TOWARDS A NEW MANAGEMENT APPROACH: DEFINING RECREATIONAL FISHING EFFORT IN THE ALASKA HALIBUT CHARTER FISHERY

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TOWARDS A NEW MANAGEMENT APPROACH:

DEFINING RECREATIONAL FISHING EFFORT IN THE ALASKA HALIBUT CHARTER FISHERY

by

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ABSTRACT

In Alaska, many recreational fishermen gain access to Pacific halibut (*Hippoglossus stenolepis*) with knowledgeable captains aboard chartered sportfishing boats. Traditionally, and when viewed against a backdrop of commercial fishing effort, management agencies and the fishing public perceived recreational fishing as harmless in terms of stock depletion. Recent research suggests this perception is false. Management for the charter fishery has been evolving since 1993, consuming countless hours of industry and management time and resources, still with no settled plan in place. The charter fleet requires a long-term management strategy so that charter operators can plan their businesses for the long-term. This paper addresses management of marine recreational fishing in general, focusing on the Alaska halibut charter fishery.

Part of the challenge with the halibut charter fishery's management development is a lack of definition of recreational fishing effort. I attempt to build an approach to recreational fishery management by segmenting recreational fishing effort into separate categories, selecting those categories present in the Alaska halibut charter fishery, and discussing management tools which may satisfy the needs of that fishing effort. Fishermen in the charter fishery are a diverse group with multiple aims for their fishing trips, which range from high halibut landings to broad recreational experiences in the Alaska wilderness. I suggest queue and lottery type distribution mechanisms, combined with elements of traditional open access tools already common in fisheries, as possible resolutions to the delayed development of a charter halibut management plan.

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LIST OF ABBREVIATIONS

ACA	Alaska Charter Association
ADFG	Alaska Department of Fish and Game
AP	Advisory Panel
APA	Administrative Procedure Act
CEY	Constant Exploitable Yield
EO	Executive Order
GHL	Guideline Harvest Levels
HCWG	Halibut Charter Working Group
IFQ	Individual Fishing Quota
IPHC	International Pacific Halibut Commission
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAN	No-Advance Notification
NMFS	National Marine Fisheries Service
NOAA	National Oceanographic and Atmospheric Associate
NPFMC	North Pacific Fisheries Management Council *or* Council
SSC	Scientific and Statistical Committee
TAC	Total Allowable Catch

1. INTRODUCTION

The Alaska Pacific halibut (*Hippoglossus stenolepis*) charter fishery is poorly understood. This paper argues that management's weak overall grasp of the reasons why recreational fishermen choose to fish is a troublesome contributor to management in the Alaska fishery, and with recreational fisheries management more generally. This paper presents the halibut charter fishery's dilemma in two parts. The first is an attempt to describe the current management conflict in the Alaska halibut charter fishery. The second proposes a means to assess the conflict and generate resolutions to what has proved an intractable management problem. Having discussed these two elements, this paper proposes an approach to improve recreational fisheries management in Alaska.

The halibut charter fishery in Alaska is a guided fishery, and is just one part of Alaska's licensed recreational halibut fishery. Although this is the case, the charter fishery suffers from an identity crisis at the hands of the various governmental bodies tasked with its management. Frequently questioned is its role as either a commercial or a recreational fishery, or some amalgam thereof. This presents a key flaw in charter fishery management, since the tools available for commercial fisheries do not necessarily work for recreational fisheries, and vice versa. The halibut charter fishery does provide access for recreational fishermen, but the charter operators themselves are commercial businesses. Management will struggle to satisfy the charter fishery unless the various management organizations and the charter fleet itself can come to some agreement on what the charter fishery is first. For the remainder of this work I take another tack on the challenge in charter fishery management and focus mostly on those licensed to harvest halibut, the recreational fishermen themselves.

To recreationally fish for halibut in Alaska today, all a fisherman needs to do is purchase a recreational fishing license from the Alaska Department of Fish and Game (ADFG). Licenses are available online at ADFG's site, or at a number of other locations around the State. Once a fisherman obtains a license, he or she may fish for a number of allowed species, including halibut, without further permissions, tickets, stamps, etc. The process is purposefully simple and straightforward, dedicated to providing smooth access for recreational fishermen. Pursuing halibut is more complicated because of the halibut's range and depth, so a boat is almost always a necessity. This is where the guided halibut fishery finds its market, in fishermen who otherwise are unable to get to the fish in deep water and in remote locations. Recreational halibut fishermen use the same license whether they are fishing from a chartered vessel or fishing privately. This license is managed through ADFG, and currently allows for recreational landings totaling two halibut per day. Four halibut is the maximum that any angler can possess at one time, though once the fish are processed in some manner on shore, a fisherman may continue fishing his daily limit. This means, that on a three-day trip, a fisherman could catch his limit on the first and second day, process and freeze his catch on shore, then fish for an additional two halibut on the third day. There are no maximum annual catch or size limits (ADFG 2006a). Although the charter fishery is one part of the recreational halibut fishery, it is the dominant method in both effort and landings for recreational fishermen to access halibut. It is now generally identified as a fishery in its own right, largely separate from non-chartered fishing effort.

Halibut is highly prized for its tender white meat, and is widely known as a culinary delicacy among fishes. Halibut are difficult to obtain, but the Alaska halibut

charter fleet is good at providing fishing opportunities for clients. Their success has spurred rapid annual growth in the fleet since the 1980s (See section 3). Many local commerce organizations and the charter fleet itself are very pleased with the charter fleet's growth. Some groups, like the North Pacific Fisheries Management Council (NPFMC, hereafter Council), are concerned about the charter fleet's unhindered growth, and others, like the commercial halibut fishery, are worried. Some individuals are downright contemptuous about the halibut charter fleet's success. In Sitka during the 2006 summer fishing season, bumper stickers appeared on a few vehicles stating 'charter fishing is an organized crime.' Development of a sound management plan for the charter fishery is ongoing. In 2001 the Council approved an Individual Fisheries Quota program for the charter fleet, but after a series of procedural delays this program was rescinded prior to implementation in 2005 (NPFMC 2005a). My intention is to cast some light on the current management dilemmas in the Alaska halibut charter fishery, and also to provide a discussion sufficiently general for wider recreational fisheries management use. The reasons for examining the Alaska charter halibut fishery are threefold. First, the U.S. fisheries management process has failed to realize a well-developed management plan for the Alaska charter fleet for well over a decade. Second, the conflict between the commercial and recreational/charter halibut fisheries is characteristic of the tension between different fisheries user groups. Third, finding methods to ease management conflicts within recreational fisheries is generally important in light of recreational fishing's global growth.

Since 1993, the Council has worked on the allocation issue between the recreational halibut charter fishery and the commercial halibut longline fishery. The

allocation is derived from the halibut population's Constant Exploitation Yield (CEY), as determined by the International Pacific Halibut Commission (IPHC). First the IPHC determines by management area the halibut total exploitable biomass (Figure 1). To find the annual CEY for each management area, the IPHC applies a fixed harvest rate (comparable to $F_{0.1}$) to the estimated exploitable biomass. The total amount harvestable under the applied fixed harvest rate becomes the year's CEY. Directed halibut fisheries, which include the commercial fisheries in all regulatory areas from the Aleutian Islands to the continental United States, and sport fisheries in British Columbia (Area 2B), Washington, and Oregon (both states are Area 2A), receive a fishery CEY, from which the regional management authority will determine a final allocation for each area. The annual fishery CEY is the difference between the CEY and an estimate of all unallocated uses, which include "bycatch of legal-sized fish, wastage of legal-sized fish in the halibut fishery, fish taken for personal use, and sport catch except in Areas 2A and 2B" (45, IPHC 2005).

