted. Key informant interviews in 2007 suggested that the upper bound of such a reduction could be on the order of 30%.

One goal in the following analysis of the impact of a one-halibut daily bag limit is to maintain the key assumptions established in earlier analyses on this topic. These analyses include the 2007 EA/EIR/IRFA prepared by Northern Economics, Inc., for the Council entitled *Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level Measures in the Halibut Charter Fisheries in International Pacific Halibut Commission Regulatory Area 2C* (hereafter NMFS, 2007d). These key assumptions include:

- A backward-looking estimation procedure that models estimated harvest in 2007 if the proposed regulation had existed during that harvest year. This approach means that if the average weight of halibut increases, then harvest in subsequent years will be higher than forecasted by the analysis for 2007. Similarly, if angler participation increases in subsequent years, then harvest will be higher in subsequent years than forecast for the 2007 scenario. While average harvest weight varies from year to year, the number of client days has increased in each of the last six years. Thus, a management measure projected to reduce charter halibut harvest to 100 percent of the Area GHl under 2007

conditions may actually result in a higher or lower reduction in subsequent years, if angler effort and biological conditions are different from those conditions that existed in 2007.

- The creation of estimates which model a) no change in angler demand related to the proposed measure and b) a reduction in angler demand for charter trips resulting from the management measure. As noted in NMFS, 2007b, a 30 percent demand reduction was the average upper level reduction predicted by key informant interviews during the preparation of NMFS, 2007b. However, there are no peer-reviewed published reports on halibut anglers in Alaska and predicted reactions to bag limit changes. For this reason, we present a range of estimated effects associated with demand reductions from no change in demand, to a 50 percent reduction in demand.

The basic analytical approach for the analysis is to divide the 2007 harvest of 109,835 halibut into two groups: halibut that represented an angler’s first halibut in their daily bag limit, and halibut that represented the second fish in an angler’s daily bag limit. Under a one-halibut daily bag limit, the second fish in the daily bag limit would have disappeared in 2007. We can use this approach because the daily bag limit does not affect an angler’s chances of catching a halibut per hour fishing; it affects the ability to keep halibut.

An angler is not required to stop bottomfish fishing after taking a first halibut (Antaya, pers. comm.)¹⁴. Thus, the analysis can assume that these other fishing conditions (e.g., the portion of anglers who kept no fish, because they did not catch any fish) would not change because of the proposed regulation.

This approach for this analysis differs from that in NMFS (2007d) in that ADF&G’s estimates of 2007 average halibut harvest weights in Area 2C reflect the introduction of the “second fish 32 inch maximum limit” that year. Because of this, these estimates are not perfectly comparable to estimates from prior years in which the limit was not in force. That creates difficulties for projecting the impact of a one halibut daily bag limit without an accompanying size limit. ADF&G’s sampling regime does not identify which fish in an angler’s two fish daily bag limit is the fish of any size and which fish was the fish under the length limit. Halibut are sampled by the boatload, as anglers return to port and are not assigned to specific anglers. Thus, the analysis has no estimate of the average weight in 2007 of the halibut in an angler’s bag which are allowed to be of any size. These fish would be the best proxy for the average weights that the fishery may have experienced in 2007, under the assumption of a one-halibut daily bag limit.

ADF&G staff suggested resolving this issue by using an ARIMA time-series model to predict 2007 average weights using average weight data from 1999 to 2006, when all of the halibut in an angler’s daily bag limit could have been “of any size.”¹⁵ In addition, the analysis models the average, median, minimum, and maximum average weights seen between 1999 and 2006, as the analysis recognizes that actual average weights could be different from the ARIMA results. The use of this range of average weights also shows how sensitive or insensitive the core results of the analysis are to halibut average weights.

Table 6 Average Weight per Harvested Halibut in the Area 2C Charter Fishery 1999-2006

Year	1999	2000	2001	2002	2003	2004	2005	2006	Average
Average Weight (lb.)	17.8	19.8	18.1	19.7	19.1	20.7	19.1	19.9	19.28

Source: Alaska Department of Fish and Game, 2008.

The approach used here is best illustrated with a concrete example: There were 109,835 halibut harvested in the guided charter fishery in 2007 in Area 2C. ADF&G estimates that 61.6 percent of these fish (i.e.,

¹⁴ Ron Antaya, NOAA Office of Law Enforcement. Juneau, Alaska. Personal communication, November 7, 2008.

¹⁵ Please see Appendix A for a detailed description of the ARIMA model.

67,662 halibut) were first fish in anglers' daily bag limits and 38.4 percent (i.e., 42,173 halibut) were second fish in angler's daily bag limits¹⁶. Overall, these fish, which included those required to be 32 inches or less in length, weighed an average of 17.46 pounds each. For this example, assume that the first fish weighed 19.28 pounds each; the same number as the average weight of all guided charter halibut caught between 1999 and 2006. The analysis' estimate of harvest in 2007 under a one-halibut bag limit would be approximately 1.304 Mlb or 67,662*19.28. The second fish simply disappear. This example assumes no change in demand. A 30 percent reduction in demand would reduce the halibut charter harvest by 30 percent (all other things being equal) to 47,363 halibut or 0.913 Mlb with a 19.28 lb average.

A caveat to this approach is that the analysis is unable to account for high-grading by anglers. Certainly under a one-halibut daily bag limit anglers may feel a greater desire to high grade their catch than they do under a two-fish bag limit. The maximum average weight found in the fishery between 1999 and 2006 may represent a potential proxy for the amount of highgrading an angler may do under normal circumstances. The portion of the population represented by any given size of halibut decreases as the size of the halibut increases. IPHC set-line surveys indicate that halibut over 50 inches represent less than 5 percent of the population at any given time (NMFS, 2007d).

The results of the analysis are summarized in Tables 7 and 8. Table 7 shows that implementation of a one-halibut daily bag limit would reduce charter vessel angler catch to a range of 1,495,000 pounds (678.1 mt) to 602,000 pounds (273.1 mt), depending on various average weight scenarios and assumptions about reductions in demand.¹⁷

Table 7 Estimated Charter Halibut Harvest Levels Under a One-halibut Bag Limit (Mlb)- 2007 Conditions

Average Weight Scenario	Average Weight per Harvested Halibut	Estimated Harvest Level (Mlb)					
		No Demand Reduction	10% Demand Reduction	20% Demand Reduction	30% Demand Reduction	40% Demand Reduction	50% Demand Reduction
ARIMA 2007 Projected Average	20.24	1.369	1.232	1.095	0.959	0.822	0.685
1999-2006 Average	19.28	1.304	1.174	1.043	0.913	0.783	0.652
1999-2006 Median Average	19.40	1.313	1.181	1.050	0.919	0.788	0.656
1999-2006 Minimum Average	17.80	1.204	1.084	0.964	0.843	0.723	0.602
1999-2006 Maximum Average	22.10	1.495	1.346	1.196	1.047	0.897	0.748

Source: Northern Economics, Inc. estimates, 2008.

¹⁶ In 2006 the ratio of first fish to second fish was 60.3 percent to 39.7 percent, so there was a 1.3 percent change between 2006 and 2007 with fewer anglers keeping two fish in 2007. If the 2006 ratio is used in the analysis instead of the 2007 ratio, under the theory that the NMFS 2007 rule changed angler behavior, the analysis' estimates of harvest shift downward by 2.16 percent. This amount is well within the estimation error of this analysis given that the analysis uses a backward-looking estimation method.

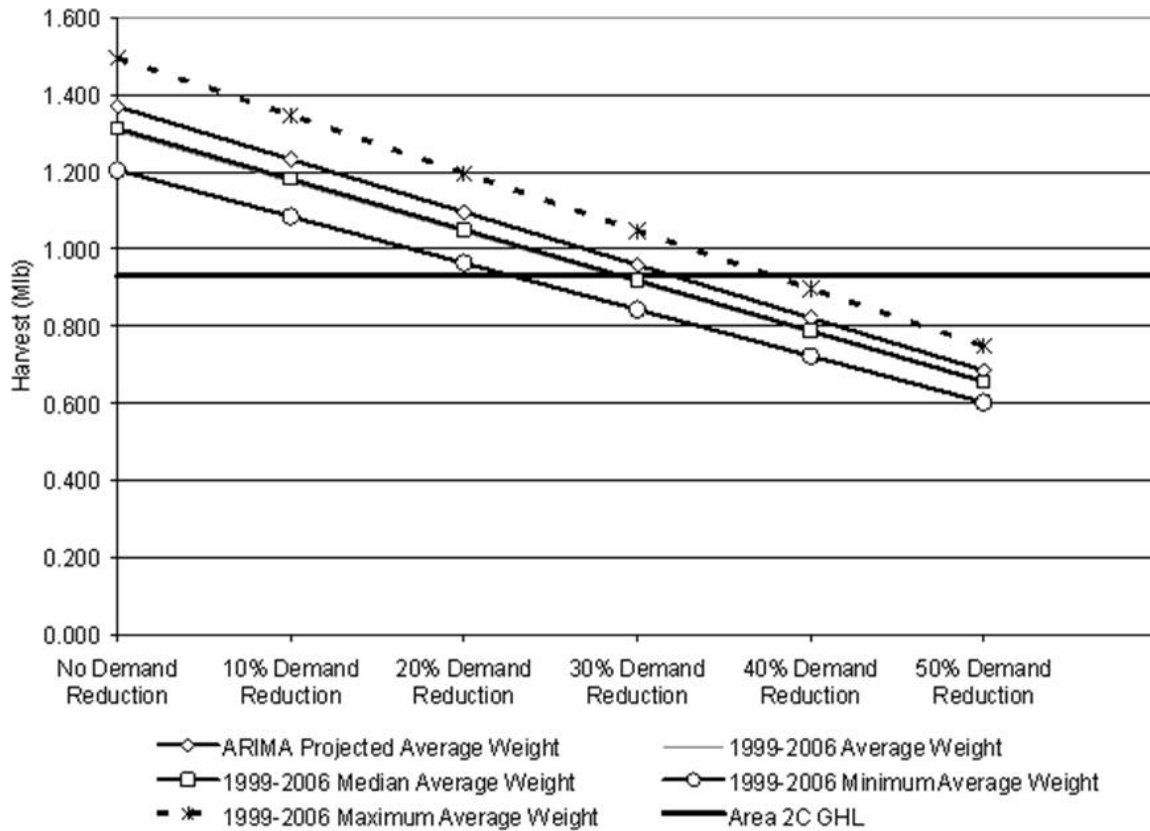
¹⁷ The analysis notes that the harvest levels predicted by the model without any demand reduction are approximately at or below the 1.432 Mlb GHl which existed before the halibut biomass declined (e.g., from 2000 to 2007). If biomass increases then the GHl will rise according to the steps outlined in the NPFMC's original GHl decision.

Table 8 Estimated Charter Halibut Harvest Levels Under a One-halibut Bag Limit as a Percentage of the 0.931 GHL- 2007 Conditions

Average Weight Scenario	Average Weight per Harvested Halibut	Percent of the 0.931 Milbs GHL					
		No Demand Reduction	10% Demand Reduction	20% Demand Reduction	30% Demand Reduction	40% Demand Reduction	50% Demand Reduction
ARIMA 2007 Projected Average	20.24	147.1%	132.4%	117.7%	103.0%	88.2%	73.5%
1999-2006 Average	19.28	140.1%	126.1%	112.1%	98.1%	84.1%	70.0%
1999-2006 Median Average	19.40	141.0%	126.9%	112.8%	98.7%	84.6%	70.5%
1999-2006 Minimum Average	17.80	129.4%	116.4%	103.5%	90.6%	77.6%	64.7%
1999-2006 Maximum Average	22.10	160.6%	144.6%	128.5%	112.4%	96.4%	80.3%

Source: Northern Economics, Inc. estimates, 2008.

Figure 12 conveys the results of the analysis visually. The vertical axis shows harvest measured in millions of pounds, while the horizontal axis measures the percentage reduction in demand. Each of the downward sloping lines represents a different assumption about average halibut weight in the charter fishery. The lines slope downward from left to right, because for any given average weight, the harvest will decline as the demand for fishing declines. The dark horizontal line represents the 0.931 GHL that became effective in 2008. The corresponding line for the 2009 GHL of 0.788 would lie below that one.



Source: Northern Economics. (Note that the line labeled “Area 2C GHL” is the 2008 GHL and not the 2009 GHL of 0.788Milbs.)

Figure 12 Estimated guided sport harvest of halibut under alternative assumptions about fish weight and demand

During 2007, captains, guides and crew were also prohibited by State of Alaska emergency orders from retaining halibut for themselves when they anglers were on board. This measure has an additional impact on reducing harvests. ADF&G estimates from November 2006 concluded that the State prohibition on crew-caught halibut reduced harvest that year by approximately 84,000 lb. These estimates are verified by comparing the estimates of Area 2C harvest, based on linear trends in the Statewide Harvest Survey Data data (which include crew catch because in prior years crew caught halibut while on trips) and extrapolation of 2006 logbook data collected through August 15. The linear trend estimates predicted a harvest of 2.113 Milb, while the logbook projects a harvest of 2.035 Milb. The 78,000 lb difference in these estimates is, in part, due to the fact that the linear SWHS projections would have included crew harvest, while the logbooks (which reflect the actual catch) reflect the fact that crew harvest was banned under the Emergency Order. The 78,000 lb estimate and the 86,000 lb estimate are 3.8 percent and 4.2 percent of 2006 charter harvests. These portions corroborate estimates by the earlier analysis. These estimates are consistent with other information. According to ADF&G logbook data from 1999 through 2001, harvests by crew members accounted for between 3.3 percent and 4.5 percent of the annual halibut harvest in Area 2C. (NMFS, 2007d)

As a result of this action, the individual quotas received each year by quota share holders in the halibut IFQ fishery will be larger than they would otherwise have been. Commercial longline operations should therefore enjoy higher producers’ surplus from their quota share holdings each year than they otherwise would have. Competitive pressures should not lead to the dissipation of this producers’ surplus, because the incentive to compete to access the fish in the water is limited by the quota shares. When a current quota share holder sells the shares, the expected increase in producers’ surplus associated with this action will be capitalized into the value of the shares. The longline fishermen who benefit from this action are those holding quota share at the time expectations about future returns change and become incorporated into the share values. People who enter the business in later years by purchasing quota shares will tend to pay more for those shares, and this additional payment will tend to offset the increased annual producers’ surplus they would enjoy from this action. They would not tend to benefit from this action.

The demand for crewmembers by longline halibut fishing operations is likely to shift to the right; more will be demanded by at any given wage or share rate. Crew employment will tend to increase, but in the absence of models of the demand and supply for labor in this sector, the size of any change cannot be determined. The impact on crew wages would depend on the supply of crew members’ labor. This may be relatively responsive to small changes in wages for the same reasons that the supply of guided charter operators may be. In that case the impact on average wages may be relatively small.

2.5.5 Local communities

Guided charter operations of all kinds, and commercial longline fishermen, buy materials and hire workers within Southeast Alaska, and pay local and state fees and taxes. The firms and people they buy from, and the governments to which they pay fees and taxes, likewise buy materials and hire workers in Southeast Alaska. Changes in the guided charter bag limit which affect demand by their clients and the fish available to the commercial longline fleet, may have income and employment impacts within Southeast Alaska. However, ultimately, a large share of the materials and labor used by guides and longliners have their origins outside of Alaska. As explained in Section 2.3.5, the limited depth of the regional economy means

that local and regional impact multipliers are significantly smaller than they would be for comparably sized fishing industries in many other regions.

The information that would be necessary to provide a complete quantitative analysis of the impacts of this action on the commercial or charter boat sectors, and to estimate the impacts these sectors would have on the regional economy, is not available. This information would include survey-based models of anglers' behavioral responses to the regulation changes, detailed information on the revenues and costs of commercial and guided charter operations, a model of guided charter responses to changing client behavior, and income and employment impact multipliers for the regional communities in Southeast Alaska. The Alaska Department of Fish and Game prepared an analysis of the economic impact of the seafood industry on Southeast Alaska (Hartman, 2002). However, the information used in this study is based on information collected in 1994 and which is, therefore, almost 15 years old. Moreover, the study does not provide separate information for the halibut fishery. Finally, the halibut fishery was transformed following the date on which the data was collected by the implementation of the individual quota program in 1995. This event spread the fishery out over the year, shifted production away from frozen product and toward the fresh market, led to a reduction in the number of separate fishing operations, and changed the economics of operation. Ongoing research at the AFSC of models of the regional impacts of fisheries, and potential research into the economics of guided charter operations, may eventually provide an analytical base for this type of analysis.

If clients could not, or chose not to, take a halibut trip and did not spend this money elsewhere in the local economy, then the option would result in gross economic losses related to client expenditures. These losses would affect local businesses and local economies. However, although impact multiplier effects may affect the income of persons within a specific region, these effects do not provide a measure of welfare change. Assuming that the markets supplying inputs to the commercial halibut longline and processing industries, and to the guided sport charter industry, are reasonably competitive, this action should not create any significant welfare gains and losses in the regional communities, other than those associated with the producer and consumer surplus changes that occur in those communities.

Local communities have residents who participate in subsistence and unguided sport fishing for halibut. These harvests are not subject to annual catch limits and cannot be directly impacted by guided anglers in the way the commercial longliner harvests can be. In 2008 and 2009, the GHF was used for estimating the Fishery CEY and the commercial catch limit. This may contribute to exceeding the Total CEY if a one-fish bag limit is not imposed, and this may have an indirect impact on subsistence and unguided harvesters. However, as noted in the EA, the IPHC can address such an unexpected reduction by modifications to the catch limit in subsequent years. Many persons believe that guided angler fishing contributes to localized depletion of halibut stocks in areas where guided anglers are active, and that reduced halibut availability can reduce subsistence and unguided sport fishing productivity in areas close to home communities. As noted in Section 4.3.1, current data do not clearly indicate what the causes, magnitude, and geographical distribution of nearshore depletions might be if they are occurring.

The guide moratorium program adopted by the Council at its April 2007 meeting includes measures that would allow certain small rural communities to acquire, at no cost, a certain number of guide permits. The purpose of these measures is to provide opportunities for guided charter fishing in these communities. If the one halibut daily bag limit were to adversely impact small communities, this part of the program could, at least in theory, offset those impacts.

2.5.6 Halibut consumers

The reduction in the allocation of halibut to the commercial longline sector will reduce the amount available to people buying halibut in stores and restaurants. The appropriate measure of gain or loss to these persons

is the change in their consumers' surplus. The use of consumers' surplus in this context is similar to its use in discussing the impacts of the action on clients of guided halibut charters. The consumers' surplus is the amount people would have been willing to pay for a given amount of halibut in excess of what they actually do pay. Consumers' surplus will change because some people won't eat halibut anymore, or will eat less of it, and others will pay more for the halibut they eat.

The most recent econometric analysis of the market for halibut was published in 2004. Herrmann and Criddle (2006) prepared a general econometric model of the market for U.S. and British Columbia halibut. The model included separate but related equations for the ex-vessel demand and the wholesale U.S. demand for Alaska halibut.

If the status quo alternative is chosen in this action, and if the guided halibut charter fishery and its harvest cease to grow, the commercial longline catch limit reductions from this source will stop. Assuming 2008, 2009, and subsequent guided charter harvests remain at 2007 levels, the guided charter fleet would be harvesting about 1.0 Mlb of product. As commercial catch limits fully adjust to this reduction from the Fishery CEY, the commercial fleet would be producing about 1.0 Mlb less of product for consumer markets. This reduction in product will reduce consumer halibut consumption, lead to a loss of consumers' surplus, and prompt consumers to substitute other goods in an effort to minimize their consumer surplus loss. However, the guided charter fleet has grown considerably in recent years, and has (apparently) shown an ability to grow even under the constraints imposed by the 32 inch size limit imposed in 2007. If the guided charter fishery continues to grow, the volume of product produced by the commercial longline fleet will continue to decrease along with consumers' surplus in the final markets served by this sector. These statements assume other factors influencing commercial longline production remain unchanged, which is highly unlikely, over time.

Under the action alternative the guided sport harvest of halibut in Area 2C is expected to get smaller. The size of the decrease will depend on many factors, including the steps guided sport charter operators take to minimize their potential losses, and the impact of these steps and the reduction in the halibut daily bag limit on consumer demand for charters. As discussed in Section 2.5.4, under plausible assumptions, this alternative could reduce the guided sport harvest of halibut in Area 2C to approximately the GHL. This would, with a lag, result in smaller deductions from the Total CEY for halibut, a larger halibut Fishery CEY, and larger production from the commercial longline fleet. This in turn would reduce the price of halibut in the marketplace, increase the amounts consumed, and increase consumers' surplus. Assuming the vast majority of this halibut is consumed in the U.S. domestic markets, these consumers' surplus gains would be a benefit to the Nation, while consumers' surpluses accruing to non-domestic consumers would not.

2.5.7 Management and enforcement costs

Management and enforcement costs in the commercial longline halibut fishery are not expected to change by more than small amounts under either the status quo or the preferred alternative. Management and enforcement expenditures are policy decisions that may be affected by many considerations. However, the preferred alternative doesn't change the regulations governing the longline fleet. Although it should change the volumes of fish delivered by the fleet, this change in volume is likely to fall within the range of harvest volume changes observed in the past. For example, an increase in commercial harvest equal to the entire difference between the most recent year's guided sport harvest and the GHL would be about one million pounds; between 1995 and 2008, the commercial harvest fluctuated between about 6.21 (the 2008 catch limit) and about 10.5 million pounds, a range of 4.29 million pounds. Management and enforcement costs for the commercial longline fishery are paid for by those fishermen through a cost-recovery program.

Regulations governing fishing by guided sport anglers would change. The status quo would maintain a two halibut daily bag limit, with the 32 inch maximum size on one of the fish. The preferred alternative is a one-halibut bag limit without a size limit on the fish.

Guided sport fish enforcement costs under the status quo are expected to remain similar to those in 2007 and 2008. These were the first years under which the status quo was in effect. Thus, no change is expected from the current conditions baseline.

The preferred alternative will increase the opportunity costs faced by clients and guides for complying with regulations since a prohibition on harvest of a second fish imposes greater limits on behavior than the combination of a limit on the size of a second fish and prohibition on harvest of a third. Thus the incentive for individual guided sport fishermen to land fish illegally, and the incentive for individual guides to help them do so, are both increased.

The regulatory change does not involve any change in the kind or the nature of surveillance and enforcement required. One difficulty associated with enforcing a bag limit or minimum size requirement is that in situations with multiple anglers, NOAA OLE has difficulty attributing an individual fish to a specific person.¹⁸ Such attribution requires interviews or investigation, determination of a violation based on the harvest for a group of anglers, or observation of a person harvesting a fish at sea. The enforcement of a bag limit requires on-the-water or dockside enforcement to observe a person with an illegal halibut. For these reasons, enforcement of a bag limit requires regular visits by enforcement officers to areas where halibut are landed. These include remote areas such as lodges as well as urbanized areas (e.g., Sitka or Juneau). Since enforcement of a size limit also requires on-the-water or dockside measures, the one-halibut daily bag limit will not change the necessary approach to enforcement. As noted earlier in Section 2.5.1, this action may reduce the demand for guided charter fishing, and the number of participants. This may reduce the number of separate operations that must be monitored.

Decisions about the level of enforcement effort are a policy decision that, as noted, will be affected by many other considerations, including the availability of enforcement resources and other enforcement obligations. OLE has reported that enforcement occurs on an opportunistic basis. The decision to allocate additional enforcement to this program would properly entail an evaluation of the public interest in doing so, versus doing less enforcement somewhere else. It is unlikely that OLE will receive additional enforcement resources to support this program.

The impact of the preferred alternative on enforcement costs will depend on the way clients and guides respond to the increased opportunity cost of compliance, the way possible demand reductions for guided charters affect the number of operations that must be monitored, the resources available for enforcement, and the identification of enforcement priorities. It is not clear enforcement costs will increase, decrease, or remain approximately the same, but large changes are not anticipated.

Requiring operators to prominently post the size or bag limit requirements onboard charter vessels would help promote compliance. The State could further support this by requiring those businesses selling sportfishing licenses to do the same. However, this is likely to have minimal effect as some charter clients are willing to exceed their bag/possession limits, while risking the limited likelihood that they will be caught. If they are caught in violation, many know that any fines will be minimal and this is a cost they are willing to accept, as it is a fraction of what they have paid for the opportunity to fish halibut in Alaska. In

¹⁸ As noted earlier, ADF&G conducts dockside sampling to collect information on guided charter harvests. This process is independent of NOAA OLE enforcement and the data are not used for enforcement purposes. It probably could not be used for enforcement purposes without compromising the ability of ADF&G to collect accurate data.

addition, fines would most likely be levied on the operator. Some clients are willing to violate the law to keep more or larger halibut than the regulations allow, even if the regulations are posted in plain sight. Some clients may offer the guide incentives to violate the law, or they may choose to fish in remote places to minimize the chance that they would be detected, if they are determined to keep more halibut or larger halibut than the regulations allow. As a comparison, many charter tour operators have posted the Federal marine mammal viewing regulations and guidelines in plain sight on their vessels. NOAA OLE has not received any reports of violations or misconduct from a passenger on any of those vessels. However, OLE does receive reports of violations committed by the vessels that have the information posted from other, non charter or tour vessels that happen to observe these behaviors.

While there are some operations in isolated locations, many boats tie up and operate in close proximity to other charter operations. Even in these areas, it is not reasonable to expect that those operators who are following the rules would be quick to notice another operator who wasn't following the rules. Effective enforcement of proposed management options can only be accomplished by enforcement personnel at-sea and with effective after-the-fact auditing. Competitor charter operators aren't likely to know any more details regarding potential violations than enforcement personnel, unless they are on the catcher vessel witnessing and auditing the activities. The operator of one vessel that is observing the actions of persons onboard another vessel, whether at-sea or dockside, will not know who harvested which fish, if that fish was properly documented in a log book, if the fishermen had a valid fishing license, if the fishermen documented it on the back of the fishing license, the total number of halibut onboard, if the skipper or crew harvested any of the halibut, the total number of fish harvested by each individual for the year, the destination of the halibut, etc.

The commercial longline halibut fishery is equally highly competitive and many boats operate, offload, and tie up in close proximity to each other. In addition, the commercial fleet has processing plant employees, fuel dock employees, harbor department employees, and often ADF&G and IPHC samplers watching their daily activities. Yet, with all this competition and oversight, enforcement does not get many reports of violations from competitor commercial fishermen, even though violations are committed and investigated.

Charter operators are required to have a current Coast Guard license to operate. One of the conditions of the license requires the operator to comply with all Federal regulations. Charter operators potentially risk losing their Coast Guard license if they violate Federal fisheries regulations. However, there has been little precedent for this action and NOAA OLE believes that this is a relatively weak deterrent at this time.

The attributes associated with a charter fishery, along with an enforcement priority for recreational fisheries, and appropriate recordkeeping and reporting, may provide a level of compliance sufficient to ensure the alternatives have the desired effect in controlling charter halibut removals in Area 2C.

2.5.8 Summary of the costs and benefits of the two alternatives

Table 9 summarizes key elements from the preceding discussion. As noted in the introduction to this section, the baseline against which the two alternatives are measured is the situation in 2007. A decision to maintain the status quo regulations may lead to a situation that differs from that baseline, because of other changes that may take place.

Table 9 Comparative Summary of the costs and benefits of the Area 2C one-halibut bag limit halibut charter alternatives

	Alternative 1	Alternative 2
Description	This is the status quo: a two fish daily bag limit, one of which must be less than or equal to 32 inches long.	Preferred alternative: one fish daily bag limit.
Does this alternative meet the objectives of this action?	No. This alternative was in place starting in 2007. Harvest estimates for 2007, which became available in September 2008 show that this alternative did not succeed in reducing guided halibut charter harvest between 2006 and 2007, and that the 2007 harvest was more than twice the size of the current GHL (0.788 Mlb).	This alternative is expected to reduce the harvest of halibut by guided sport fishermen and, to the extent that it does, it will meet the action's objective, at least in part. Under reasonable assumptions it reduces the harvest to the GHL, fulfilling the primary objective for this action.
Charter operation clients	This alternative was in place in 2007, and the harvest information from that year provides no evidence that the status quo led to a reduction in demand for guided charters, or a significant decrease in consumers' surplus for clients. The number of clients served and their associated consumers' surplus could rise under this alternative if other demand conditions permit. On the other hand, the uncertainty associated with the U.S. financial crisis of 2007-08 and the international financial crisis in the fall of 2008, and the relatively high possibility of an economic recession in 2008-09, may have adverse effects on consumer spending and recreational travel. Fuel prices have varied considerably recently, but are currently (October 2008) down from the highs reached in the summer of 2008. Should these rise again, they may also dampen demand by increasing the cost of traveling to Alaska, and of operating charter fishing vessels.	This alternative is expected to reduce the demand for guided halibut charters, and to reduce the consumers' surplus enjoyed by guided charter clients fishing for halibut in Area 2C.
Half-day charter operators	Charter operators are expected to obtain producers' surplus levels similar to those in the 2007 baseline under this alternative, all else equal. This caveat especially reflects the macroeconomic issues described under "charter operation clients."	There may be a decline in the business they receive from permanent or temporary local residents, as these individuals substitute other ways of fishing for halibut. There may be a decline in the business they receive from clients on cruise ships, although this is likely to be a smaller decline, as these clients currently have somewhat limited opportunities to catch two halibut because of their short visits and tightly scheduled port calls.
Full- and multi-day charter operators	Charter operators are expected to obtain producers' surplus levels similar to those in the 2007 baseline under this alternative, all else equal.	These operations are expected to see a reduction in client demand as a result of the one-fish bag limit. The reduction in demand and consequent welfare losses are likely to be greater than for half-day charter operations for this sector as a group, although the impacts may vary among the diverse operations in the sector. The impacts may be somewhat less for more competitive small-scale segments and somewhat more for specialized lodges.
Commercial longline operations	Unless other demand shifters (income, the costs of visits to Alaska) reduce the demand for guided charters, it appears that guided charter harvests	The one fish daily bag limit should lead to a considerable reduction in guided sport halibut harvests compared to the baseline and status

	Alternative 1	Alternative 2
	will remain at levels significantly above the current guideline harvest level of 0.788 Mlb. This will continue the shift in the effective share of IPHC removal limits from the commercial longline to the guided sport charter fishery. This may result in reduced gross revenues and lower quota share prices in this fishery. The greatest impact will fall on persons already in the fishery. Persons who subsequently buy in to the IFQ fishery would pay an amount that reflected the prevailing resource split. That price should capture market expectations concerning future division of the halibut catch.	quo, and is likely to lead to a reduction in the demand for guided sport fishing in Southeast Alaska. In the absence of a large reduction in the quantity of guided sport fishing demanded, a decline on the order of 30% from 2007 levels, this alternative is unlikely to reduce guided sport harvests to the GHL level. In general the beneficiaries of the change will be current quota share holders in the commercial longline fishery, and not persons who subsequently purchase quota share.
Local communities	Both commercial longline and guided charter operations contribute local economic impacts. Available models can't evaluate the tradeoffs in income and employment associated with shifts of production between sectors. Income and employment impacts are not measures of economic costs and benefits and cannot be interpreted as such. Shifts between these two sectors would be expected to have minimal net benefit consequences from a national cost and benefit accounting stance, although this remains an empirical question.	
Seafood consumers	On-going shifts in the effective share of IPHC removal limits from the commercial longline to the guided sport charter fishery may result in some associated loss of consumers' surplus under this alternative. The size and distribution of consumers' surplus changes will depend on a number of factors (e.g., supply from alternative sources, identity of final market), none of which are readily amenable to evaluation here. If demand for guided halibut charter fishing increases, this impact would increase, all other things equal.	Reduction in guided sport halibut harvest could lead to reversion of halibut to the commercial longline fishery and thus, to consumer markets (minus waste). Increases in consumers' surplus would be expected, although, the size and distribution of consumers' surplus changes will depend on a number of factors (e.g., supply from alternative sources, identity of final market), none of which are readily amenable to evaluation here.
General public	The general public may be affected by this action through changes in management and enforcement costs. Management and enforcement costs under this alternative are expected to be similar to those seen under the 2007 and 2008 baseline.	The general public may be affected by this action through changes in management and enforcement costs. Management and enforcement costs under this alternative could be similar to those seen under the 2007 and 2008 baseline. Costs could be greater if a more restrictive one-fish daily bag limit increases the incentive to violate harvest rules and it becomes more difficult to enforce a one fish daily bag limit than a two fish bag limit. Costs could be smaller if declining demand reduces the number of operations that must be monitored.
Net Benefit to the Nation	It is impossible at this time to provide a quantitative estimate of the impact of this action on net benefits. The problem statement identifies a need to address distributional objectives and stabilize the halibut fishery in Area 2C. On these criteria, this action falls short of meeting the objectives of this action. It, therefore, would not be expected to increase the net benefit to the Nation	It is impossible at this time to provide a quantitative estimate of the impact of this action on net benefits. The primary objective of this action is to meet distributional objectives and re-establish stability in the 2C halibut fishery. On these criteria, this action is closer to meeting the stated objectives of this action, and would be expected to increase the net benefit to the Nation, over that of the status quo. The precise size and nature of that net benefit gain remains an empirical question.