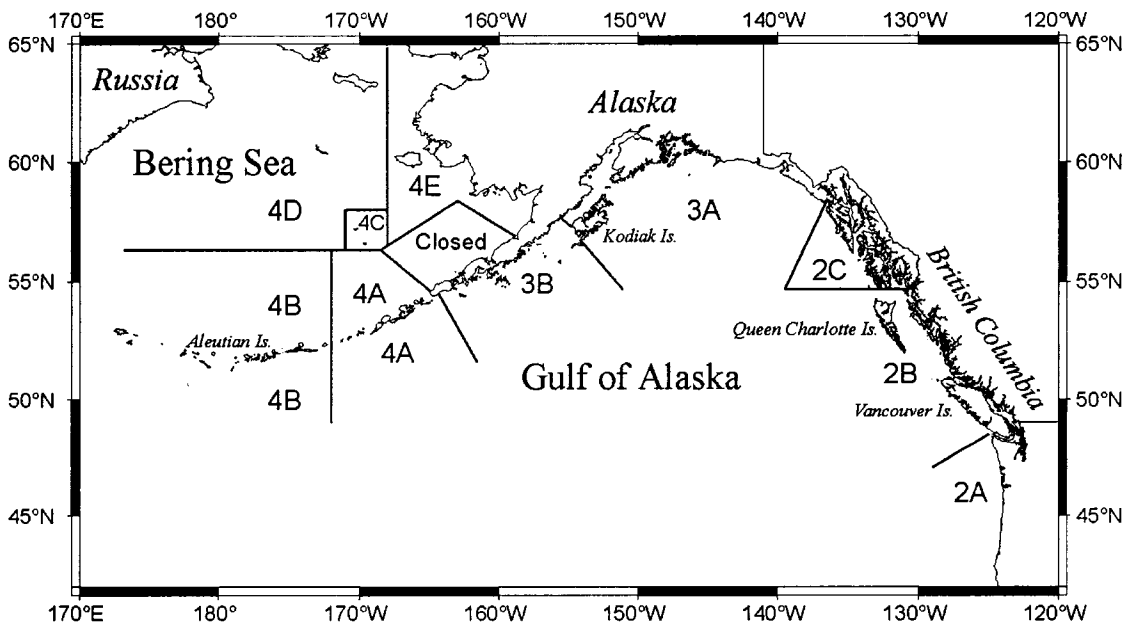

Fig. 1. International Pacific Halibut Commission Management Areas (IPHC 2006).

The commercial longline fishery argues that it is losing an ever-larger percentage of the CEY to the halibut charter fishery. The IPHC currently includes the charter fishery in its list of unallocated uses, and deducts charter landings from the fishery CEY (NPFMC 2001b). This role for charter landings in the IPHC process is the result of policy decisions prior to the charter fishery's recent growth. It is probably fair to say that settling this allocation issue has proven a greater challenge than originally anticipated. The Council has worked for fourteen years on a comprehensive management plan for the charter halibut fishery, and the issue is still unsettled (NPFMC 2006b). The situation in Alaska is especially complex; involving parties from the international (IPHC), federal (National Marine Fisheries Service), regional (Council), state (ADFG), commercial, and non-charter recreational fisheries in addition to the charter fleet itself. Each player in the Alaska charter issue seems to hold a different view of the purpose of the charter fleet or why recreational fishermen choose to hire a fishing charter, and the differing views make evaluating appropriate management strategies problematic. Council involvement in 1993 formalized the halibut fishery's conflict, but tension has always existed between Alaska's varied halibut fisheries.

The different governmental groups interact in unique ways compared to other Pacific fisheries. Halibut, a trans-boundary stock, is managed under the Northern Pacific Halibut Act (16 U.S.C Sec.773 1982) and the Magnuson Stevens Fishery Conservation and Management Act (MSA, 16 U.S.C. Sec.1801 1996). The Halibut Act overrides portions of the MSA and delegates oversight of halibut to the IPHC. The IPHC is a jointly-funded Canada/United States research and management organization. As explained earlier, the IPHC conducts halibut population assessments and allocates the

annual CEY to commercial fisheries along the entire West Coast and sport fisheries from British Columbia to the continental United States. Once they determine the fishery CEY, it is up to the Department of Fisheries and Oceans (DFO) in Canada and the Council process in the United States to allocate halibut further, including setting bag limits and other controls for recreational fisheries. ADFG operates at present as a data gathering and end-point management group for the IPHC and the Council, and has a voting seat on the Council. Unlike other licensed recreational fisheries in Alaska, ADFG is only one part of the process rather than the sole custodian of recreational halibut management in Alaska. It is unique that ADFG is so removed from the management of a recreational fishery, given that most U.S. recreational fisheries fall under state management. Depending on the waters fished, commercial fisheries come under both state and Council management.

In the 1970s ADFG created a charter registration for Alaska's various ocean-going guided sport fisheries. According to ADFG Sport fish division's Deputy Director, the charter fleet "operated in a vacuum" without any specific guidelines for operator qualifications, vessel safety standards, or specific fishing regulations.[1] Despite this lack of focused charter management measures, ADFG still required recreational halibut fishing licenses and fishermen were required to follow all other applicable recreational fishing regulations. In the 1980s Alaska imposed the charter fleet's first safety-oriented guidelines through United States Coast Guard (USCG) certification. In 2005, ADFG established a charter-specific license over registration for charter operators. Rigorous logbook requirements were not introduced until the early 1990s, with the most recent major revision in 2005.[2] In the year prior to these most recent changes, charter halibut

operators fished under their first Guideline Harvest Level (GHL) as developed at the Council. This Council action was the first implemented attempt to mitigate the impact of charter landings on the commercial sector. The GHL is a soft cap, which means that exceeding the cap does not require immediate management action.[3] If charter landings exceed the pre-established GHL, as they have in Southeast Alaska (Area 2C) in 2004 by 22 percent, and again by 36 percent in 2005,[4] then the National Marine Fisheries Service notifies the Council and negotiations begin to bring charter halibut landings back within the GHL (NMFS 2005a). Current management tools directed at halibut harvest are daily bag limits for each recreational license. Other management tools exist, directed at charter operators, such as the logbook and licensing requirement. Pre-season estimates in 2005 predicted that the strictest limits proposed using these tools will still fail to bring charter landings within the GHL. Final post-season estimates for 2005, released in late 2006, showed an even greater disparity between the GHL and actual landings.