3.0 FINAL REGULATORY FLEXIBILITY ANALYSIS

3.1 Introduction

This Final Regulatory Flexibility Analysis (FRFA) evaluates the impacts of a one-halibut daily bag limit on directly regulated small guided sport charter operations in IPHC Area 2C (Southeast Alaska). A small operation in this context is one with annual gross revenues less than \$7.0 million from all its affiliated activities, worldwide, combined.

This FRFA addresses the statutory requirements of the Regulatory Flexibility Act (RFA) of 1980, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996 (5 U.S.C. 601-612).

3.2 The purpose of an FRFA

The RFA, first enacted in 1980, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are (1) to increase agency awareness and understanding of the impact of their regulations on small business, (2) to require that agencies communicate and explain their findings to the public, and (3) to encourage agencies to use flexibility and to provide regulatory relief to small entities. The RFA emphasizes predicting impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts while still achieving the stated objective of the action.

On March 29, 1996, President Clinton signed the Small Business Regulatory Enforcement Fairness Act. Among other things, the new law amended the RFA to allow judicial review of an agency's compliance with the RFA. The 1996 amendments also updated the requirements for a final regulatory flexibility analysis, including a description of the steps an agency must take to minimize the significant (adverse) economic impacts on small entities. Finally, the 1996 amendments expanded the authority of the Chief Counsel for Advocacy of the SBA to file *amicus* briefs in court proceedings involving an agency's alleged violation of the RFA.

In determining the scope or "universe" of the entities to be considered in an FRFA, NMFS generally includes only those entities that can reasonably be expected to be directly regulated by the action. If the effects of the rule fall primarily on a distinct segment, or portion thereof, of the industry (*e.g.*, user group, gear type, geographic area), that segment would be considered the universe for the purpose of this analysis. NMFS interprets the intent of the RFA to address negative economic impacts, not beneficial impacts, and thus such a focus exists in analyses that are designed to address RFA compliance.

Data on cost structure, affiliation, and operational procedures and strategies in the fishing sectors subject to the regulatory action are insufficient, at present, to permit preparation of a "factual basis" upon which to certify that the preferred alternative does not have the potential to result in "significant economic impacts on a substantial number of small entities" (as those terms are defined under RFA). Because, based on all available information, it is not possible to "certify" this outcome, should the action be adopted, a formal FRFA has been prepared and is included in this package for Secretarial review.

3.3 What is required in an FRFA?

Under 5 U.S.C., Section 604(a) of the RFA, each FRFA is required to contain:

- a succinct statement of the need for, and objectives of, the rule;
- a summary of the significant issues raised by the public comments in response to the initial regulatory flexibility analysis, a summary of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments;
- a description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available;
- a description of the projected reporting, recordkeeping and other compliance requirements of the rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record; and
- a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

3.4 What is a small entity?

The RFA recognizes and defines three kinds of small entities: (1) small businesses, (2) small non-profit organizations, and (3) small government jurisdictions.

Small businesses. Section 601(3) of the RFA defines a “small business” as having the same meaning as “small business concern” which is defined under Section 3 of the Small Business Act. “Small business” or “small business concern” includes any firm that is independently owned and operated and not dominant in its field of operation. The SBA has further defined a “small business concern” as one “organized for profit, with a place of business located in the United States, and which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor...A small business concern may be in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the firm is a joint venture there can be no more than 49 percent participation by foreign business entities in the joint venture.”

The SBA has established size criteria for all major industry sectors in the United States, including fish harvesting and fish processing businesses. A business involved in fish harvesting is a small business if it is independently owned and operated and not dominant in its field of operation (including its affiliates) and if it has combined annual receipts not in excess of \$4.0 million for all its affiliated operations worldwide. A seafood processor is a small business if it is independently owned and operated, not dominant in its field of operation, and employs 500 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in both the harvesting and processing of seafood products is a small business if it meets the \$4.0 million criterion for fish harvesting operations. Finally a wholesale business servicing the fishing industry is a small business if it employs 100 or fewer persons on a full-time, part-time, temporary, or other basis, at all its affiliated operations worldwide. A business involved in providing fishing charter services is a small business if it is independently owned and operated

and not dominant in its field of operation and if it has combined annual receipts not in excess of \$7.0 million.¹⁹

The SBA has established “principles of affiliation” to determine whether a business concern is “independently owned and operated.” In general, business concerns are affiliates of each other when one concern controls or has the power to control the other or a third party controls or has the power to control both. The SBA considers factors such as ownership, management, previous relationships with or ties to another concern, and contractual relationships, in determining whether affiliation exists. Individuals or firms that have identical or substantially identical business or economic interests, such as family members, persons with common investments, or firms that are economically dependent through contractual or other relationships, are treated as one party with such interests aggregated when measuring the size of the concern in question. The SBA counts the receipts or employees of the concern whose size is at issue and those of all its domestic and foreign affiliates, regardless of whether the affiliates are organized for profit, in determining the concern’s size. However, business concerns owned and controlled by Indian Tribes, Alaska Regional or Village Corporations organized pursuant to the Alaska Native Claims Settlement Act (43 U.S.C. 1601), Native Hawaiian Organizations, or Community Development Corporations authorized by 42 U.S.C. 9805 are not considered affiliates of such entities, or with other concerns owned by these entities solely because of their common ownership.

Affiliation may be based on stock ownership when (1) A person is an affiliate of a concern if the person owns or controls, or has the power to control 50 percent or more of its voting stock, or a block of stock which affords control because it is large compared to other outstanding blocks of stock, or (2) If two or more persons each owns, controls or has the power to control less than 50 percent of the voting stock of a concern, with minority holdings that are equal or approximately equal in size, but the aggregate of these minority holdings is large as compared with any other stock holding, each such person is presumed to be an affiliate of the concern.

Affiliation may be based on common management or joint venture arrangements. Affiliation arises where one or more officers, directors or general partners control the board of directors and/or the management of another concern. Parties to a joint venture also may be affiliates. A contractor or subcontractor is treated as a participant in a joint venture if the ostensible subcontractor will perform primary and vital requirements of a contract or if the prime contractor is unusually reliant upon the ostensible subcontractor. All requirements of the contract are considered in reviewing such relationship, including contract management, technical responsibilities, and the percentage of subcontracted work.

Small non-profit organizations The RFA defines “small organizations” as any not-for-profit enterprise that is independently owned and operated and is not dominant in its field.

¹⁹ This industry may fall into one of three NAICS industry sectors and all three have a \$7 million threshold. The sectors include NAICS NAICS 721110 ("This industry comprises establishments primarily engaged in providing short-term lodging in facilities known as hotels, motor hotels, resort hotels, and motels. The establishments in this industry may offer food and beverage services, recreational services, conference rooms and convention services, laundry services, parking, and other services."), NAICS 713990 ("This industry comprises establishments (except amusement parks and arcades; gambling industries; golf courses and country clubs; skiing facilities; marinas; fitness and recreational sports centers; and bowling centers) primarily engaged in providing recreational and amusement services."), and NAICS 713930 ("This industry comprises establishments, commonly known as marinas, engaged in operating docking and/or storage facilities for pleasure craft owners, with or without one or more related activities, such as retailing fuel and marine supplies; and repairing, maintaining, or renting pleasure boats. ").

Small governmental jurisdictions The RFA defines small governmental jurisdictions as governments of cities, counties, towns, townships, villages, school districts, or special districts with populations of fewer than 50,000.

3.5 The action

This action pertains to IPHC Area 2C and would impose a one halibut daily bag limit on clients of guided sport charter operators, prohibits the harvest of halibut by charter vessel guides, operators, and crewmembers while clients are aboard, and limits the number of lines that may be used on a charter vessel to six, or to the number of charter anglers onboard, whichever is fewer. This action lifts a requirement that charter operators retain halibut carcasses onboard until fillets are offloaded. This action is described in detail in Section 1.4 of the Introduction.

3.6 Objectives and Reasons for Considering the Action

The purpose of this action is to reduce the harvest of guided charter vessel anglers to approximately the GHL established for Area 2C, while minimizing adverse impacts on the charter fishery, its sport fishing clients, the coastal communities that serve as home ports for this fishery, and on fisheries for other species.

The reasons for considering the action are described in more detail in Sections 1.1, 1.2, and 1.3 of the Introduction, and Section 2.4 of the RIR. The problem statement adopted by the Council in February 2006 is:

Harvest by the guided sport halibut sector has exceeded the Guideline Harvest Level recommended by the NPFMC and established by the Secretary of Commerce. The NPFMC adopted the GHL to address the open-ended reallocation of halibut from the commercial to the guided sport sector and to provide a measure of stability to the halibut industry and coastal communities while the NPFMC develops a long term plan for the guided sport sector. Designing management measures to maintain stability and prevent the guided sport sector from exceeding the GHL during this interim period is the responsibility of the NPFMC.

3.7 Legal Basis of the Action

The Northern Pacific Halibut Act of 1982 (16 U.S.C. 773-773k; Pub. L. 97-176, as amended, “Halibut Act”) authorizes the Secretary of Commerce to enforce the terms of the Convention between the United States and Canada for the Preservation of the Halibut Fishery of the Northern Pacific Ocean and Bering Sea. The Secretary promulgates regulations pursuant to this goal in 50 CFR Part 301.

The Regional Fishery Management Council responsible for the geographic area concerned (i.e., the Pacific or North Pacific Council) may also develop and implement regulations as deemed necessary, to fulfill the purpose of the Convention and this Act. However, the implementation of these regulations is subject to approval by the Secretary of Commerce. The Secretary also has the general authority and responsibility to carry out the Convention, which is the basis of this action.

3.8 Comments

The proposed rule was published in the *Federal Register* on December 22, 2008 (73 FR 78276). An Initial Regulatory Flexibility Analysis (IRFA) was prepared and described in the classifications section of the preamble to the rule. The public comment period ended on January 21, 2009. NMFS received 179 letters of comment with 141 distinct comments.

The following comments addressed impacts on directly regulated small entities; these are the guided charter operations in Area 2C. The final rule contains all comments and responses, including economic comments that do not address impacts on directly regulated entities. The comments and responses have the comment numbers they are assigned in the preamble to the final rule. These comments and responses have been copied verbatim from the final rule. They may contain references to other comments and responses which have not been reproduced here. The reader may find all cross-referenced comments in the final rule itself.

Comment 53: This action will reduce tourist demand for Southeast guided trips. A one-fish limit will make halibut fishing less attractive to charter vessel anglers, and will increase the cost per pound of halibut harvested with the assistance of guides. Quality differences mean that fish purchased in a store are an imperfect substitute for fish harvested in a recreational fishery. Evidence from declining bookings in 2008, questions about bag limits from guided clients and potential clients, cancellations in 2009, and statements made by potential clients, indicate that the one-fish limit will lead to large reductions in visits. Typical comments noted that many operations had reported a decline in bookings, for example, of about 15 percent because of the published one-fish rule in 2008; reduced 2009 bookings; a 20 percent to 30 percent estimate of reduced visits is not unreasonable. One fish per day is too few to justify the high expense of a trip to Area 2C for many potential clients. Many customers will go elsewhere, for example, to other parts of Alaska, British Columbia, or Mexico. It may not be easy for the guided industry demand to recover; the business depends on repeat customers and many of these will now go elsewhere. Uncertainty interferes with willingness of customers to make bookings. The impacts of surprise regulatory changes outlast the regulation by many years. It takes years to build up a client base.

Response: NMFS acknowledges that the reduced bag limit is likely to reduce the demand for guided fishing in Southeast Alaska. Other than acknowledging the potential for lost business, as was done in the analysis, NMFS cannot predict the number of charter vessel anglers that will choose to not take a guided sport fishing trip in Area 2C as a direct result of this final rule. NMFS notes that the current financial climate may be affecting bookings at this time, so that the entire decline in 2009 bookings may not be solely attributable to the pending one-fish bag limit.

Comment 54: Guided charter operations will be badly hurt by the demand decrease associated with this action. Many comments from within the guided industry pointed to concrete instances of the adverse business impacts because of the proposed 2008 one-fish bag limit, and to adverse word of mouth and bookings impacts already observed from the proposed 2009 limit. For example, one lodge operation with 1,000 clients a year is only successful and profitable when booked to 85 percent of capacity. At the time the comment was submitted, bookings were 60 percent, down from 80 percent at the same time the previous year. The business has a very thin margin. A sustained loss of 20 percent of customers means the lodge will no longer be viable. Ultimately the statement in the analysis that some businesses will fail is a gross underestimate. Reductions in demand on the scale necessary to bring harvest within the GHL means bankruptcy for all but a few guided operations. Halibut charter businesses will be devastated and many forced out of business.

Response: NMFS agrees that this action is likely to have adverse impacts on charter business profitability in 2009 and that some charter operators may fail or leave the business, however, NMFS does not agree that all but a few guided operations will go bankrupt. NMFS agrees that an action taken in one year may have impacts on marketing and bookings in subsequent years.

Comment 57: Captains, guides, and crew would like to consume halibut, and it is more cost-effective for them to catch it when they are already on the water guiding than if they have to make a separate independent trip to catch halibut. They can economize on fuel, and other costs, if they take their

recreational harvest incidental to their work as guides and not make special trips. It is recommended that guide and crew personal use fishing be allowed, consistent with regulations, prior to May 16 and after August 15, or some other agreed upon dates outside of the busy tourist season. This would allow taking fish for summer use, then taking fish for winter use. Total restriction of fishing by guides and crew does not achieve the goal of "minimizing the adverse impacts on the charter fishery" which was a NMFS goal in its 2008 proposed rule, or of optimizing benefit to the Nation. Minimization of the adverse impacts will be achieved by allowing personal use fishing by guides and crew to eliminate the expenditure for fuel and other resources that they will unnecessarily incur while trying to put food on their tables.

Response: Prohibitions on retention of halibut by charter vessel guides, operators, and crew may make it more costly for them to harvest halibut for personal use.

In 2006 and 2007, the State Commissioner of the ADF&G (Commissioner), consistent with his authority, issued emergency orders prohibiting the retention of all fish by the skipper and crew of a charter vessel in Area 2C (ADF&G Emergency Orders 1-R-01-06, 1-R-02-07). The Commissioner could not make his emergency order apply only to halibut because the State of Alaska is not authorized to directly regulate halibut fishing. The comprehensive application of the emergency order to all fish effectively prevented charter vessel skippers and crews from harvest of salmon, rockfish, lingcod, and other species. No emergency order was issued in 2008 when NMFS implemented a similar prohibition, but which would only apply to halibut, as a part of the one-fish bag limit rulemaking. No emergency order has been issued as of March 2009.

This action provides charter vessel operators relief from a potential comprehensive state prohibition on skipper and crew harvests by having a federal prohibition on skipper and crew harvest apply only to halibut. Assuming that the Commissioner would issue an emergency order prohibiting skipper crew and harvest if a federal prohibition was not forthcoming, this action would relieve charter vessel skippers and crew from the more comprehensive prohibition against retention of all fish on charter vessels but would impose this prohibition on the retention of halibut. This substitution of the federal restriction for the more burdensome state restriction helps minimize the burden on guided charter operators.

Comment 59: The one-fish limit will lead to legal and illegal avoidance activity. People will try to get around the rules. They may switch to bare boat charters, fail to register as guides or charters, fish for other species and "incidentally" catch halibut, or take other actions. These measures will defeat the purpose of the rules. Some commenters indicated that because of problems they saw with the proposed rule, they would not accept the regulations.

Response: NMFS agrees that this action will increase incentives for anglers to substitute non-guided fishing for guided fishing, and for guides and anglers to conspire to illegally evade the bag limit for guided anglers. To the extent this happens, the reduction in guided sport fishing may be offset to a greater or lesser extent by an increase in unguided sport fishing.

NMFS, however, does not have the information to estimate the extent to which the substitution of unguided for guided sport fishing will take place. Much will depend on the preferences of anglers, their opportunities to fish elsewhere, and the ability of businesses to substitute unguided for guided capacity.

NMFS notes that it would expect proportionately more substitution of unguided for guided sport fishing by persons visiting on multi-day and overnight trips than by persons visiting Alaska on cruise ships.

Comment 60: The adverse impacts to the guided sport fishery will be in addition to adverse impacts associated with the economic crisis, and to adverse impacts associated with restrictions on harvests of other species targeted by sport fishermen. The depressed economy on its own is projected to decrease tourism to

Alaska by 30 percent. The combination of the recession and one-fish limit could reduce total demand by 50 percent. Consideration of the one-fish limit must take account of the 48-inch minimum size limit for king salmon in the second half of the summer, and the prohibition on taking ling cod from June 16 to August 15.

Response: NMFS agrees that the current recession and financial crisis are likely to reduce demand for guided sport fishing trips in the summer of 2009, and perhaps in subsequent years. Moreover, in recent years the State of Alaska has tightened regulations governing the harvest of other species of fish targeted by sport anglers. These tighter restrictions can be assumed to reduce the attractiveness of a Southeast Alaska fishing trip and to reduce the demand for guided charters. The adverse impact of this final rule on guides will be in addition to these other impacts. Although NMFS is unable to quantify these other impacts, they were considered qualitatively in developing the final rule.

Comment 61: This action creates a paperwork burden for guided charter operations. A five-minute response per angler for new reporting requirements adds about a half hour to the paperwork time at the start of each four-hour half-day charter. Did NMFS consider the capabilities of non-English speaking, younger, and older anglers when estimating the compliance burden associated with these requirements?

Response: In the proposed rule, NMFS reported that the new logbook information required for this action includes the regulatory area in which halibut were caught and kept during the fishing trip, the printed name of the charter vessel angler, including youth anglers under 16 years of age, and the signature of the angler on the back of the logbook sheet to verify that the number of halibut caught and recorded is accurate. NMFS estimated that the additional time requirement for each trip was four minutes for the guide and one minute for each angler. For example, for a guided charter vessel with six anglers, total elapsed time to comply with this reporting requirement could be 10 minutes. Actual total elapsed time is likely to be shorter. The discussion in the preamble to the proposed rule did not estimate a reporting burden of five minutes per angler. Only the charter vessel guide would need to have an ability to read and write English. A charter vessel angler would be required only to sign his or her name. This can be done in a minute, on average, even considering the groups identified in the comment.

Comment 62: It is erroneous to assume that all guided sport fishing lodges are small entities. In testimony before the Council owners of certain Area 2C lodges have said that their businesses annually gross between \$7 million and \$12 million. \$7 million is the threshold for identifying large and small entities. The number of large lodges should be documented in the record.

Response: The Regulatory Flexibility Act (RFA) required NMFS to provide an estimate of the numbers of small entities that are directly regulated by the action. The threshold for discriminating between large and small entities under the RFA in this case is \$7 million in gross revenues. NMFS does not have access to systematic estimates of lodge operation gross revenue estimates similar to those that are available for the commercial setline fishery, or for many other commercial fisheries in Alaska. Moreover, the RFA requirement is to provide an estimate of the number of small entities, not the number of large ones. While the analysis did indicate that there may be large lodges according to this criterion, it did not subtract an estimate of their number, which was unavailable, from the count of total entities to estimate the number of small entities. Since the number of large entities is likely to be small in comparison to all entities, it is unlikely that this would seriously bias the estimate of small entities.

Comment 63: This action will not significantly adversely impact angler demand for guided charters and charter operators can address adverse impacts by modifying their operations. One guide indicated that the customers will still come. This was a very small minority among the guides. Similarly, a very small proportion of comments from anglers indicated that they, personally, would not reconsider a trip to Alaska. Another comment indicated that, based on a study given to the Council in June 2007, when asked about the impact of a one-fish limit, as many respondents (26 percent) said it wouldn't make a difference as said they

would be much less likely to return (24 percent). One commenter notes that this will not put the guided charter companies out of business, but will force them to move to a charter business that is friendlier on the natural resource such as catch-and-release and sightseeing.

Response: As noted in its response to Comment 53, this action is likely to reduce the demand for guided sport fishing in Southeast Alaska, as indicated in the analysis. The comment that charter operations may modify their operations so as to take advantage of other Southeast Alaska resources, or to engage in more catch-and-release fishing, is most likely accurate.

Comment 70: The environmental and cost-benefit analyses are inadequate. Commenters had a number of concerns: (a) the analysis tended to provide more information about commercial fishery impacts under the status quo than it did about the costs of the action alternative to the sports fishermen; (b) the analysis failed to estimate the net benefits or costs of the action; (c) additional economic research is necessary; (d) the analysis failed to adequately address the impacts of the status quo on subsistence and non-guided sport users; (e) the analysis failed to adequately recognize that GHL overages are a conservation issue; (f) NMFS erroneously assumes there will be an increase in charter boats and guided harvests in 2008 and 2009 over 2007; and (g) the analysis fails to provide an estimate of the number of large lodges, according to the criteria of the Regulatory Flexibility Act.

Response: Several of these issues have been addressed in other comments. Comment 70(a) is addressed in detail in the response to Comment 71. Comment 70(b) is addressed in response to Comment 73. Comment 70(c) regarding research projects underway, these are identified in the analysis (see ADDRESSES). The response to Comment 72 describes two studies released since the analysis was prepared. With regard to Comment 70(d), NMFS has modified the analysis to provide a brief description of unguided sport and personal use fishing activity. However, the discussion also notes the lack of information on the causes of localized depletion.

In response to Comment 70(e), the relationship of this action to conservation is discussed in detail in the responses to Comments 1 through 27. The response to Comment 7 notes that the environmental assessment part of the analysis is meant to determine whether the impact of the action would have a significant impact on the human environment and does not determine whether an action has a conservation objective.

In response to Comment 70(f), NMFS did not assume that there will be an increase in the number of operations in 2009. NMFS notes that the GHL for 2008 was 931,000 lbs. As shown in Table 1 of the analysis, the guide sector has caught more than the 931,000 lbs every year over the period from 1997 to 2007. The best available harvest information for 2008 indicates that the guided fishery exceeded the 2008 GHL in that year as well. NMFS did not project increases in future guided angler activity. NMFS's conclusions about the impact of the action were based on the assumption that in the absence of action, if guided harvest levels persisted at levels observed in recent years, or even declined significantly, the guided fishery would harvest in excess of the GHL, as observed in recent years.

The response to Comment 70(g) is addressed in the response Comment 62.

Comment 71: The analysis tended to provide more information, including quantitative information, about commercial fishery impacts under the status quo than it did about the impacts of the action on the guided charter fishery. The analysis does not include estimates of gross revenue impacts to the charter fleet, even though NMFS provided such estimates for its analysis of the Catch Sharing Plan. The analysis of the Catch Sharing Plan included rough estimates of revenue impacts accruing to the guided charter fishery from a range of options. A comparison of two of the Catch Sharing options (1c and 2c in Table A-42, page 74) suggests that this action would have adverse revenue impacts of about \$10.4 million in the year the restriction was imposed. Despite the fact that NMFS was able to make gross revenue estimates of the

impacts on guided charter operators from the Catch Sharing Plan action, it has not done so for the current bag limit action.

Response: The analysis includes a qualitative analysis of the impacts to charter vessel anglers (Section 2.5.1) and to guided operations (Sections 2.5.2 and 2.5.3) that is comparable to that provided for impacts to longline fishermen (Section 2.5.4). The analysis does not provide a quantitative projection of the impact on longline fishermen, although it does provide an illustrative table showing the longline costs under the status quo for one set of assumptions.

NMFS has not provided a similar illustrative table for the guided sport fishery because the fundamentally different natures of the products of the two sectors (halibut sold in competitive markets as opposed to fishing experiences which are affected by the availability of halibut) preclude guided charter gross revenue estimates with the information currently available. The output of the commercial longline sector is halibut, and this output in Area 2C is small enough compared to overall output on the West Coast that the impact of changes in Area 2C production on Area 2C halibut prices are probably small. The quantity supplied by the longline sector appears to be closely related to the annual catch quota set by the IPHC. Under these conditions, NMFS has been able to provide illustrative calculations of gross revenues for the longline sector. However the situation is very different in the guided sector. The output in the guided sector is not halibut, but days of angler fishing time. To estimate gross revenue changes in the guided charter fleets, NMFS would have to have demand models based on survey research, which would allow the determination of changes in angler participation in the lodge-based and cruise ship-based industry segments in response to changes in the bag limit. Moreover, NMFS would need better information than it has on the possible guided charter operation supply responses.

The analysis for the one-fish bag limit included the best scientific and commercial information available to NMFS. The Catch Sharing Plan analysis cited in the comment was prepared for the Council. This analysis has not yet been submitted to NMFS for review.

As noted above, the analysis for the bag limit includes a qualitative discussion of the impacts of this action on guided anglers, half-day guided operations, and full and multi-day guided operations. Different assumptions and models will generate different approaches to a problem and different results. NMFS has worked with a conceptual model in which retained halibut catches are one input into the demand for guided charter fishing days. A change in the number of halibut retained will shift the demand curve; guided charter businesses may respond by altering their business models or prices. The impacts will be different in the half-day and full- and multi-day segments of the guided charter business. NMFS does not have the data necessary to better specify or estimate the parameters of this model. As noted in the analysis (see ADDRESSES), ongoing research conducted by NMFS at the Alaska Fisheries Science Center may change this in the future.

The model used for the Catch Sharing Plan implicitly assumes that fishermen come to catch a certain weight of halibut, that the demand in terms of the number of angler-days is fixed for any given GHL, and that demand is not responsive to price or any other factor. The model assumes anglers come to Alaska to harvest 24 lbs of halibut (an estimate based on average harvests by charter vessel anglers in Area 2C) and the model equilibrates so as to set the number of angler-days demanded equal to the GHL divided by 24. The quantity of halibut harvested is central to the Catch Sharing Plan model, while the fishing experience in Southeast is central to the model used in this analysis. As the Catch Sharing Plan analysis notes, the analysis was provided at the request of Council members, despite the impossibility of providing rigorous estimates of charter sector revenue with the information available.

Comment 72: In December 2008, an economic study of the economic impacts and contributions of sport fishing, prepared by the Southwick Associates consulting firm, was published by the ADF&G. The new information in this study should be used in the analysis of this action.

Response: NMFS appreciates this comment, bringing this report to its attention. In fact, since the preparation of the analysis for the proposed rule, two new reports describing the relationship between sport and commercial fisheries and regional economies have become available. One, prepared by consultants to ADF&G, estimates regional impacts for fresh and salt water sport fishing in Alaska; a second, prepared by consultants for a consortium of fishing industry groups, estimates regional impacts for Alaska commercial fisheries. While the two studies are useful additions to the literature on the social impacts of Alaska fisheries, they are of limited use in estimating the impacts of the proposed action in Southeast Alaska.

Both studies are driven by changes in the quantity of the good or service demanded. In the case of the sport fishing study the demand is for days of fishing time, and in the case of the commercial study the demand is for volume of fish products at the first wholesale level. Neither study discriminates between halibut fishing and other types of sport or commercial fishing. This is a more important shortcoming for using the commercial study to evaluate the action's impacts than it is for the sport study, since the level of aggregation is higher in the commercial study. The analyses do not provide information that would make it possible to estimate how this action would change the quantity of the outputs demanded. This is a serious shortcoming since there is great uncertainty about the impact of this action on days of guided sport fishing demanded. Moreover, both studies assign impacts based on the location where the fishing activity takes place, and not on the place of residence of the individuals earning incomes. Thus, for example, the impacts for a charter guide or longline crew member from Washington State or South Central Alaska are attributed to Southeast Alaska, where the activity took place. However, in each case, the individual in question may have had very limited contact with the Southeast economy and may have spent all their income outside of the region. Finally, as noted in the response to Comment 73, these studies are impact studies and not designed for cost-benefit analysis. The sport fishing study results were based in part on survey research on activity and spending during 2007. The analysis did not focus on or provide special information about trips targeting halibut. The information from the commercial study must be inferred from figures because it contains little tabular data.

NMFS recommends reading the actual studies for more information. The sport fishery study, titled "Economic Impacts and Contributions of Sportfishing in Alaska, 2007" is available online at <http://www.sf.adfg.state.ak.us/Statewide/economics/>; the commercial fisheries study, titled "The Seafood Industry in Alaska's Economy" is available at http://www.marineconservationalliance.org/docs/SIAE_Jan09.pdf.

3.9 Number and Description of the Small Entities Directly Regulated by this Action

Federal courts and Congress have indicated that an RFA analysis should be limited to small entities directly regulated by the action. This proposed action would directly regulate small entities providing guided charter services to sport halibut fishermen in IPCH Area 2C.

Table 4 in the RIR shows the estimated numbers of guided bottomfish charter operations active in Area 2C from 1999 through 2007. The number ranged from 351 in 2002 to 403 in 2007. The number has grown each year since 2002. Targeted halibut charter fishing trips are not reported separately, but instead are included under this general target heading. Nonetheless, over three-quarters of "bottomfish" trips are believed to be primarily charters targeting halibut. As noted earlier, bottomfish charters with retained halibut accounted for 80 percent of trips in 2008 and 84 percent of trips in 2007. The table shows that these

businesses operated between 568 and 724 vessels during this period. The number of vessels grew in each year since 2002 (H. Sigurdsson, ADFG, pers. comm., Mar. 21, 2008). Prior analyses, such as the 2003 and 1997 GHF analyses, conducted by University of Alaska, Anchorage Institute for Social and Economic Research (ISER) and Council staff, indicated a substantial amount of entry and exit from the charter sector in Area 2C. These analyses concluded at the time that all of the operations are likely “small entities” based upon SBA criteria, since they were expected to have average annual gross revenues of less than the threshold annual limit of \$6.5 million. The criterion has changed since that time to \$7.0 million, annually.

The largest of the companies involved in the fishery, which are lodges or resorts that offer accommodations as well as an assortment of visitor activities, may be large entities under the SBA size standard. Key informant interviews conducted for earlier analyses indicated that the largest of these companies may gross more than \$7.0 million per year, but that it was also possible that all of the entities involved in charter halibut harvest grossed less than that amount. Data are insufficient to permit this analysis to verify these estimates, therefore all entities are treated as small entities in this analysis. (NMFS 2007b).

3.10 Recordkeeping and Reporting Requirements

The action imposes new recordkeeping and reporting requirements on the directly regulated small entities described in Section 3.8. The Council, NMFS, and ADF&G stressed the importance of minimizing reporting burden on the charter vessel industry and developed a proposed information collection program that would allow for the recording of necessary information in the existing ADF&G Saltwater Sport Fishing Charter Trip Logbook (logbook).

The new logbook information that would be required to be provided for this action includes the regulatory area in which halibut were caught and kept during the chartered fishing trip, the printed name of the charter vessel angler, including youth anglers under 16 years of age, and the signature of the angler on the back of the logbook sheet to verify that the number of halibut caught and recorded is accurate.

As currently required by the State, the charter vessel guide also would be required under the regulations to provide (1) the business license number issued by ADF&G, (2) the charter vessel guide license number issued by ADF&G, (3) the date the charter vessel fishing trip was taken, (4) the Alaska Sport Fishing License number of each charter vessel angler, and (5) the number of halibut retained. At the end of each fishing trip, each charter vessel guide would be required to acknowledge that the information recorded in the logbook is correct by signing the logbook data sheet.

The professional skill that is necessary for each charter vessel guide to record the required logbook information is the ability to read and write in English.

The collection of information has been approved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act (PRA).

3.11 Federal rules that may duplicate, overlap, or conflict with the action

An FRFA should include “An identification, to the extent practicable, of all relevant Federal rules that may duplicate, overlap or conflict with the proposed rule...”

This analysis did not reveal any Federal rules that duplicate, overlap, or conflict with the action.