Most parties involved in charter management see a flaw with this approach, which is the delay between the close of a fishing season with an exceeded GHL and the consideration and implementation of corrective management measures. For years that was as far as consensus reached on the issue. Recently the Council found wide support for a moratorium on charter operator entry, revered as a "kumbaia moment" for many long-involved in the process.[5] A stakeholder working group, the Charter Committee, evaluated different strategies for charter management and presented their findings to the Council in 2006. The Halibut Charter Working Group, similarly tasked, offered their recommendations to the Council in late 1993. Due to a series of procedural delays and possibly some political intervention, the first working group's recommendations were for

naught when the 2005 Council rescinded a 2001 Council management plan for the charter fleet. Further detail on management development in the charter fishery will come later in this paper.

Work is only recently emerging in the literature that explores the impact of expanding recreational fisheries on existing recreational and commercial fisheries. This is surprising given the considerable social and economic value which recreational fisheries are generally held to provide. Recent research suggests that the impact is significant and growing (Kirkegaard and Gartside 1998; Kearney 2001; Garcia-Moliner et al. 2002; Coleman et al. 2004). Sometimes the recreational impact exacerbates declining stocks in some commercial fisheries. Sometimes stock depletion comes from recreational effort alone. Either way, the implication of a growing recreational impact means fisheries management must take steps to guide this developing effort (Kearney 2001).

Creating suitable alternatives to the current management approach in recreational fisheries has so far proved difficult. The reasons are different from those common in commercial fisheries. For example, much of recreational management falls victim to imprecise descriptions of the fishery (Kearney 2001). Current management strategies do not account for fundamental user group differences. Managers must have a very clear sense of a fishery's purpose before they can approach that particular fishery's management. It is those differences that need attention in order to find the right management tools.

Common approaches used to evaluate commercial fisheries fit recreational fisheries poorly (Kirkegaard and Gartside 1998; Garcia-Moliner et al. 2002; Schroeder

and Love 2002). Instead, management appears to take a one-size-fits-all approach that fails to recognize the unique attributes of individual recreational fisheries. This is arguably one of the primary reasons why many conflicts in recreational fisheries management remain unsettled. With recreational landings and demand on the rise both in Alaska and around the globe, more precise management is needed to address conservation and to mitigate social problems (Kirkegaard and Gartside 1998).

1.1 Research Problem

The purpose of this paper is threefold. Firstly, it is to determine why a management plan for the halibut charter fishery is not yet in place. Secondly, it is to identify the features of this management challenge that require new, creative solutions. Thirdly, it is to suggest a possible way for management in the charter halibut fishery to proceed beyond its current impasse.

1.2 Methodology

Methods for pursuing the above research problem include a review of previous studies on the Alaska halibut charter fishery. The review also includes an examination of studies related to recreational fisheries management that bear on user group conflicts similar to those encountered in the Alaska halibut charter fishery. Following the literature review I provide a more detailed discussion of the current conflict in Alaska with an overview of the U.S. policy-making process for fisheries. I will then turn to a presentation of a new assessment method for recreational fishing effort. The presentation will lead to an analysis of management tools that hold promise for Alaska's halibut

charter fishery. Research also involves an analysis of pertinent statistics on the Alaska halibut fisheries, discussions with individuals involved in the conflict, and relevant personal experience from the Alaska fisheries. This process will culminate in a connection between the diverse values recreational fishermen bring to a fishery, and the way fishermen pursue their respective harvest goals. Through an analysis of recreational fishing motivations, I hope to find a more appropriate suite of management tools for the halibut charter fishery. The method developed here may prove relevant and useful for the management of other recreational fisheries as well.

There is little published peer-reviewed research on the Alaska halibut charter fleet and their interactions with the commercial fishery. In addition, recreational management in the Council is in its infancy, so the outcome of this research will depend heavily on an ongoing broad dialogue with people from NMFS, IPHC, ADFG, the Council, the charter fishery, and both commercial and recreational fishing sectors. I will draw on the work of Kearney (2001) and others whose research is related to this budding area in fisheries management. To this end, I will meld published academic work and conversations within the Alaska fisheries in the anticipation of producing a proposal of merit.

2. Previous Studies and Discussion

Critics of fisheries tend to focus blame on either management of the commercial sector or commercial fishermen themselves when a fished species is in decline. Recent literature suggests recreational fisheries also play a part (Kearney 2001; Pitcher and Hollingworth 2002; Post et al. 2002; Coleman et al. 2004). Frequently expressed in this literature is the surprising absence of further published and reviewed sources directly

related to marine recreational fisheries issues. Many argue that this is because of "the perception that recreational fishing had little influence on stock declines" (1958, Coleman et al. 2004; Schroeder and Love 2002).

Bob Kearney addresses this lack of research repeatedly (Kearney 1994, 2001, 2002a,b). He is perhaps the first to ask "why haven't even the most important recreational fisheries been extensively studied?" (15, Kearney 1994). Although much of the recreational fisheries literature I reference in this paper was published after 1994, Kearney's concern for recreational fisheries is still well founded. He lists common problems and perceptions in recreational fisheries management: a widespread belief in a limitless ocean, commercial fishing's ruthless impact, absent research, and weak, if any, monitoring. One of his more telling observations is as follows: "[a]nglers, and angling bodies, didn't really want to know what the total catch was, probably because of a combination of the perception that 'we couldn't possibly be the problem' and perhaps a hidden fear that if the truth came out catches might be restricted" (15, Kearney 1994). This is echoed in more recent research (Kirkegaard and Gartside 1998; Schroeder and Love 2002).

Literature in other areas can provide good information for use in marine recreational fisheries. Taking a page from inland fisheries management, Wikle (1991) discusses several rationing methods and uses an uncommon approach for identifying those most suitable for a particular fishery. The methods considered are: price, merit, lottery, first-come-first-served, advanced reservation, and priority for first time users. Wikle focuses on "public acceptance of alternative rationing policies" because successful resource management requires user buy-in (389, Wikle 1991). He suggests that a useful

step toward this goal is to ask the public which method is preferred. This is because perceptions of management methods can vary greatly between managers and the public. This paper's approach is similar, insofar as anticipating recreational fisherman's reasons for fishing, and subsequently managing with tools appropriate for those reasons.

Two of Wikle's suggested tools come into play in this research; advanced reservations and lottery distribution. Advanced reservations are a queue-type of distribution tool. Similar to a first-come-first-served model, the queue is a method for fishermen to confirm their privilege of access to the fishery. Wikle (1991) cites Stankey and Badden (1977) for their concerns with advanced reservations. Discrimination against users who make "spur-of-the-moment decisions" is unavoidable, meaning that only those "who live and work orderly lives" will benefit from advanced reservation methods (390, Wikle 1991). For the purposes of this paper, the sort of people who plan their activities will be 'Advance Notification' (AN) fishermen, and those who do not plan their fishing will be 'No-Advance Notification' (NAN) fishermen. Complications with advanced reservations begin with no-shows and people who "strategically make multiple reservations" in order to keep their options open (390, Wikle 1991). These issues typically result in underutilization, with the potential for local economies to suffer unanticipated losses in-season. The other burdens of advanced reservations are the inevitable voluminous paperwork and communication associated with organizing reservations to access a given resource (Wikle 1991). Those issues which Wikle (1991) cites concerning underutilization are most likely not a factor in the charter fleet (fishing trip no-shows and fishermen who make multiple reservations), as long as there is some process to redistribute un-harvested halibut in the same season.

A member of the most recent Charter Committee, Rex Murphy, put forward a proposal for charter halibut management based on advanced reservation. The Murphy Proposal (2006) uses halibut tickets to distribute halibut to recreational fishermen. His proposal originally avoided splitting allocation between the charter and non-charter sectors, instead distributing halibut to the entire recreational halibut fishery with halibut tickets. This means that all halibut harvested recreationally in Alaska would require first a halibut ticket specific for the landed fish, whether landed from a charter boat or privately. The current version of his proposal provides an option for the combination of charter and non-charter halibut distribution. In this paper's analysis, I use Murphy's proposal as an example of a queue for halibut. I also articulate my own ideas for a lottery to distribute halibut.

A lottery, although far from economically efficient, is the most equitable method for distributing a resource (Hardin 1969). Lotteries distribute all rents as user surplus to anyone winning the lottery. A lottery also presents a cost and time burden to those holding the lottery, both toward collecting applications and notifying users after the lottery (Wikle 1991). Thus far, lottery use is more common in land-based recreational management, such as federal park access or big-game hunts. Lotteries are rarely used in recreational fisheries, probably because of an absent realization that recreational fisheries require some sort of limited access management. This warrants further discussion about the nature of lottery allocation (Coleman et al. 2004).

The complexities of fisheries mean that no lottery for a fishery could exist without modification. There are many facets to designing a resource lottery, such as transaction costs, area exceptions or permissions, etc. Transferability of a won lottery ticket is one of

these issues sometimes questioned. Creating a transferable lottery ticket would undermine some of the equity found through a random drawing, and it would introduce a secondary market for fisheries access counter to the purpose of the lottery. Issuance of a lottery ticket to a third party, such as a fishing guide, may work for some fisheries where guide use is high. Controls must be in place so that a guide or other third party could not unduly profit from offering this ticket to fishermen.

Kerr (1995, 351) approaches price and lottery allocation with the assumptions that transaction costs are zero, there is a fixed overall use allowed, and the 'marginal social cost of [the] resource is zero for all use levels." Kerr concludes that since "(1) price allocation always yields greater expected aggregate benefits than lottery allocation; and (2) lottery allocation always yields greater expected consumer benefits than price allocation...there will be consumer preference for lottery allocation. This result occurs because, while price allocation may be efficient, the efficiency gains will not flow to the resource users unless they are also the resource owners." (362, Kerr 1995).

Koh et al. (2006) provides further support for lottery allocation. Their study focuses on the differences between lottery and queue distribution, rather than lottery and price as in Kerr (1995). Dependent on the consumer's time spent in a queue, and how they value that time, the queue's efficiency will improve as the cost of time in the queue increases. This means fewer people will participate because of the high participation cost. Barzel (1974) also notes inefficiencies with queues, in that participants with the lowest time-value (i.e. easily able to join a queue) may receive less benefit than those whose time-costs are higher. These values are unknown much of the time, especially when considering benefits other than monetary value. Koh et al. (2006) finds lotteries as

both the more efficient and more equitable choice for distribution under many circumstances. They go further to propose modifications to a lottery when a queue is otherwise the more efficient choice, suggesting that a lottery is the superior allocation mechanism through its adaptability and innate equity. The key modification Koh et al. propose is to create separate lotteries within a distribution for different user group types. Koh et al. suggest dividing a lottery among different incomes, but other demographic splits are possible. This could help ease tensions between different user groups seeking a share of some pre-determined allocation.

A modification already common in lotteries is the use of a point system. Buschena et al. (2001) discusses the point system for Elk permits in Colorado. The points are awarded to lottery losers from prior years. These points build to give an applicant a probabilistic advantage in the following year's draw. Here is an example:

> "...assume that Sally has five preference points for her first choice of an archery only hunt in Colorado's Game Management Unit 10 and that there are 20 such tags available. Sally will receive the license with certainty as long as there are no more than 20 applicants with five or more preference points. Suppose, however, that 15 people have more than five preference points and 10 people have five. Those with more than five preference points will be guaranteed permits. Sally will enter a random lottery for the remaining five permits with the 9 others who also have five preference points, and each will have a 0.5 probability of being drawn. Any person applying for this permit with more than five points (e.g., Sam with seven preference points) will obtain the permit and will surrender all of his accumulated preference points" (35, Buschena et al. 2001)

These systems are in use in hunts elsewhere in the United States, but Alaska has consistently turned down proposals for preference points. According to ADFG Deputy Director of Wildlife Conservation, the Alaska Board of Fish and Game consistently votes against a preference point system because it favors seasoned hunters. In the example above, Sally has entered the lottery for five consecutive years and lost every time because

she has not acquired enough preference points. Lotteries are desirable because there is no guarantee that one entrant will win over another. A preference point system guarantees that a new entrant will surely *not* win the lottery until they have built up the appropriate number of preference points to compete with long-time participants. Using the current system without preference points, and only a restriction on entry from prior-year lottery winners, means that "the 30 year resident has no preference over a new resident."[6]

Whatever management plan the Council establishes for the Charter fishery will of course impact all recreational halibut fishermen. If the fishermen themselves are not considered in a permanent management plan, then they will receive only marginal benefit from the fishery. Kearney (2001) provides a list of recreational fishery user types meant to satisfy the aim of including recreational fishermen's views. His list goes well with the conclusions of Wikle (1991) and Kerr (1995). Defining recreational fishing types on a multi-dimensional scale is an important goal for recreational fisheries management. Lists of recreational fishing types similar to Kearney's appear in the literature periodically. Each time, the particular definition of recreational fishing effort comes under a slightly different heading, from relative skill (Oh and Ditton 2006), to anticipations of leisure (Holland and Ditton 1992), to technical approaches (Bryan 1977).

Holland and Ditton (1992), and Oh and Ditton (2006) follow a track similar to Kearney's (2001) to assess which experiences recreational fishermen value the most. Holland and Ditton's (1992) survey group consists of 166 members in a Texas fishing club. They find that the reasons why most respondents fish is a complex set of feelings toward recreation, and only 6 percent are primarily focused on catching fish. Holland

and Ditton's survey is limited to one region, but applying their approach to the charter fishery would benefit ongoing management development.

Oh and Ditton (2006) also assess recreational fishermen by their experiences, but they focus on the specialization level of recreational fishermen. Their mail survey of 1,377 fishermen in Texas (with 791 responses) did find a positive trend between fishing specialization and the fisherman's interest in more restrictive management practices. The more casual the fisherman, the more interested he is in relaxed bag limits and lesser limitations on his fishing. In general, Oh and Ditton determine that skilled fishermen are more interested in the fishing experience than in the pursuit of higher catch rates. This seems to fit broader assumptions about fishing skill level, such that as fishing skill increases, the desire for high volume landings decreases. In lieu of high landings, skilled fishermen have a desire to pursue more challenging methods of capture (i.e., switching from spinning gear to fly gear), and seek more unique experiences from their fishing trips. Although charter fishermen are limited to two halibut per day and four in possession, there is no annual limit to their harvests. Landings beyond the possession limit are possible and common in the halibut fisheries.