3.12 Description of Significant Alternatives

As noted above, an FRFA is required to “a description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.”

This analysis examined two alternatives, (1) the status quo, and (2) a one halibut daily bag limit. The objective of this action, as discussed in Section 1.3, is to give effect to the Council’s intent to keep the harvest of charter vessel anglers to approximately the GHL.

The status quo alternative was introduced in 2007, with the intent of reducing Area 2C halibut harvest with minimal impact on demand for guided sport fishing. While the alternative may have reduced charter halibut harvest below what it would otherwise have been, it did not reduce the charter halibut removals from the levels seen in 2006. Instead, both the number of charter customers and the volume of halibut harvested rose to their highest recorded levels. In 2007, the GHL was 1.432 Milb. Since that time reductions in the Total CEY in Area 2C have led to a reduction in the GHL to 0.931 Milb in 2008 and to 0.788 Milb in 2009. The 2007 charter halibut harvest was estimated to be 1.918 Milbs. Thus, the status quo will not achieve the objective of this action.

The impact of the preferred alternative on the charter halibut harvest was analyzed in Section 2.5 of the RIR. A range of harvest results are possible with this alternative. The preferred alternative appears to have the potential to reduce the harvest in the guided halibut fishery compared to the status quo, and, under reasonable assumptions, it may reduce the harvest to from 1.495 Milb (678.1 mt) to 0.685 Milb (310.7 mt). Thus, this alternative is capable of achieving the principal stated objective of this action.

Although the status quo would have a smaller impact on directly regulated small entities it will not achieve the objectives of this action.

NMFS considered numerous alternatives to achieve the objectives of this action, during development of the initial charter halibut regulatory action in 2007 and early 2008. These are described briefly in Section 1.5 of the Introduction and the analysis of each may be found in the April 2008 *Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level measures in the Halibut Charter Fisheries in International Pacific Halibut Commission Regulatory Area 2C* (NMFS, 2008). This earlier analysis found that only the preferred alternative identified in the present action, that is, the one halibut daily bag limit, was capable of achieving the objectives of this action. Thus, these alternatives have been rejected without further consideration at this time.

4.0 ENVIRONMENTAL ASSESSMENT

This Environmental Assessment (EA) describes the impacts on the human environment of the no-action alternative, and of the preferred alternative action to restrict the guided charter halibut harvest in IPHC Area 2C to approximately the guideline harvest level established for the area. The preferred alternative would restrict harvest by imposing a one fish daily halibut bag limit on the clients of guided charter vessel operations in this management area.

This EA aids the agency's compliance with the National Environmental Policy Act (NEPA). The purpose of an EA is to evaluate the environmental impacts of an action to determine if any are significant. If significant impacts are identified, NEPA requires a more detailed Environmental Impact Statement (EIS), or if the analysis results in no significant impacts, a Finding of No Significant Impact (FONSI) may be prepared.

Earlier chapters in this analysis provide several elements of this EA. These include:

- History of this action (Section 1.1)
- Problem Statement (Section 1.2)
- Purpose and Need (Section 1.3)
- Detailed description of the Alternatives (Section 1.4)
- Alternatives considered but not subjected to detailed analysis (Section 1.5)
- Description of the Action Area (Section 1.6)
- The Relationship of this action to Federal law (Section 1.7)
- Background information on the fishery and user groups (Section 2.3)

4.1 Alternatives

The Secretary is considering two alternatives for this action:

Alternative 1: No action. The current limits and requirements will remain in place:

- Two halibut daily bag limit, with one fish less than or equal to 32 inches in length.
- No Federal rule prohibiting skippers and crew from retaining halibut while paying clients are aboard. In the recent past, this has been a State prohibition imposed by emergency order (Em.O.). However, the State does not currently (September 2008) have an effective Em.O. prohibiting skipper and crew retention of halibut, while clients are aboard, in Area 2C. The Em.O. issued on January 26, 2007, was effective from May 1, 2007, through December 31, 2007, and no Em.O. was issued for 2008. The Commissioner of the Alaska Department of Fish and Game has the authority to issue a new Em.O. in 2009, and subsequent years (under 5 AAC 75.003), and has shown a willingness to do so in past years.
- No Federal rule would regulate the number of lines that may be fished from a vessel. However, a State regulation (at 5 AAC 47.030(b) and (g)) would continue to impose a requirement limiting the number of lines to six, or the number of clients, whichever is fewer. Thus, as a practical matter, this restriction would be the same under both alternatives.
- Filleted halibut may be possessed onboard the charter vessel, provided that the entire carcass, with the head and tail connected as a single piece, is retained onboard until all fillets are offloaded.

Alternative 2: Preferred Alternative. The preferred alternative contains the following elements:

- The number of halibut caught and retained by each charter vessel angler in Area 2C is limited to no more than one halibut of any size, per calendar day.
- A charter vessel guide, a charter vessel operator, and a crewmember of a charter vessel must not catch and retain halibut during a charter vessel fishing trip;
- The number of lines used to fish for halibut must not exceed six or the number of charter vessel anglers onboard the charter vessel, whichever is fewer; and
- Repeal the current rule that requires retention of halibut carcasses.

The one-fish daily halibut bag limit applies to guided charter operations. If the operation is actually targeting salmon, the rule would still apply to any halibut bycatch or if the client switched to target halibut later in the day. No more than one halibut could be taken during any guided fishing day. However, if a person fished in guided and unguided sport capacities during a day, the guided limit would apply to guided fishing, and an overall sport limit would also apply. In IPHC Area 2C the daily sport fish bag limit is two fish of any size (73 FR 12292). For example, if a person spent four hours fishing with a guide in the morning, and went out on a friend's boat for the afternoon, the one fish limit would apply to the guided portion of the day and the whole day's fishing could not exceed the two-fish limit for sport fishing. The one-fish morning fishing limit would not be additive to a two-fish afternoon spent in non-guided fishing. More detail is available in Section 1.4 of the Introduction.

4.2 Reasonably Foreseeable Future Actions

Two actions have been identified as reasonably foreseeable with respect to this action. These are the limited entry plan and the catch sharing plan that have been adopted by the Council. These are both discussed in detail in Section 2.3.6.

4.3 Environmental Impacts

The purpose of an EA is to determine whether or not an action will have significant impacts on the human environment. If significant impacts are identified, the appropriate NEPA analysis is an Environmental Impact Statement.

While the CEQ regulations for NEPA (40 CFR 1500-1508) and the NOAA NAO 216-6 have broad policy requirements for significance and defines such as consideration of "context" and "intensity" of the action (40 CFR 1508.27). The resource categories evaluated here include: (a) halibut, (b) groundfish and salmon, (c) seabirds, (d) marine mammals, (e) habitat, and (e) ecosystem.

4.3.1 Halibut

The actions under consideration will affect the distribution of the harvest of a given part of the Total CEY between two sectors, the commercial longliners and the guided sport charter fishermen. A detailed discussion of the impacts of the one fish daily bag limit on the guided sport harvest and on the commercial longline fishermen may be found in Section 2.5 of the RIR. The procedure through which the changing harvest share would occur is described in Section 1.8 of the EA.

The IPHC does not yet explicitly include guided or unguided sportfishing discard mortality when determining the Fishery CEY nor is the incidental mortality in the sport fishery included in the determination of the GHL. As described earlier in Section 2.3.3, the discard mortality rate in the guided sport halibut fishery is believed to be relatively small. The best estimate available is that it is about 5% of the discarded fish. Therefore, release mortality for the guided sport fishery is not expected to substantially increase above status quo.

Another factor that may limit release mortality is the amount of time an angler has available to fish for halibut. Several of the major ports in Southeast Alaska are dependent on cruise ship passengers. These passengers generally take a half-day charter and are thus constrained by the amount of time available for fishing and travel to the fishing grounds. In some ports, the most productive halibut fishing areas are too far away to permit a half-day trip (e.g., Juneau). Anglers are further constrained by local catch rates which generally range from two to five rod hours per fish (Figure 9). Thus, during the allotted time period, anglers would be limited in their ability to optimize the size of fish through catch-and-release fishing. Multi-day anglers would have the greatest opportunity to catch and release fish. However, the ability for these anglers to “cycle” through fish would be dependent on local catch rates and how much time they spent targeting halibut rather than other species (e.g., salmon).

The preferred alternative addresses the resource allocation issues. The actions within the preferred alternative would affect harvest levels and fishing practices of individuals participating in the charter halibut fishery, but not the health of the halibut stock. Regardless of the amount of halibut biomass taken by a sector, no significant adverse impacts to the halibut resource would be expected because the IPHC accounts for all resource removals in the halibut stock assessment when estimating the biomass and setting annual catch limits. While realized IPHC target harvest rates have exceeded their target harvest rates since about 2000, the IPHC has also reduced the total CEY and the fishery catch limit substantially since 2005. Under the status quo, in the short run, it is likely that large guided charter harvests could contribute to exceedence of the exploitation rates on which the IPHC Total CEY for the year were based and exceed the desired exploitation rate contained in IPHC’s harvest policy. However, this could be ameliorated by reductions to catch limits in subsequent years. Compared to the status quo, the preferred action reduces the potential for exceeding the CEY. The IPHC does not currently explicitly account for release mortality in the halibut sport fishery. However, release mortality for the sport fishery is not expected to substantially increase above status quo under the preferred alternative. In addition, the impact of a different size frequency between the setline survey and the recreational catch is relatively minor (Hare and Clark, 2007a).

Current data do not clearly indicate what the causes, magnitude, and geographical distribution of nearshore depletions might be if they are occurring. Any localized depletions resulting from high halibut catch rates may be offset by egg and larval drift and migrations of juveniles and adults. Information about local biomass, immigration and emigration rates, seasonal changes, and the relationship of these factors with environmental characteristics is not available at a fine enough scale to indicate whether localized depletions are occurring in Area 2C. As discussed in Section 2.3.1, the IPHC sets catch limits for the commercial fishery in proportion to the amount of halibut that may be sustainably removed. This strategy protects against overharvest and distributes the fishing effort over the entire geographic range for halibut to prevent regional depletion. The IPHC does not expect small scale local depletion to have a significant biological effect on the resource as a whole. Moreover, the IPHC does not expect temporal depletion. It is likely that those "reallocated" fish would be exploited throughout the commercial fishing season at the current rates, and not as some pulse specifically directed at this incremental addition. (73 FR 30504, May 28, 2008; Williams, pers. comm.)²⁰

Because of the limited and short term impacts of the alternatives on halibut mortality, this action is not expected to produce significant impacts with respect to biomass or fishing mortality. As noted, the IPHC does not expect small scale local depletion to have a significant biological effect on the resource as a whole, and does not expect temporal effects. Therefore changes in the spatial or temporal distribution of fishing

²⁰ Gregg Williams, International Pacific Halibut Commission, P.O. Box 95009, Seattle WA 98145-2009. Personal communication, October 28, 2008.

are not expected to have a significant adverse effect on the ability of the stock to sustain itself under the preferred alternative. As noted in the discussion of biodiversity and ecosystem effects below, this action is not expected to affect the availability of prey for halibut and this would not produce a significant impact with respect to that criterion. For these reasons, this action is not expected to have a significant impact on the halibut resource.

4.3.2 Groundfish and salmon

Guided charter fishermen target species of fish other than halibut, and take other species of fish as bycatch while they are targeting halibut. Alternative target species include salmon (especially Chinook and coho), various species of rockfish (but primarily yelloweye, quillback, copper, rougheye, shortraker, and black), lingcod, Pacific cod, and some sharks. Bycatch while fishing for halibut may include other bottom dwelling species, including non-pelagic rockfish, sculpins, arrowtooth flounder, several other flatfishes, and spiny dogfish and sleeper shark.

There are three ways a two-halibut (with size limit) bag limit and a one-halibut bag limit may differ in their impacts on guided charter harvests of other species.

1. First, the demand for halibut charter fishing and total charter effort (angler-days) may be smaller under a one fish limit than a two-fish limit may. This should reduce the harvests of species taken incidentally while fishing for halibut, and of other species that anglers may target during an angler-day.
2. Second, guides and anglers may shift from targeting halibut to targeting other species with more restrictive halibut limit. In this case, the harvest of other species could increase.
3. Third, if guides and anglers begin to high-grade within the one-halibut bag limit, that is, if they repeatedly catch and release halibut as they try to maximize the size of their halibut catch, they may also increase the incidental catch of other species. On the other hand, if targeted halibut catch and release fishing under the one-fish daily bag limit takes more time than targeted halibut fishing under the status quo, the time spent targeting other species, and the targeted harvest of other species may get smaller.

The decision process for anglers is complex and data are not available to predict how guide and angler behavior may differ between the alternatives. While catches of other species may increase, or decrease, in comparison with the no-action alternative, these effects are not considered significant.

Rockfish

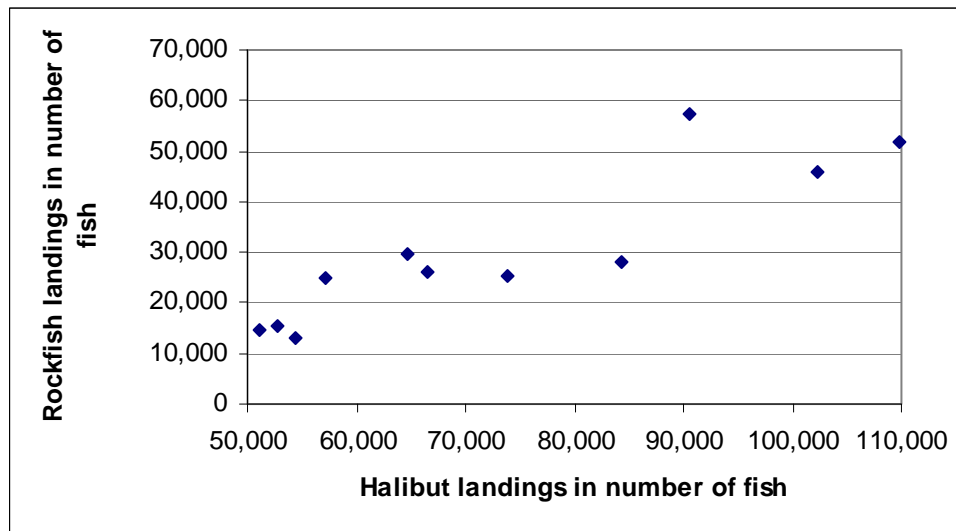
As shown in Table 10, the charter harvest of rockfish increased over the period from 1996 to 2005, rising from about 15,000 rockfish in 1996 to about 57,000 rockfish in 2005. From 2005 to 2007 rockfish harvests appear to have leveled off. The leveling off is associated with a tightening of the harvest regulations in 2006 (Table 11). The rockfish and halibut harvests appear to have a positive association (Figure 13). This is consistent with the fact that rockfish are often caught by anglers targeting halibut, and underlies the potential for substitution between halibut and rockfish harvests if halibut harvests are constrained.

Table 10

Estimated rockfish and lingcod harvest by charter anglers by area and year.

Year	IPHC Area 2C	
	Number of charter harvested rockfish	Number of charter-harvested lingcod
1996	14,591	10,588
1997	13,077	9,355
1998	15,516	11,690
1999	24,815	11,264
2000	26,292	11,805
2001	29,509	8,961
2002	25,346	5,749
2003	27,991	6,551
2004	45,908	9,549
2005	57,381	16,281
2006	51,847	12,237
2007	56,024	8,008

Sources: ADF&G, Statewide Harvest Survey data.



Source: Tables 1 and 11.

Figure 13 Estimated guided charter halibut and rockfish landings from 1998 to 2007

Table 11 Brief summary of projected biomass removal of Demersal Shelf Rockfish in the outer coast of SE Alaska and history of daily bag and annual limit of non-pelagic rockfish.