Bryan (1977) is the earliest source I find which evaluates recreational fishermen types. He segments fishermen in Wyoming into four groups: technique-setting specialists (professionals), technique specialists (avid fishermen), generalists (weekend warriors), and occasional anglers. It is apparent from the work of Bryan (1977), Holland and Ditton (1992), Kearney (2001), and Oh and Ditton (2006), that no particular assessment technique is standard for evaluating recreational fisheries. As such, the use of such assessments for management is casual and applied only in a modest sense through

discussion with no formal assessment. Without the appropriate access to evaluation procedures at this time, I will use Kearney's (2001) list among those available for the charter fishery, and I encourage a more thorough study at the governmental level in Alaska. The list itself and my interpretation are discussed in a subsequent section.

Studies specific to charter fishing in the United States are beginning to appear in the literature. Holland (1998) follows up on earlier research (Ditton et al. 1988; Holland and Milon 1989) and begins describing the breadth of charter fisheries in the Gulf of Mexico. Holland found existing charter fishing effort for 23 different species in the Gulf of Mexico charter fisheries, and noted uncertainty toward Mexican charter fisheries and their impact on Gulf of Mexico fish stocks. Steinback (1999) applies the Impact Analysis for Planning (IMPLAN) system to the Maine charter fisheries. IMPLAN is a tool which contributes to regional Economic Impact Assessments (EIA), an approach used in the U.S. fisheries policy process. Steinback's work is foundational for jumpstarting a dependable method for conducting EIAs in other states. However, IMPLAN requires extensive knowledge of a fishery's demographics. Such information is not available for most recreational fisheries.

Van Voorhees et al. (2002) conducts a pilot study of how the government collects information on Gulf of Mexico charter boat effort. They find that asking charter boat operators about client landings provides a more accurate cross-section of the fleet's harvest than surveying the fishermen themselves. This is a situational experience, since the charter operator logbook program in Alaska in the late 1990s showed a greater variation from actual landings than when ADFG surveyed fishermen. Garcia-Moliner et al. (2002) presented findings on general charter activity in the U.S. Caribbean, including

Puerto Rico and the United States Virgin Islands. They note an absence of continued charter fishery management and observation in that region, despite the region's 50 year history of charter fishing. Due to this lack of observation, their study works to establish some baseline for future management by assessing the types of charter activity present, the species targeted, and typical areas fished. They provide some helpful commentary on the need to establish more oversight in the region's expanding charter sector. Grado et al. (2003) perform an economic analysis of charter businesses in the Mississippi Gulf Coast for 2001. Similar to the efforts of Garcia-Moliner et al. (2002), Grado et al. work to establish baselines for future management and economic trends in the charter sector. The research described above is foundational to a growing body of literature on charter fisheries. However, they are not directly related to the issue at hand and will therefore not be discussed further here.

There are few papers outside of government documents directly related to the Alaska halibut charter fishery. The earliest of these is the NMFS commissioned report by Wilen and Brown (2000). Wilen and Brown examine quota transfer options for the proposed 2001 charter halibut quota system. They approach a series of transferability options by discussing major efficiency and distributive issues within those options, outlining possible outcomes for no-lease and leasable quotas, and other proposed controls. They favor unencumbered leasing, and at one point argue that the restricted quota blocks in the commercial quota system are so inefficient that they miss a potential $55 million in additional revenue. The discussion is presented with economic efficiency as the primary goal in this management plan, with negativity expressed toward tools

which limit otherwise uninhibited trade between or within the sectors (Wilen and Brown 2000).

In Wilen's (2001) assessment for the Council, he provides further information on the potential impact of a charter quota system. Exploring price differences between a quota system, open-access, and the Guideline Harvest Level (GHL) plan, Wilen draws two important conclusions concerning quota systems. One, that recreational supply and demand will determine quota price (rather than the other way around, a common assumption), and two, that trip costs will likely decline in the long run with more efficient business practices. Wilen notes that both quantifying and finding qualitative opinions on what will happen in the long run for the charter halibut fishery is difficult. Both of Wilen's papers were applicable when a quota program was a viable option for the charter fishery, but Wilen will contribute little to the evaluation of a queue or lottery process described later in this paper.

Other work published after the 2001 Council decision to implement a charter halibut quota program (NPFMC 2001a), but before the quota program was rescinded in Council (NPFMC 2005a), is Criddle et al. (2003) and Criddle (2004). Criddle et al. explores changes in angler welfare using a number of different variables, from trip costs to anticipated landings. Their focus is pacific halibut, and their base for the study is a large section of Area 3A called Cook Inlet. Cook Inlet is a large protrusion into central Alaska, linking Anchorage to the Pacific Ocean. The area is a popular destination for charter fishing, where inland residents can easily charter a boat instead of concerning themselves with the work of maintaining their own vessel, and where out-of-state fishermen can access both the amenities in Anchorage and find a suitable Alaskan fishing

experience. Criddle et al. (2003) find that increases in a fisherman's expected halibut catch will provide clear increases in angler-days fished, and that increasing trip costs (whether through abundance changes, management restraints, etc.) will cause a decrease in angler-days fished. This exploratory study provides a good background for the halibut fishery.

Criddle (2004) steps away from isolated sportfishing impacts and instead assesses changes to a fishery when multiple user types compete for a single species. Criddle applies a series of models to the pacific halibut fishery in an attempt to account for sport, consumer, and commercial use. He finds that there is more than one optimal situation depending on the allocation structure. Equally important, Criddle finds that the various optimal situations are "inferior to all other solutions from the perspective of at least one of the three stakeholder groups" (162, Criddle 2004). Criddle describes six different management objectives: Maximum Sustainable Yield (MSY), maximum net revenue for commercial users, maximum net benefit for consumers, maximum net benefits for both consumers and commercial users, maximum net benefits for the sport sector, and maximum net benefits for all three sectors. Criddle's model is very informative regarding the possible management options for multi-user fisheries. His final recommendations coincide with those of prior studies. Criddle is a proponent of rights-based management and finds that a charter halibut quota system, among other benefits, has "the potential to reduce allocation battles between the commercial fishery and the largest segment of the sport fishery" (165, Criddle 2004). The IFQ system, although rescinded in 2005, is still a potential option as the Council continues its deliberations on future charter management (NPFMC 2005a).

The above studies supplement the wide body of government documents from the Council, NMFS, and ADFG. The most detailed work on halibut comes in the form of Council assessment documents, written whenever a Council action would significantly impact how a fishery operates. These documents make up a combined Environmental Assessment/Regional Impact Review/Initial Regulatory Flexibility Analysis (EA/RIR/IRFA). This paper references two, one from just prior to Council approval of a quota system for the charter fleet in 2001, and another from early 2006, when the Council considered lowering individual bag limits to bring the charter halibut harvest back within the GHL. Combining the myriad discussion papers, committee letters, and other documents associated with the Council process, we can follow the structured evolution of U.S. fisheries management. In addition to the EA/RIR/IRFA documents I use meeting minutes, which include testimony from the United States Coast Guard's stance on safety in the charter fleet (NPFMC 2005a). Other documents essential to this research are some of those produced by the current Charter Committee. Different proposals, such as the Murphy proposal introduced earlier, come to the Committee from members and other stakeholders. Each expresses another potential remedy for charter fishery management.

Most information on charter fishery demographics I obtain through personal communications with various stakeholders, since formal studies are few. So far, only one such study proves useful. McDowell (2005) performed a detailed analysis of charter effort in Sitka, Alaska in 2005. Based on airport surveys of recreational fishermen departing Sitka, the McDowell Group assembled a cross-section of the fishing effort types common to charter fishing in that area. This might appear as a biased sample, but Sitka is a remote location and is only accessible by sea or air. Although I have no hard

data on transportation choices for charter fishermen in Sitka, the cost and time it takes to travel by ferry versus by plane is great. It is safe to assume that the bulk of charter fishermen travel to and from Sitka by air. This study is likely applicable also to much of Southeast Alaska. Demographics of other areas along the Alaska coast on charter fishing effort would be very useful, but at the time of writing I am unaware of any other studies on this topic.

3. Alaska Halibut Charter Management

The Alaska charter halibut fishery is one of the most popular recreational fisheries in Alaska (Criddle 2004). This popularity initially grew without much state attention to charter operator qualifications or management of the charter fishery. As stated earlier, the charter fleet "operated in a vacuum"[7] through the 1970s. The Halibut charter fleet operated under open-access conditions for decades, which theoretically ended with Council involvement and the implementation of the GHL. Charter harvests in Areas 3A and 2C have shown marked increases since 2002, but overall recreational halibut harvests in Southeast and Southcentral Alaska have been growing since at least 1977 when ADFG began its annual mail surveys (Figures 2 and 3; Meyer and Stock 2002; White and Jaenicke 2003, ADFG 2006d). Although information on overall recreational harvests dates to 1977, ADFG data specifying landings from either charter or non-charter effort begins in 1986. Figure 2, below, shows this general upward trend in halibut landings for Southcentral Alaska (Area 3A) only, but is representative of the landings trend in Southeast Alaska (Area 2C) as well. Halibut harvest data for 2C before 1996 was not available. In addition, information up to 1995 for Area 3A is only available in numbers

of halibut. Figure 3 shows the most precise information available on overall halibut landings, including average weights by Area for both 2C and 3A.

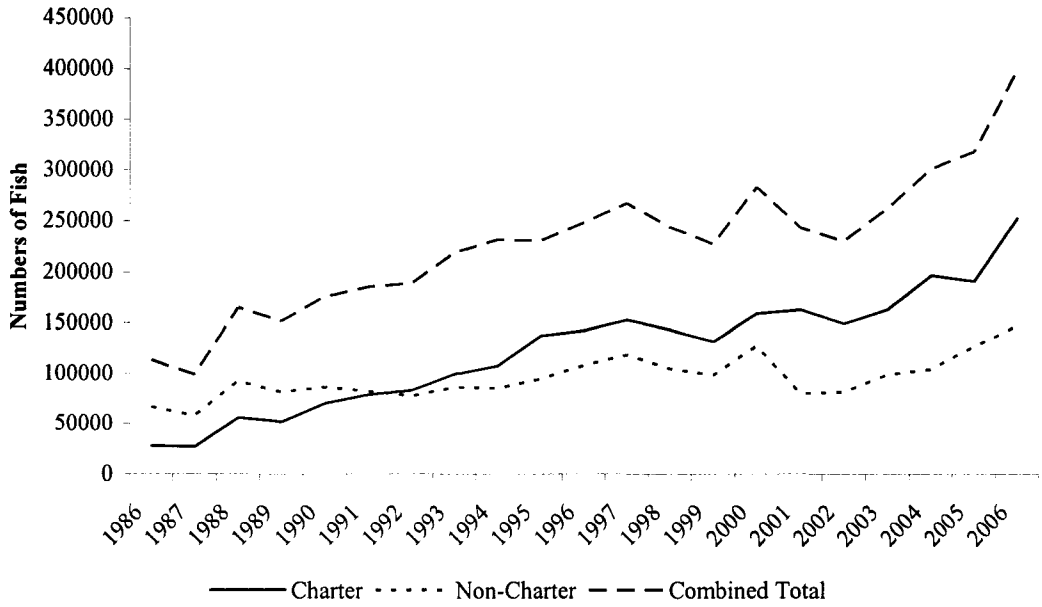

Fig. 2. Recreational Halibut Harvests for IPHC Regulatory Area 3A, 1986 to 2006[8] (Meyer and Stock 2002; Meyer 2003; ADFG 2006b,d. 2006 figures are preliminary. Author's Compilation).

Halibut assessment for both Canada and the United States is conducted through the International Pacific Halibut Commission (IPHC) as dictated by the Halibut Act, mentioned earlier. The fishery CEY determined at IPHC is a biological mark, no more than a recommendation and not a dedicated allocation to the commercial fleet. Acceptance of IPHC recommendations and commercial allocation is conducted at the federal level. After determining the various halibut stocks' estimated exploitable biomasses, the IPHC removes all non-commercial uses (such as subsistence, recreational, bycatch, and others) to determine a final allocation for the commercial fishery. The IPHC includes an element for consideration of market conditions prior to a final fishery CEY determination. Through this process, the percentage of commercial quota declined

in an 'open-ended reallocation' to the charter fleet. 'Open-ended' means that the charter fleet effectively grew without an allocation restraint, the only limit being the number of fish a charter fisherman could catch and the number of fishermen a charter operator could carry in a season. The commercial fleet subsequently brought this concern to the Council's attention in 1993, after which the Council created the Halibut Charter Working Group (HCWG) to consider the dilemma.

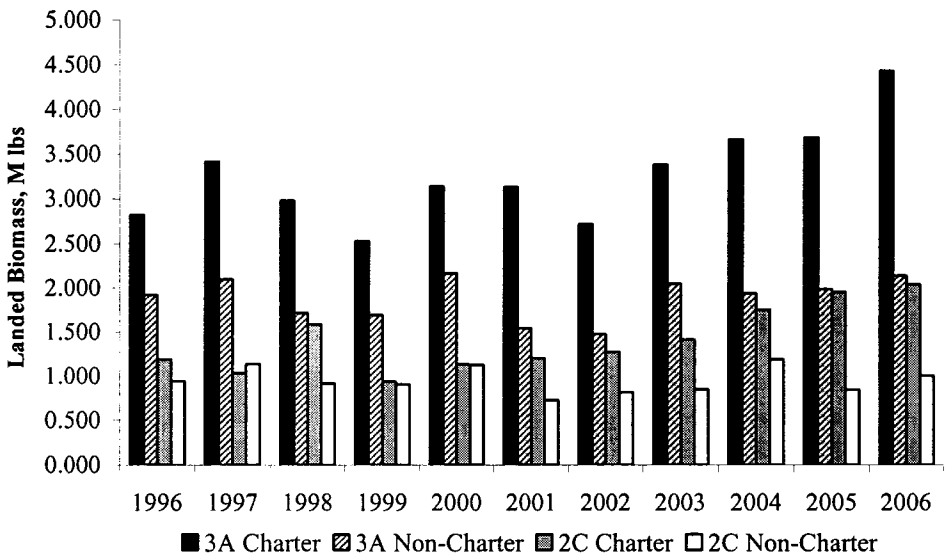

Fig. 3. Recreational Halibut Harvests in Alaska, IPHC Regulatory Areas 2C & 3A, 1996-2006[9] (ADFG 2006b,d. 2006 figures are preliminary. Author's Compilation).