Year	DSR Biomass removal (mt) on the outer coast	Required retention of nonpelagic rockfish	SE Alaska regional daily bag and possession for non-pelagic rockfish	Annual Limit
1998 1999 2000 2001 2002 2003 2004 2005	47 73 80 71 87 74 104 90	None	Five per day, 10 in possession of which only 2 per day, 4 in possession could be yelloweye for most of SE Alaska. Since 1989, for the Sitka area (Sitka Sound, Salisbury Sound, and Peril Strait) and the Ketchikan area (Behm Canal, Clarence Strait, Tongass Narrows, Nichols Passage, George Inlet, Carroll Inlet, Thorne Arm, Revillagigedo Channel) the bag and possession limit was three rockfish, of which only one could be a yelloweye rockfish.	No annual limit for any rockfish
2006	71 ^{a,b}	All non-pelagic rockfish caught must be retained until the bag limit is reached	<u>Resident and nonresident</u> daily bag limit of three non-pelagic rockfish, of which only one may be a yelloweye rockfish, possession limit of six fish of which only two may be a yelloweye rockfish.	<u>Nonresident</u> annual limit was <u>three</u> yelloweye rockfish.
2007 2008	NA	All non-pelagic rockfish caught must be retained until the bag limit is reached	<u>Resident</u> bag limit is three non-pelagic rockfish only one of which may be a yelloweye rockfish; possession limit of six fish of which only two may be a yelloweye rockfish; <u>Nonresident</u> bag limit is two non-pelagic rockfish only one of which can be a yelloweye rockfish, possession limit of four fish of which only two may be a yelloweye rockfish; .	<u>Nonresident</u> annual limit is <u>two</u> yelloweye rockfish.
Note: this table summarizes the rules for non-pelagic rockfish harvests. Pelagic rockfish rules have been the same through this period: five pelagic rockfish per day, 10 in possession, no annual limit and no size restrictions.				
a - projected; b - First year of allocation Source: NMFS, 2007d; Jaenicke, Mike, ADF&G, pers. comm..				

Rockfish sport harvests consist predominantly of yelloweye, quillback, copper, black, shortraker, and roughey rockfish. Yelloweye, quillback, copper, shortraker, and roughey are non-pelagic rockfish species, and black rockfish is a pelagic rockfish species.

The impacts of the alternatives on rockfish stocks are not expected to be significant because:

- As noted Section 2.5 of the RIR, a one-halibut bag limit is likely to reduce overall demand for guided sport fishing in Southeast Alaska. To the extent that demand for rockfish fishing and demand for halibut fishing are complementary goods, the demand for rockfish harvests would be reduced and would offset substitution effects, at least to some extent.
- Any increase in non-pelagic rockfish catch due to implementation of a one-fish bag limit for halibut would be absorbed by management action for the rockfish fishery. Sport rockfish harvest in outside waters is regulated by the State of Alaska to meet allocations set by the Alaska Board of Fisheries and applied to total allowable catch (TAC) limits set under the Council under the Gulf of Alaska Fishery Management Plan. Catch limits are set after accounting for discard mortality.

- Sport demand for pelagic shelf rockfish or slope rockfish species is very low and unlikely to increase to the point where the combined sport and commercial harvest exceeds the overfishing levels (OFLs) or acceptable biological catches (ABCs) set for these assemblages.

Lingcod

As shown in Table 10, sport charter harvests of lingcod in recent years have been relatively stable. While the charter catch rose to about 16,000 fish in 2005 from about 10,000 in 2004, it fell back in 2006 and 2007, reaching about 8,000 in 2007. Lingcod is also a commercial target species. Harvests are subject to sport fishery slot limit regulations, seasons, annual limits on nonresident and guided anglers, and commercial quota limits. The impact of the alternatives on lingcod are not expected to be significant because (a) as noted above, to the extent that lingcod and halibut are complementary goods, a decrease in demand for halibut fishing will decrease demand for lingcod fishing; (b) recreational and commercial ling-cod fisheries are managed under harvest guidelines based on historical fishery performance and allocations set by the Alaska Board of Fisheries; (c) a harvest increase in the sport sector resulting from the alternatives would likely be small given the existing regulatory constraints.

Other groundfish species

The interaction of halibut harvest and harvest of other groundfishes is poorly documented and not well understood. Any detailed discussion of impacts from the preferred alternative will be highly speculative. Other species taken incidentally in sport charter halibut fisheries include Pacific cod, starry flounder and several other flatfishes, spiny dogfish, sleeper shark, blue shark, salmon shark, and greenling. No sport fish harvest estimates are available for these species for Area 2C. However, the impact of the action on these species is not expected to be significant because (a) as noted above for rockfish and lingcod, reduced demand for halibut fishing may reduce incidental catches of these species; (b) some of these species, such as starry flounder, are not now and are unlikely to become sport fishing targets; (c) should some of these species become targets in the future under either alternative the State of Alaska and NMFS would respond if conservation concerns arose.

Salmon

Guided sport fishermen also harvest salmon, particularly Chinook and coho salmon. Guided charter operators might try to offset the impact of stricter halibut limits under the preferred alternative by increasing harvests of these species of salmon. The impact on salmon species is not expected to be significant because, (a) as noted above, to the extent that salmon and halibut fishing are complementary goods, a decrease in the demand for halibut fishing in comparison to the no-action alternative will decrease the demand for salmon fishing; (b) Chinook and coho salmon harvests in the guided charter sector are subject to State of Alaska catch regulations, including size and bag limits. A non-resident charter angler is required to have a nontransferable annual harvest record in possession while fishing, and may be subject to an annual limit of from one to five king salmon 28 inches or more in length, as established by an ADF&G emergency order (ADF&G). These measures should limit aggregate harvest, spatial and temporal impacts of restrictions on halibut fishing.

4.3.3 Seabirds

The Endangered Species Act of 1973 as amended (16 U.S.C. 1531 *et seq*; ESA) provides for the conservation of endangered and threatened species of fish, wildlife, and plants. The designation of an ESA-listed species is based on the biological health of that species. The status determination can be either threatened (species likely to become endangered in the foreseeable future [16 U.S.C. § 1532(20)]) or endangered (species in danger of becoming extinct throughout all or a significant portion of their range

[16 U.S.C. § 1532(20)]. Species can be listed as endangered without first being listed as threatened. The Secretary of Commerce, acting through NMFS, is authorized to list marine fish, plants, and mammals (except for walrus and sea otter) and anadromous fish species. The Secretary of the Interior, acting through the USFWS, is authorized to list walrus and sea otter, seabirds, terrestrial plants and wildlife, and freshwater fish and plant species.

Species found in Southeast Alaska that are listed under the ESA include Species listed under the ESA include the Steller's Eider (*Polysticta stelleri*) listed as threatened, the Short-tailed Albatross (*Phoebaotria albatrus*) listed as endangered, and the Spectacled Eider (*Somateria fishcheri*) listed as threatened. The Kittlitz's Murrelet (*Brachyramphus brevirostris*) has been proposed as a candidate species (69 FR 24875, May 4, 2004).

In addition to listing species under the ESA, the critical habitat of a newly listed species is designated concurrent with its listing to the "maximum extent prudent and determinable" [16 U.S.C. § 1533(b)(1)(A)]. The ESA defines critical habitat as those specific areas in which are found physical or biological features that are essential to the conservation of a listed species and that may be in need of special consideration. Federal agencies are prohibited from authorizing or undertaking actions that jeopardize the continued existence of a listed species, or that destroy or adversely modify designated critical habitat.

The USFWS listed the short-tailed albatross as an endangered species under the ESA throughout its United States range (65 FR 46643, July 31, 2000). The current population status, life history, population biology, and foraging ecology of these species, as well as a history of ESA section 7 consultations and NMFS actions carried out as a result of those consultations are described in detail in section 3.7 of the PSEIS (NMFS, 2004a). Although critical habitat has not been established for the short-tailed albatross, the USFWS did designate critical habitat for the spectacled eider (66 FR 9146; February 6, 2001) and the Steller's eider (66 FR 8850; February 2, 2001).

In 1997, NMFS initiated a section 7 consultation with USFWS on the effects of the Pacific halibut fishery off Alaska on the short-tailed albatross. USFWS issued a Biological Opinion in 1998 that concluded that the Pacific halibut fishery off Alaska was not likely to jeopardize the continued existence of the short-tailed albatross (USFWS 1998b). USFWS issued an Incidental Take Statement of two short-tailed albatross in a two-year period (1998/1999, 2000/2001, 2002/2003, etc), reflecting what the agency anticipated the incidental take could be from the fishery action. Under the authority of ESA, USFWS identified non-discretionary reasonable and prudent measures that NMFS must implement to minimize the impacts of any incidental take. NMFS has complied with required appropriate measures to comply with these requirements.

In addition to species listed under the ESA, other seabirds occur in Alaskan waters which may indicate a potential for interaction with halibut fisheries. The most numerous seabirds in Alaska are northern fulmars, storm petrels, kittiwakes, murre, auklets, and puffins. These groups, and others, represent 38 species of seabirds that breed in Alaska. Eight species of Alaska seabirds breed only in Alaska and in Siberia. Populations of five other species are concentrated in Alaska but range throughout the North Pacific region. Marine waters off Alaska provide critical feeding grounds for these species as well as others that do not breed in Alaska but migrate to Alaska during summer, and for other species that breed in Canada or Eurasia and overwinter in Alaska. Additional discussion about seabird life history, predator-prey relationships, and interactions with commercial fisheries can be found in the 2004 Final Programmatic Supplemental EIS.

Possible seabird impacts include incidental takes, impacts on prey availability, and disturbance of benthic habitat used by benthic feeding seabirds.

The impact of this action on incidental take is expected to be minimal and not significant. The 2007 EA evaluating Seabird Avoidance Measures in the Hook-and-line Fisheries off Alaska provides the latest information about seabird distribution in Southeast Alaska and hook and line [take] interactions (<http://www.fakr.noaa.gov/protectedresources/seabirds/ea/publicdraft0507/ea.pdf>). Since charter halibut gear are typically rod-and-reel with a maximum of two hooks, interactions with seabirds are unlikely. There are no known reported takes of seabirds in charter fisheries off Alaska, based on best available information. A one-fish daily bag limit may lead to increases in commercial halibut fishing activity if charter fishing levels and charter deductions from the calculation of the Fishery CEY decline. Seabirds are only present to a limited extent in the inside waters of Southeast Alaska. While seabirds are more common in outside waters, and in certain transitional waters, commercial longline fisheries for halibut operating in these areas are subject to strict seabird avoidance requirements (<http://www.fakr.noaa.gov/protectedresources/seabirds/guide.htm>).

As noted above, the preferred alternative may have some impact on harvests of halibut, certain groundfish, and salmon. However, as compared to the no-action alternative, these harvests are not expected to have a significant adverse impact on these stocks. This action is therefore unlikely to have an impact on seabird prey.

Impacts of the gear types affected by this action on benthic and essential fish habitat are described more fully in Section 4.2.6. Rod-and-reel gear probably has relatively little impact. Observations of longline gear indicated that it can be dragged across the bottom while being set or retrieved, or by halibut caught and trying to escape. As it moves, it has been observed to overturn smaller rocks, break hard corals, and dislodge invertebrates and other lightweight objects. Soft corals appear to be unaffected. A one-fish daily bag limit may lead to greater halibut fishing and harvests by the commercial longline fleet than have been observed in the past and these may be associated with greater benthic impact. However, because the action may reduce guided sport harvests to levels observed in the past, any increase in commercial activity and harvest is likely to be similar to that observed in the past. For example, an increase in commercial harvest equal to the entire difference between the most recent year's sport harvest and the GHL would be about one million pounds. This is likely to represent an upper bound estimate of the possible change. Between 1995 and 2008, the commercial harvest fluctuated between about 6.21 (the 2008 catch limit) and about 10.5 million pounds, a range of 4.29 million pounds. Thus, this action is not expected to have a significant impact on benthic feeding sea birds that would affect population survival or reproductive success.

4.3.4 Marine Mammals

The primary categories of marine mammals that may have interactions with the guided sport charter fishery for halibut, or with commercial longline halibut fishermen are sperm whales, killer whales, and humpback whales. Sperm and killer whales are known to attack longline gear to eat fish captured on the gear; killer whales have also been observed to attack sport fishing gear (Matkin et al.). Humpback whales are not known to engage in this behavior. (Lunsford, pers. comm.)²¹ The three impacts under consideration are competition for prey, incidental takes (lethal incidents), and disturbance.

The preferred alternative would have limited impacts on overall harvests of halibut, rockfish, salmon, and other species connected with the two types of fishing operations. The commercial halibut fisheries in Southeast Alaska are not likely to compete with sperm or killer whales, which appear to take advantage of fish captured by participants in these fisheries. Humpback whales feed primarily on schooling fish or

²¹ Chris Lunsford. NMFS Auke Bay Laboratory, Ted Stevens Marine Research Institute, 17109 Pt. Lena Loop Road Juneau, AK 99801. Personal communication, October 29, 2008.

invertebrates, and therefore do not compete for prey with the halibut fisheries. Because this action has no effect on the overall harvest of marine mammal prey species, no effect is expected on prey availability for marine mammals in comparison to the no-action alternative. For this reason, NMFS does not believe that the preferred alternative, in comparison with the no-action alternative, will have a significant impact with respect to competition for prey for these species.

Potential takes may occur following ship strikes on sperm, humpback and killer whales, or from entanglement (or possibly ingestion of gear). Both sport and commercial fishing vessels have been observed infrequently in vessel strikes on whales. (Jensen, pers. comm.)²² If this action does reduce activity by one of the charter boat fleet, there may be an associated increase in activity by commercial longliners as they set and retrieve more gear to take additional allowable harvests. NMFS does not expect changes in vessel strikes to be a significant source of new mortality. Humpback and killer whales have been observed to be entangled in longline gear in Alaska. Sperm whales are known to attack long line gear but entanglements are not recorded in the NMFS AKR Marine Mammal Stranding Database. Researchers have observed that sperm whales predating on longline gear appear to be able to avoid becoming entangled. Research in the eastern Gulf of Alaska is ongoing to develop deterrents to predation by sperm whales on sablefish longlines. (NMFS, 2006) However, because the preferred alternative may reduce guided sport harvests to levels observed in the past, any consequent increase in commercial activity and harvest is likely to be similar to that observed in the past. Thus, this action is not expected to have a significant impact on entanglements. Marine mammal stock assessment reports provide information on fishing mortality for these species, by fishery. The GOA halibut longline fishery has not been associated with serious injury or mortality of these species over the following periods covered by the analysis: (a) humpback whale from 2001-2005; (b) sperm whale from 2001-2006; (c) resident population killer whales 2000-2004. (Marine mammal stock assessment reports conducted pursuant to the Marine Mammal Protection Act available at <http://www.nmfs.noaa.gov/pr/sars/species.htm>). For these reasons, NMFS does not expect entanglement to be a significant source of incidental take and expects no change in the amount of incidental takes for these species.

Disturbance does not appear to be common in these fisheries. While sperm and killer whales seek out the fishing operations, this “disturbance” is not expected to interfere with reproductive behavior, or other behaviors necessary to the survival of sustainable populations. Moreover, the gear may provide the whales with a food source that requires relatively small energy expenditures.

Two distinct population segments of the Steller sea lion, the eastern and western, occur within the action area. The western segment had been designated as endangered under the ESA, while the eastern segment has been designated as threatened. The eastern segment is the primary segment within the action area, although western segment animals may enter it on foraging trips.

Since “Most of the top-ranked prey of sea lions are off-bottom, schooling species...” (Calkins, 1994) this action is unlikely to affect sea lion prey. As noted in the discussion of whales, this action is unlikely to have population level impacts on halibut and groundfish or salmon species.

The List of Fisheries (LOF) required by the Marine Mammal Protection Act lists U.S. fisheries and classifies them on the basis of their level of serious injury and mortality of marine mammals that occurs incidental to each fishery. The proposed list for 2009 (73 FR 33760; June 13, 2008) lists AK Gulf of Alaska longline halibut and Alaska halibut longline/setline (State and Federal waters), and commercial passenger fishing vessel (charter vessel) fisheries. The LOF indicates that: (a) the GOA longline halibut

²² Aleria Jensen. NMFS, Protected Resources, Alaska Region. P.O. Box 21668, Juneau, AK. 99802-1688. Personal communication, October 29, 2008.

fishery has not taken Steller sea lions in the past, (b) the statewide halibut longline fishery has taken western stock sea lions in the past, and that (c) the charter fishery has taken both eastern and western stock sea lions in the past. The report of a statewide halibut fishery take is based on a fisher self-report of one animal in 1994. Because this animal was reported taken in the western distinct population segment it was probably not taken in Southeastern Alaska. Because this appears to be a rare event and is not likely from Southeast Alaska, and because there are no report of takes in the GOA longline fishery, and because the one-fish bag limit would serve to reduce guided sport fishery activity, no incidental takes are expected for these alternatives.