The HCWG presented its findings to Council later in 1993, beginning a long and yet incomplete process to bring long-term management to the charter halibut fishery. Section 3 below will provide more detail on this management development. In December 2005 the Council passed an ADFG motion to rescind the Halibut Charter Individual Fisheries Quota (IFQ) program, a program rooted in the HCWG (NPFMC 2001a, 2005a,b; NMFS 2005a). This action reverses twelve years of industry-supported debate,[10] including "over 8,000 public comments on managing the charter halibut fishery" (4, NPFMC 2001a). It should be noted at this point that at no time in the charter

halibut IFQ program's development did ADFG ever support the program.[11] The Council appointed another workgroup, the Charter Halibut Stakeholder Committee, to review charter halibut management. This committee developed alternatives, including the recently rescinded IFQ option, and presented them to the Council in December 2006. Council action has now been delayed to 2008 pending further review of the proposed alternatives, discussed below. After the Council takes final action on their preferred alternative, Council staff will complete an EA/RIR/IRFA and forward the management action to NMFS for further review and publication in the Federal Register. Publication of the final rule may take up to a year after the Council's final action. The following is a discussion of the U.S. policy-making process regarding the development of charter management.

3.1 Policy-Making and Charter Management

Developing management plans or actions within the United States fishery management system follows three steps. The process begins with public concern proposed in Council on a given issue. The second step is Council review and development of management options or alternatives. The third step is a federal review within NMFS of proposed Council actions, with any final adjustments to a plan or action made after federal review (NMFS 2004).

Council meetings are held five times annually. Members of the public usually propose an issue to the Council during the regular public comment period at every meeting, but Council members may also present proposals for consideration. The Council will rank the various proposals, addressing the most critical first. The Council's

standing industry Advisory Panel (AP) takes the proposals and identifies a set of alternatives for the proposals they feel are most urgent. After receiving public testimony and the AP's recommendations, the Council will develop formal problem statements for those proposals warranting further investigation. Sensitive issues will go to an ad-hoc stakeholder committee, such as the recent Charter Halibut Stakeholder Committee. Council members or others interested in a proposal may also prepare statements for presentation. In addition, the Scientific and Statistical Committee (SSC) will address the biological and ecological elements of an issue. This accumulation of research is presented at a subsequent Council meeting, where either the Council will request more research and recommendations on the issue, or they will select which alternatives their staff will prepare for a formal vote at a later meeting (NMFS 2004).

At this point the Council staff will work with ADFG and NMFS to clarify that all alternatives follow the necessary regulations. The Council aims for a six-month window between the October and April meetings to prepare most analyses, issues of greater complexity can take much longer and may require more complex documentation (NMFS 2004). AP, SSC, and public commentary on draft analyses documents are also accepted during this process. Once a review is complete, the Council will hear again the proposed alternatives and vote on which one the Council will submit for NMFS review.[12] The Preferred Alternative then follows a detailed review at the NMFS Regional office prior to official Council submission to the Secretary of Commerce. Figure 4 displays the Council's consideration process for management actions.

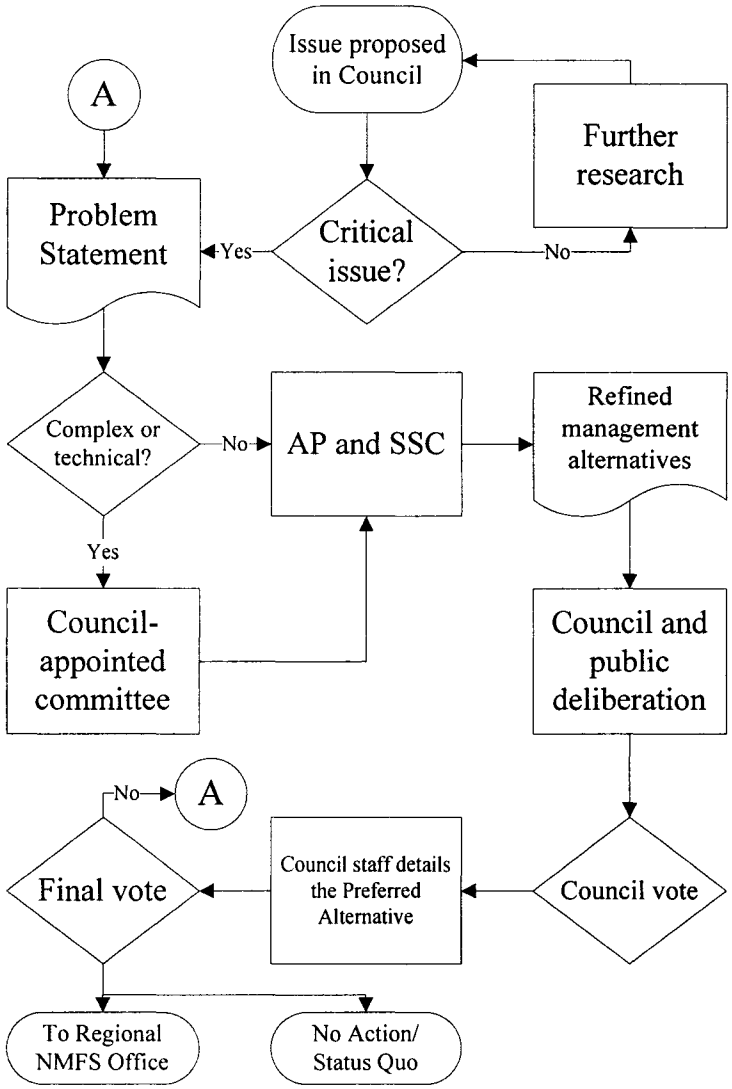

Fig. 4. Council Process for Consideration of Management Actions.

Once at the regional office, a Preferred Alternative follows a 12-step review. NMFS maintains offices in each of the eight management regions, with North Pacific region offices in Juneau, Alaska. The following description is for their office specifically, but the process is similar at other regional offices. This NMFS regional review is one of two federal reviews, and is the most thorough. Secretarial review is frequently a matter of the regional office notifying their respective counterparts in Maryland at NMFS headquarters of an action in process.