There are no rookeries or haulouts for the western distinct population segment of Steller sea lion found within IPHC Area 2C and this action is not expected to change activity in the vicinity of rookeries or haulouts for the eastern segment, thus this action is not expected to impact disturbance levels.

4.3.5 Habitat

Benthic habitat is bottom living and non-living habitat between the shoreline and the 200 mile outer limit of the US EEZ. Essential Fish Habitat (EFH) is defined in the MSA as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” For the purpose of interpreting the definition of EFH, the EFH regulations at 50 CFR 600.10 specify that “waters” include aquatic areas that are used by fish and their associated physical, chemical, and biological properties and may include areas historically used by fish where appropriate; “substrate” includes sediments, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species entire life cycle.

An EIS that analyzed the alternatives for Essential Fish Habitat (EFH) in the GOA and BSAI noted that little information exists on the effects of longlining on benthic habitat. It did report on observations of halibut longlines and their interaction with bottom habitat made by NMFS scientists on submersible dives off of Southeast Alaska (NMFS, 2005)

Setline gear often lies slack and meanders considerably along the bottom. During the retrieval process, the line sweeps the bottom for considerable distances before ascending. It snags on objects in its path, including rocks and corals. Smaller rocks are upended, hard corals are broken, and soft corals appear unaffected by the passing line. Invertebrates and other lightweight objects are dislodged and pass over or under the line. Fish, notably halibut, frequently moved the groundline numerous feet along the bottom and up into the water column during escape runs, disturbing objects in their path. This line motion was noted for distances of 50 feet or more on either side of the hooked fish. In addition to NMFS divers’ observations, Sigler and Lunsford (2001) cite observations by K.J. Kreiger of small *Primnoa* colonies attached to less than 0.4-m-diameter boulders that had been tipped and dragged, which he attributed to longline gear.

These submersible observations only demonstrate the potential for, and some mechanisms for, effects of longlines on benthic habitat, particularly structure-forming animals. Those observations are insufficient to assess whether habitats are significantly altered at either local or regional levels or whether they vary in fisheries that use different gear or methods (i.e., setting mainline under tension). Further information is needed regarding how much area of seafloor is affected by longlines, the proportion of animals in that area that are affected, the severity of effects, rates of recovery, and the importance of affected structures in the function of EFH. (NMFS 2005)

Guided charter halibut fishermen use rod-and-reel gear with a regulated maximum of two-hooks. This gear has limited contact with the bottom, therefore the potential for effects to the benthic habitat is minimal under the no action alternative.

The one-fish bag limit under the preferred alternative would be expected to reduce the amount of rod-and-reel gear used and may increase the use of commercial longline gear beyond what they otherwise would have been under the status quo. However, because the action may reduce guided sport harvests to levels observed in the past, any increase in commercial activity and harvest is likely to be similar to that observed in the past. As noted earlier, an increase in commercial harvest equal to the entire difference between the most recent year's sport harvest and the GHL would be about one million pounds; between 1995 and 2008, the commercial harvest fluctuated between about 6.21 (the 2008 catch limit) and about 10.5 million pounds, a range of 4.29 million pounds. Thus, commercial harvests under this action are expected to be comparable to historical levels and to have similar impacts. Thus, although the one-fish bag limit may have adverse impacts on benthic habitat, NMFS does not expect these impacts to be significant with respect to complexity, benthic biodiversity, or habitat suitability.

4.3.6 Ecosystem

Halibut is one of four groundfish, in terms of biomass as measured by the trawl surveys, which dominate the Gulf of Alaska ecosystem (S. Gaichas, NMFS, pers. comm.). The others include arrowtooth flounder, walleye pollock, and Pacific cod (in order of importance). Halibut is a top predator in the Gulf of Alaska, and appears to be dependent on pollock stocks, which comprised over half of the diet composition of adult halibut when measured in the early 1990s. Most mortality on halibut is from fishing because they have few natural predators, especially as adults.

Halibut harvests by the charter fishery as well as all other fishery harvests, removes predators, prey, or competitors and thus could conceivably alter predator-prey relationships *relative to an unfished system*. Studies from other ecosystems have been conducted to determine whether predators were controlling prey populations and whether fishing down predators produced a corresponding increase in prey. Similarly, the examination of fishing effects on prey populations has been conducted to evaluate impacts on predators. Finally, fishing down of competitors has the potential to produce species replacements in trophic guilds. Evidence from other ecosystems presents mixed results about the possible importance of fishing in causing population changes of the fished species' prey, predators, or competitors. Some studies showed a relationship, while others showed that the changes were more likely due to direct environmental influences on the prey, predator, or competitor species rather than a food web effect. Fishing does have the potential to impact food webs but each ecosystem must be examined to determine how important it is for that ecosystem.

Little research has been conducted on the specific trophic interactions of halibut. With the complexities associated with halibut trophic interactions and interspecific competition, it is difficult to clearly specify the effects to the ecosystem of the commercial longline, the charter halibut, or other sources of fishery removals.

However, given the nature of the difference between the alternative, in which the actions involve relatively little change in aggregate harvest, or in the timing and location of harvest, the effects of the alternatives on the ecosystem are believed to be insignificant. As noted above, the action is expected to have modest impacts on overall harvest mortality for halibut, groundfish, and salmon. These changes are not expected to lead to significant impacts on predator-prey relationships, on energy flow and balance through the ecosystem, or on species or functional diversity. Removals from the system should not lead to a reduction in species diversity or large changes in the biomass of different species. These removals are thus not expected to reduce functional diversity in the Southeastern ecosystem or to remove genetic components

from fish stocks so as to cause a decline in stock biomass. Thus, this action is not expected to have a significant impact on biodiversity or the ecosystem.

4.3.7 Social and Economic Environment

A description of the charter halibut fishery and detailed discussions of the socioeconomic impacts of the alternatives may be found in the RIR in Chapter 2. Chapter 3 contains an IRFA, conducted to evaluate the impacts of the alternatives on small entities, in accordance with the provisions of the Regulatory Flexibility Act (RFA).

4.4 Cumulative Effects

Effects of an action can be direct or indirect. According to the definition in the Council on Environmental Quality (CEQ) regulations (40 CFR 1500.1) and NAO 216-2 providing guidance on NEPA, direct effects are caused by the action and occur at the same time and place, while indirect effects are those caused by the action and occur later in time or farther removed in distance, but are still reasonably foreseeable. Although the CEQ regulations draw this distinction between direct and indirect effects, legally both must be considered equally in determining significance. In practice, “the distinction between a reasonably foreseeable effect and a remote and speculative effect is more important than the question of whether an impact is considered direct or indirect” (Bass et al., 2001).

The actions under consideration in this EA within the preferred alternative are designed to limit halibut harvests in the charter fishery to approximately the GHL established for Area 2C. Any direct effects or reasonably foreseeable indirect environmental effects from the action would be minor, as explained in the EA. The action itself would not entail changes in stock levels, and any environmental effects, such as the removal of halibut biomass from the ecosystem, are so minor as to make it difficult to reasonably predict further indirect effects of those changes.

As discussed in Section 2.3.6, the reasonably foreseeable future actions that may be relevant are (a) the adoption of a moratorium program for guided sport vessels by the Council at its April 2007 meeting, and (b) the adoption of a catch sharing plan by the Council at its October 2008 meeting.

Limited entry for guided sport charter vessels may limit future guided sport harvests of halibut. However, the connection between measures such as limited entry, that control harvest indirectly, and harvest, are often weak. If entry limitation makes it more profitable for remaining operations to service more clients, they tend to find ways to do so by expanding activity in ways that have not been limited. Depending on other circumstances, the guided sport halibut fleet may take more of fewer halibut, although in general limited entry will tend to constrain effort and harvest. Limited entry may tend to enhance the efficacy of the one-halibut bag limit and make it more likely to reduce harvests approximately to the GHL. However, as noted above, achievement of the GHL will not have significant environmental impacts.

The catch sharing plan will substitute a new and more direct approach to allocating harvest between the commercial longline and guided charter fleets. The catch sharing plan incorporates a one-halibut bag limit for clients. The catch sharing plan will be complementary to the one-halibut bag limit.

These actions, if approved by NMFS, are expected to become effective after 2010 or 2011 and will create a new regulatory structure that will supercede the rules evaluated in this analysis. These new provisions will be evaluated in NEPA analyses conducted independently of this one. These actions will have the effect of limiting the period during which the rules analyzed in this EA will be effective, and will thus reduce any impacts of the current action. For this reason, the reasonably foreseeable future actions would not have

impacts that would cause significant cumulative effects when combined with the direct and indirect effects of this action evaluated earlier.

4.5 Conclusions

National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality (CEQ) regulations at 40 CFR 1508.27 state that the significance of an action should be analyzed both in terms of “context” and “intensity.” Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ’s context and intensity criteria. These include:

Context: The setting of this action is the charter halibut fishery in Area 2C (Southeast Alaska). The effects of this regulation on society, within this area, are on individuals directly and indirectly participating in the charter halibut fishery and on those who use the ocean resources. Because this action would reduce the amount of halibut available to the charter sector, it may have regional impacts on society such as the sport fishing public.

Intensity: Listings of considerations to determine intensity of the impacts are in 40 CFR 1508.28(b) and in the NAO 216-6, Section 6. Each consideration is addressed below in order as it appears in the NMFS Instruction 30-124-1 dated July 22, 2005, Guidelines for Preparation of a FONSI.

1. Can the proposed action be reasonably expected to jeopardize the sustainability of any target species that may be affected by the action? *No. No significant adverse impacts were identified for the preferred alternative. The action is expected to reduce charter vessel harvest of halibut. Total removals from the halibut resource are set by the IPHC at a level determined to be sustainable. No changes will be made to the total amount of halibut harvest (EA Section 4.3.1).*
2. Can the proposed action be reasonably expected to jeopardize the sustainability of any non-target species or prohibited species? *No. There may be some shift in charter vessel fishing effort toward other species like salmon or lingcod, however this shift in effort is not expected to jeopardize the sustainability of any non-target species or prohibited species. The harvest of Pacific halibut will be managed in a sustainable manner based on recommendations by the IPHC and in compliance with the Northern Pacific Halibut Act (Halibut Act, 16.U.S.C. 773 – 773k) and the Convention between the United States and Canada for the Preservation of the halibut fishery of the North Pacific Ocean and Bering Sea, signed at Washington D.C., on March 29, 1979. (EA Section 4.3.2)*
3. Can the proposed action be reasonably expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat (EFH) as defined under the Magnuson-Stevens Fishery Conservation and Management Act and identified in Fishery Management Plans? *No. No significant adverse impacts were identified for the preferred options under Alternative 2. No effects were expected on ocean or coastal habitat or EFH. The action is not expected to increase the intensity of fishing or areas fished under the status quo (the no-action alternative). (EA Section 4.3.5)*
4. Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety? *No. Public health and safety will not be affected in any way not evaluated under previous actions or disproportionately because of the proposed management measures for charter halibut fishing in Area 2C. The action will not change fishing methods, including gear types, or the traditional fishing season for the charter fishery. The proposed action may result in an increase in unguided bareboat charters, but the*

USCG is not convinced that this increase will be large enough to have a substantial adverse impact on public health or safety (RIR Section 2.5).

5. Can the proposed action be reasonably expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species? *No. The rule will not result in significant increase in the harvest of prey species for marine mammals. No interaction between the charter halibut fishery and any listed species has been reported. Further, halibut do not comprise a measurable portion of the diet of any listed species nor do any listed species comprise a measurable portion of their diet. Therefore, because of the location, characteristics of the charter halibut fishery, and amount of harvest that would occur under the action, incidental take and disturbance of marine mammals is not likely to adversely affect endangered or threatened species, marine mammals, or critical habitat. (EA Sections 4.3.3 and 4.3.4)*

6. Can the proposed action be expected to have a substantial impact on biodiversity and ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)? *No significant adverse impacts were identified for the preferred options under Alternative 2. No effects were expected on biodiversity, the ecosystem, or seabirds. (EA Section 4.3.6)*

7. Are social or economic impacts interrelated with significant natural or physical environmental effects? *No. This action is not expected to have a significant impact on the natural or physical environment. (EA Section 4.3.7)*

8. To what degree are the effects on the quality of the human environment likely to be highly controversial? *The impacts of halibut fishing on the marine environment are well understood and not considered controversial. This action is expected to reduce the amount of halibut that may be harvested by a person fishing from a charter vessel. Hence, this action is controversial only in a socioeconomic manner because the harvest reduction may result in a reduction in revenue for the charter fishery. In addition, this action is also part of an ongoing allocation contest between the commercial and sport fishing sectors for Pacific halibut. Future management actions to reduce this controversy are discussed in the analysis.*

9. Can the proposed action be reasonably expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas? *No. This action will have no substantial impacts on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, nor cause loss or destruction of significant scientific, cultural, ecological sensitive areas, or historical resources. Because this action is at sea, consideration park land, prime farmland, wetlands, wild and scenic river, and historic or cultural resources is not applicable to this action. This action will not occur in ecologically sensitive areas such as habitat areas of particular concern.*

10. To what degree are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks? *The potential effects of the action on the harvest of Pacific halibut and groundfish species are well understood because of the fish species, harvest method involved, harvest amounts, and area of the activity. However, angler behaviors in response to the rule are poorly understood, particular in the context of discard rates for Pacific halibut and other species and reductions in demand for angling trips. However, given that harvest for these species are well documented and the species are managed within biological benchmarks, the action will not result in highly uncertain or unique or unknown risks to the sustainability of these stocks and the marine environment.*

11. Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts? *No additional past or present cumulative impact issues have been identified that would accrue from this action. Reasonably foreseeable future actions identified in this analysis will be addressed under additional NEPA analyses as discussed in the EA. This action would not interact synergistically with*

other actions or with natural trends to significantly affect the halibut resource in the Gulf of Alaska. (EA Section 4.4)

12. Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources? *No. This action will have no effect on districts, sites, highways, structures, or objects listed or eligible for listing in the National Register of Historic Places, nor cause loss or destruction of significant scientific, cultural, or historical resources. Because this action is at sea, this consideration is not applicable to this action.*

13. Can the proposed action be reasonably expected to result in the introduction or spread of a nonindigenous species? *No. This action will not introduce or spread a nonindigenous species into the Gulf of Alaska beyond those previously identified because it does not change fishing, processing, or shipping practices that may lead to the introduction of nonindigenous species.*

14. Will the proposed action likely establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration? *No. While future actions related to this action may result in impacts, these actions depend on future decisions by the Council, which are also subject to NEPA, as appropriate. For all future actions pursuant to NEPA, the appropriate environmental analysis documents will be prepared to inform the decision makers of potential impacts to the human environment and to implement mitigation measures to avoid significant adverse impacts.*

15. Can the proposed action be reasonably expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment? *No. This action poses no known violation of Federal, State, or local laws or requirements for the protection of the environment. New charter fishery management measures would be conducted in a manner consistent, to the maximum extent practicable, with the enforceable provisions of the Alaska Coastal Management Program within the meaning of Section 30(c)(1) of the Coastal Zone Management Act of 1972, and its implementing regulations.*

16. Can the proposed action be reasonably expected to result in adverse impacts, not otherwise identified and described above? *No additional past or present impact issues have been identified that would accrue from this action. Foreseeable future impacts are likely socioeconomic and are dependent on action taken by the Council. These potential social and economic impacts are described above and in Section 4.3.7 of the EA.*

5.0 REFERENCES

- Alaska Department of Fish and Game (ADF&G). n.d. Regionwide regulations. (a leaflet on Southeast Alaska sport fishing regulations accessed at <http://www.sf.adfg.state.ak.us/statewide/regulations/southeast/SEregion.pdf> on October 21, 2008.
- ADF&G. 2008. Area 2C Harvest 2007. Leaflet. Accessed at http://www.fakr.noaa.gov/npfmc/current_issues/halibut_issues/ADFG_halibutdata908.pdf on November 5, 2008.
- Bass, R.E., A. I. Herson, and K. M. Bogdon. 2001. *The NEPA Book*. Solano Press Books, Point Arena, California.
- Bruckner, Bryce. 2008. Email, "Big B's Closes Doors for 2008." August 4, 2008.
- Butler, John W. and Earl W. Comstock. 2008. Before the Department of Commerce National Oceanic and Atmospheric Administration, National Marine Fisheries Service. Pacific Halibut Fisheries; Guided Sport Charter Vessel Fishery for Halibut. Docket No. 071031633-7834-01. RIN 0648-AW23. Comments of Scott Van Valin, Ken Dole, Patty Seaman, Tom Ohaus, and Rick Bierman. Available from Records Office, National Marine Fisheries Service, Alaska Region, Juneau, Alaska.
- Calkins, Don. 1994. Steller sea lion. Alaska Department of Fish and Game wildlife leaflet. Accessed at <http://www.adfg.state.ak.us/pubs/notebook/marine/sealion.php> on November 7, 2008.
- Cerveney, Lee. K. 2005. Tourism and Its Effects on Southeast Alaska Communities and Resources: Case Studies From Haines, Craig, and Hoonah, Alaska. United States Forest Service, Pacific Northwest Research Station. PNW-RP-566. July 2005.
- Clark, W. G. and S. R. Hare. 2006. Assessment of the Pacific halibut stock at the end of 2005. International Pacific Halibut Commission Report of Assessment and Research Activities 2005: 81-160.
- Cohen, Kathryn Koutsky. 1983. The Noncommercial Harvest and Use of Halibut in Southeast Alaska: A Summary of Current Information. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 73. Juneau, Alaska.
- Criddle, K., M. Herrmann, S. T. Lee, and C. Hamel. 2003. Participation Decisions, Angler Welfare, and the Regional Impact of Sportfishing. *Marine Resource Economics* 18:291-312.
- Dugan, Darcy, Ginny Fay, and Steve Colt. 2006. Nature-Based Tourism in Southeast Alaska: Results from 2005 and 2006 Field Study. Institute of Social and Economic Research, University of Alaska, Anchorage. October 31, 2006.
- Fall, J.A., M. Kerlin, B. Easley, R.J. Walker. 2004. Subsistence harvests of Pacific halibut in Alaska, 2003. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 288. Juneau.
- Fall, J.A., M. George, B. Easley. 2005. Subsistence harvests of Pacific halibut in Alaska, 2004. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 304. Juneau.
- Fall, J.A., D. Koster, B. Davis. 2006. Subsistence harvests of Pacific halibut in Alaska, 2005. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 320. Juneau.
- Fall, J.A., D. Koster, M. Turek. 2007. Subsistence harvests of Pacific halibut in Alaska, 2006. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 333. Juneau.
- Fall, J.A. and D. Koster. 2008. Subsistence harvests of Pacific halibut in Alaska, 2007. Alaska Department of Fish and Game Division of Subsistence Technical Paper No. 342. Anchorage.
- Forsberg, Joan. 1997. Unpublished manuscript by IPHC biologist.

- Hare, S. and W. G. Clark. 2007a. 2006 Harvest Policy Considerations Pages 75-90 *In*: 2007 International Pacific Halibut Commission Annual Meeting Handout. 130 p. URL: <http://www.iphc.washington.edu/halcom/pubs/annmeet/2007/bluebook/iphcbb07.pdf>
- Herrmann, M. and K. R. Criddle. 2006. An Econometric Market Model for the Pacific Halibut Fishery. *Marine Resource Economics* 21(2).
- Hartman, Jeff. 2002. Economic Impact Analysis of the Seafood Industry in Southeast Alaska: Importance, Personal Income, and Employment in 1994. Regional Information Report No 5J02-07. Alaska Department of Fish and Game. P.O. Box 25526, Juneau, Alaska 99802-5526. October 16, 2002.
- Hiatt, Terry, Ron Felthoven, Michael Dalton, Brian Garber-Yonts, Alan Haynie, Kathleen Herrmann, Dan Lew, Jennifer Sepez, Chang Seung, Leila Sievanen, the staff of Northern Economics. 2007. Stock Assessment and Fishery Evaluation Report for the Groundfish Fisheries of the Gulf of Alaska and Bering Sea/Aleutian Islands Area: Economic Status of the Groundfish Fisheries off Alaska, 2006. Alaska Fisheries Science Center, National Marine Fisheries Service, 7600 Sand Point Way N.E., Seattle, WA 98115-6349. October 23, 2007.
- Jonaitis, Aldona. 1981. Tlingit Halibut Hooks: An Analysis of the Visual Symbols of a Rite of Passage. *Anthropological Papers of the American Museum of Natural History*. Volume 57: Part 1. New York.
- Just, Richard E., Darrell L. Hueth, and Andrew Schmitz. 2004. *The Welfare Economics of Public Policy*. Edward Elgar, Cheltenham, U.K.
- Matkin, Dena R., Janice M. Straley, and Christine M. Gabriele. Killer Whale Feeding Ecology and Non-Predatory Interactions with other Marine Mammals in the Glacier Bay Region of Alaska. *Proceedings of the Fourth Glacier Bay Science Symposium*.
- McDowell Group. 2007. Economic Impact of the Commercial Halibut Fisheries in Areas 2C and 3A. A report prepared for The Halibut Coalition. McDowell Group. Juneau, Alaska. April 2007.
- Meyer, S. 2007. Choice of a Hook and Release Mortality Rate for the Area 2C Charter Halibut Fishery, 2006. Appendix A in NMFS, Regulatory Amendment to Modify the Halibut Bag Limit In the Halibut Charter Fisheries in IPHC Regulatory Area 2C. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis. National Marine Fisheries Service. Juneau, March 23, 2007.
- Meyer, Scott, Mike Jaenicke, and Barbi Failor. 2008. Letter to Calvin Blood of the International Pacific Halibut Commission (IPHC) containing the updated final harvest estimates for 2007 and preliminary harvest estimates, or projections for 2008 for areas 2C, 3A, 3B, and 4. Homer. November 5.
- National Marine Fisheries Service (NMFS). 2005. Final Environmental Impact Statement for Essential Fish Habitat Identification and Conservation in Alaska. National Marine Fisheries Service, Alaska Region. Juneau, AK. April 2005. Accessed at <http://www.fakr.noaa.gov/habitat/seis/efheis.htm> on October 30, 2008.
- NMFS. 2006. Biological Assessment of the Alaska Groundfish Fisheries and NMFS Managed Endangered Species Act Listed Marine Mammals and Sea Turtles. NMFS Alaska Region, Sustainable Fisheries Division. Juneau, AK. April 2006.
- NMFS. 2007b. Regulatory Amendment to Modify the Halibut Bag Limit in the Halibut Charter Fisheries in IPHC Regulatory Area 2C. Environmental Assessment/Regulatory Impact Review/ Initial Regulatory Flexibility Analysis. Sustainable Fisheries Division, Alaska Region, Juneau, Alaska. March 23, 2007. URL: <http://www.fakr.noaa.gov/index/analyses/analyses.asp>

- NMFS. 2007d. Draft for Secretarial Review. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level Measures in the Halibut Charter Fisheries in International Pacific Halibut Commission Regulatory Area 2C. Sustainable Fisheries Division, Alaska Region, Juneau, Alaska. 99802-1668. November 27, 2007.
- NMFS. 2007e. Draft for Public Review. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis for A Regulatory Amendment to Revise Regulations for Seabird Avoidance Measures in the Hook-and-line Fisheries off Alaska To Reduce the Incidental Take of the Short-tailed Albatross And Other Seabird Species. NMFS, Alaska Region. May, 2007.
- NMFS. 2008. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendment to Implement Guideline Harvest Level measures in the Halibut Charter Fisheries in International Pacific Halibut Commission Regulatory Area 2C. Sustainable Fisheries Division, Alaska Region. Juneau, Alaska. April 20, 2008.
- NMFS. 2008b. Pacific Halibut-Sablefish IFQ Report Fishing Year 2007. Alaska Region, NOAA Fisheries, Restricted Access Management. Juneau, AK. April 2008.
- NMFS. 2008c. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis For Amendment 89 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area and Regulatory Amendments for Bering Sea Habitat Conservation. NMFS, Alaska Region. Juneau, AK. May 2008. Accessed at http://www.fakr.noaa.gov/analyses/amd89/earirfrfa_0508.pdf on October 27, 2008.
- NMFS. 2009. Transfer Report Summary. Changes under Alaska's Halibut IFQ Program, 1995 through 2006. NOAA Fisheries, Alaska Region, Restricted Access Management. P.O. Box 21668. Juneau, Alaska 99802-1668. January 2009.
- North Pacific Fishery Management Council. 2003. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendments to Implement Management Options Under a Guideline Harvest Level and/or Moratorium for the Charter Fishery for Pacific Halibut in Areas 2C and 3A. Anchorage, Alaska.
- NPFMC. 2005. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendments to Incorporate the Charter Sector into the Individual Fishing Quota Program for Pacific Halibut in International Pacific Halibut Regulatory Areas 2C and 3A. Anchorage, Alaska.
- NPFMC. 2006. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Regulatory Amendments to Implement Management Options Under a Guideline Harvest Level Options for the Charter Fishery for Pacific Halibut in Areas 2C and 3A. Anchorage, Alaska.
- NPFMC. 2007. Draft Report of the Scientific and Statistical Committee to the North Pacific Fishery Management Council. February 5-7, 2007.
- NPFMC. 2007b. "Halibut Charter Moratorium." North Pacific Fishery Management Council News and Notes. April 2007. NPFMC, 605 W. 4th Avenue, Suite 306, Anchorage Alaska 99501.
- NPFMC. 2008. Draft for Initial Review. Regulatory Amendment for a Catch Sharing Plan between the Halibut Charter and Commercial Longline Sectors in IPHC Regulatory Area 2C and Area 3A. Environmental Assessment/Regulatory Impact Review/Initial Regulatory Flexibility Analysis. NPFMC, 605 W. 4th Avenue, Suite 306, Anchorage Alaska 99501. March 14, 2008.

- NPFMC. 2008b. "Charter Halibut." North Pacific Fishery Management Council News and Notes. April 2008. Accessed at <http://www.fakr.noaa.gov/npfmc/newsletters/NEWS408.pdf> on September 22, 2008.
- Northern Economics, Inc. 2009. The Seafood Industry in Alaska's Economy. Prepared for Marine Conservation Alliance, At-Sea Processors Association and Pacific Seafood Processors Association. January. Anchorage, Alaska.
- Seung, Chang K. and Edward C. Waters. 2009. Measuring the economic linkage of Alaska fisheries: A supply-driven social accounting matrix (SDSAM) approach. Fisheries Research. In press.
- Southwick Associates, Inc., William J. Romberg, Allen E. Bingham, Gretcehn B. Jennings, and Robert A. Clark. 2008. Economic Impacts and Contributions of Sportfishing in Alaska, 2007. Professional Publication No 08-01. Alaska Department of Fish and Game, Division of Sport Fish. Anchorage, Alaska.
- Tersteeg, Diana L. and Michael J. Jaenicke. n.d. Summary Data from the Sport Fishery for Pacific Halibut in the IPHC Area 2C Portion of Southeast Alaska, 2007. Alaska Department of Fish and Game, Division of Sport Fish. Juneau, Alaska.
- U.S. Fish and Wildlife Service (USFWS). 1998. Section 7 Consultation - Biological Opinion for Pacific Halibut Fisheries in Waters Off Alaska, Ecological Services Division, Anchorage, Alaska. URL: <http://www.fakr.noaa.gov/protectedresources/seabirds/section7/biop.htm>

6.0 LIST OF PREPARERS

Ben Muse, Ph.D.
National Marine Fisheries Service, Alaska Region
709 W. 9th St.
Juneau, Alaska 99802-1668

Jonathan King
Northern Economics
880 H. Street, Suite 210
Anchorage, AK 99501

Lewis Queirolo, Ph.D.
Senior Regional Economist
Office of the Administrator, Alaska Region
440 Eagle Crest Rd.
Camano Island, WA 98282

7.0 INDIVIDUALS CONSULTED

Ron Antaya
NOAA Office of Law Enforcement
P.O. Box 21767
Juneau, AK 99802-1767

Melanie Brown
NMFS Alaska Region Alaska Region
709 W. 9th St.
Juneau, Alaska 99802-1668

Jane DiCosimo
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, AK 99501

Mike Jaenicke
Alaska Department of Fish and Game
P.O. Box 110024
Douglas, AK 99811-0024

Aleria Jensen
Protected Resources Division
National Marine Fisheries Service, Alaska Region
709 W. 9th St.
Juneau, Alaska 99802-1668

John Lepore.
NOAA General Counsel, Alaska Region.
709 W. 9th St.
Juneau, Alaska 99802-1668

Chris Lunsford.
NMFS Auke Bay Laboratory
Ted Stevens Marine Research Institute
17109 Pt. Lena Loop Road
Juneau, AK 99801.

Kristin Mabry
Analytical Team
National Marine Fisheries Service, Alaska Region
709 W. 9th St.
Juneau, Alaska 99802-1668

Scott Meyer
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99802

Bob Powers
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99802

Halladora Sigurdsson
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, AK 99802

Gregg Williams
International Pacific Halibut Commission
P.O. Box 95009
Seattle WA 98145-2009

8.0 APPENDIX A: THE ARIMA MODEL

The ARIMA (p,d,q) models allow the analysis to account for autocorrelated (p), stationarity (d), and moving average (q) processes in the data. In layman's terms:

- The autocorrelated process is the effect that an angler's decision to go charter fishing may have on another angler's decision to go charter fishing in subsequent years. For example, an angler has a good charter experience and influences family, friends, or neighbors to go charter fishing in subsequent years.
- Stationarity is whether there is some underlying process driving changes in charter harvest from year to year. For example, many have argued that the low cost of entry into the charter fleet has, over time, resulted in more vessels entering the fleet, lower prices, and greater availability of seats on charter vessels. This trend has been particularly evident in Area 2C as the number of vessels and seats available has grown in recent years (see NPFMC, 2007b). The analysis conducted a series of tests for the presence of a unit root process including the Phillips-Perron, Dickey-Fuller, and the KPSS tests. All of the tests failed to identify a non-stationary process.

- The moving average process may be described as the momentum built up in the system where an action in one year affects the next year. For example, average weights have been increasing for several years so the likelihood in the trend is that the next year will see an average weight increase instead of an average weight decrease.

The ARIMA model takes the functional form of (0,0,1). In other words the model has one lag associated with the moving average term. The analysis selected this combination of lags and differencing by selecting the combination that provided the best log likelihood score. In addition to accounting for the items discussed above, the ARIMA model also includes a weighting system which forces the model to give greater credence to nearer term observations.

Figure 14 shows the ARIMA model results, while Table 13 shows ARIMA model projections against actual harvest weights.

```

. /*ARIMA Model*/
> arima pounds year [iweight=recency], ma(1) nolog;

```

ARIMA regression

Sample: 1999 - 2006 Number of obs = 8
Wald chi2(1) = 0.31
Log likelihood = -1.280589 Prob > chi2 = 0.5784

		Coef.	OPG Std. Err.	z	P> z	[95% Conf. Interval]	

pounds							
	year	.1819136	.3273321	0.56	0.578	-.4596455	.8234727
	_cons	-344.9434	655.1958	-0.53	0.599	-1629.104	939.2167

ARMA							
	ma						
	L1.	-.999999

	/sigma	.3523324	.6430956	0.55	0.584	-.9081118	1.612777

Source: Northern Economics, Inc. Estimates 2008.

Figure 14 ARIMA Model for Area 2C

Table 12 **ARIMA Model Projections**

Year	ADF&G Average Harvest Weight (lb)	ARIMA Project Harvest Weight (lb)
1999	17.8	18.7
2000	19.8	19.4
2001	18.1	18.7
2002	19.7	19.7
2003	19.1	19.5
2004	20.7	19.9
2005	19.1	19.1
2006	19.9	19.9
2007	-	20.2

Source: Northern Economics, Inc. estimates, 2008.

Note: estimated average weight for 2007 not shown because of the potential inconsistency with earlier years associate with the introduction of the 32 inch size limit.

G:\FMGROUP\Halibut GHl 2C - 2009\FR\Area 2C Charter Halibut RIR FRFA EA 2009 03apr09 v1.ea.doc

R:\region\2008\s\dec\Area 2C Charter Halibut RIR FRFA EA 2009 08apr09 v1.ea.doc

Bmuse

Includes regional economist edits; edits from February and March 2009; GC edits; edited on April 8 2009 to include final versions of relevant comments and responses.