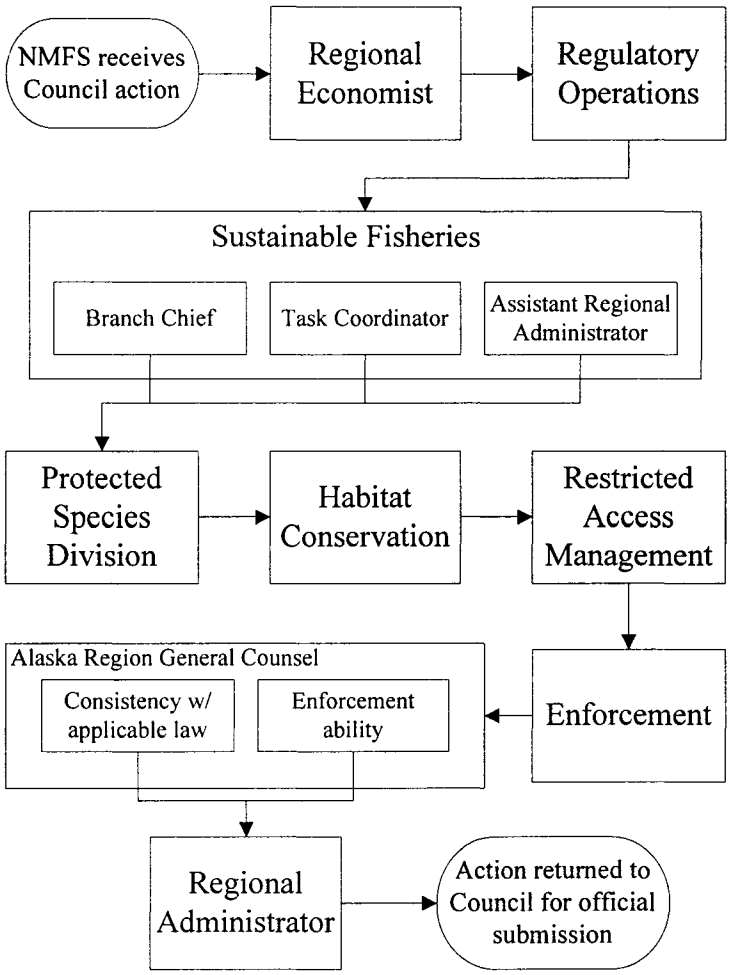

Fig. 5. NMFS Regional Review Process for Council Actions.

There are five primary divisions in the Juneau NMFS office. Those five divisions are Sustainable Fisheries, Protected Resources, Habitat Conservation, Enforcement, and Operations, Management, and Information. Additional offices are Restricted Access Management and an administrative section. These offices work in consort with the Council to both develop the proper documentation for Secretarial Review and to revise technical implementation plans, cost projections, and other operating issues which are part of an action. The review is a formal NMFS process, but it is not the Secretarial review (Jay Ginter, Personal Communication, 7 May 2007). Figure 5 displays the

reviewing schedule at the regional office, each box representing a different office and review.

After these twelve clearance points at the regional office, an action is returned to the Council for official submission to the Secretary of Commerce. If a Council action fails to meet regulatory standards at the regional level, then the action is returned to Council with an explanation. The regional office review could take as little as one week, but depending on the action's complexity it may take longer. Generally, if the action requires complex analysis, getting to the proposed rule stage may take six months or more. Publishing a proposed and final rule after analysis usually takes two to six months. Issues that may lengthen the time required for analysis publication include Secretarial review, the summer fishing season (three to six months), regional completion of a complex analysis, or other pending Council actions. If the regional office finds itself over-tasked, then completing management action reviews could take much longer.[13]

Once an action is officially submitted to the Secretary, it runs through a final five checkpoints. At this juncture, the bulk of an action's revision should be complete. Although a second full review is permitted at the Secretarial level, frequently a brief summary of the action and modifications from the NMFS Regional office is all the reviewers require. If an action does not pass Secretarial review, it is returned to Council with an explanation. The final review process for a Council action is below (Figure 6).

Secretarial review is clearly less regionally-specific, and the review does not include offices such as Enforcement or Restricted Access Management. The overall federal review process is designed so that the regional office review assumes the brunt of the labor in action review, since Secretarial intervention will waylay progress for months

or years, as is the case with charter halibut fishery management. In process order, the offices at NMFS which conduct the final review are the Office of Sustainable Fisheries, NOAA General Counsel, the Department of Commerce Office of General Counsel, and Office of Management and Business. Lastly, an action goes to the NMFS Director's office. He will sign an action on behalf of the Secretary of Commerce. Only then is an action published in the Federal Register as a proposed rule.[14]

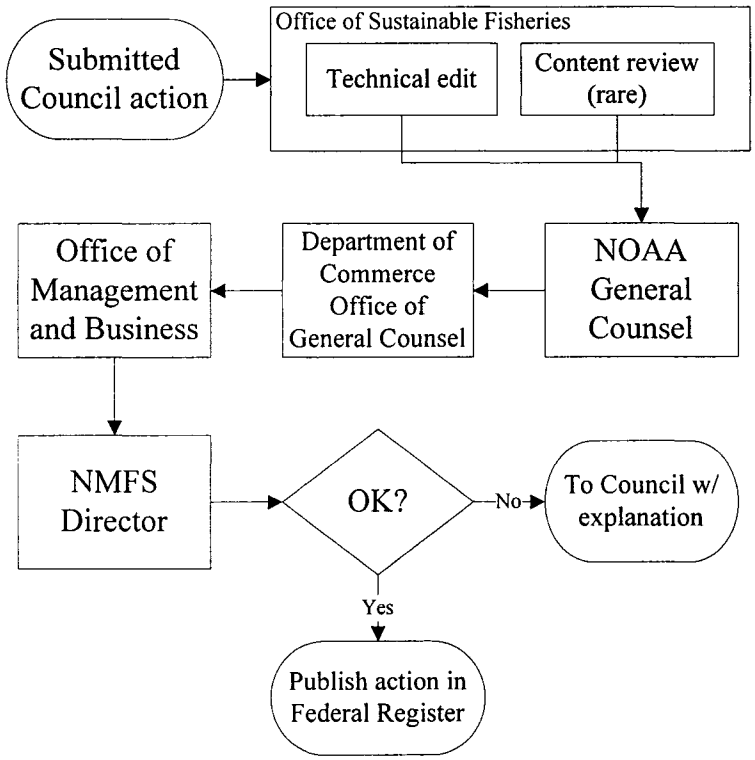

Fig. 6. Secretarial Review Process for Submitted Council Actions.

Once published, a proposed rule is open for public comment. The timeline for this process is well-prescribed, and is dependant on the type of Council action. Halibut fisheries do not have an MSA-required Fishery Management Plan (FMP). Instead, the Halibut Act and IPHC serve in place of a FMP. Therefore, no FMP amendments will ever come from Council for the halibut fisheries, only Regulatory Amendments (Jay Ginter, Personal Communication, 7 May 2007). The timeline for public review in this

case is as follows. Once received, Secretarial review must begin within five days. The review itself is the only portion of this process not regulated by a time limit. If the action fails approval, then it is returned to Council with an explanation. If approved, the Secretary must publish the rule in the Federal Register within two weeks. A proposed Regulatory Amendment is available for public comment for thirty days. Once the comment period is complete, NMFS has another thirty days to synthesize and respond to public comments in the Final Rule, making any necessary changes as well. An action is in effect thirty days after final publication (NMFS 2004).

3.1.1 Regional Review – A Historical Perspective

Commercial halibut fishermen approached the Council in 1993. Their concern was that, under IPHC allocation methods, the commercial fishery was losing halibut to the charter fishery. As introduced earlier, the Council established the HCWG to consider management possibilities for this open-ended reallocation from the commercial to the charter sector. The Council had to postpone consideration of the HCWG findings due to staffing priorities. In early 1995 the Council followed through on the Work Group's 1993 presentation, discussing alternative management measures against the status quo. Still plagued with staffing issues, and an additional lack of funding for proper management analysis, Council movement on charter management was delayed for another year (71 Fed. Reg. 26). The timeline in Figure 7 should help visualize the charter fleet's complex management history.

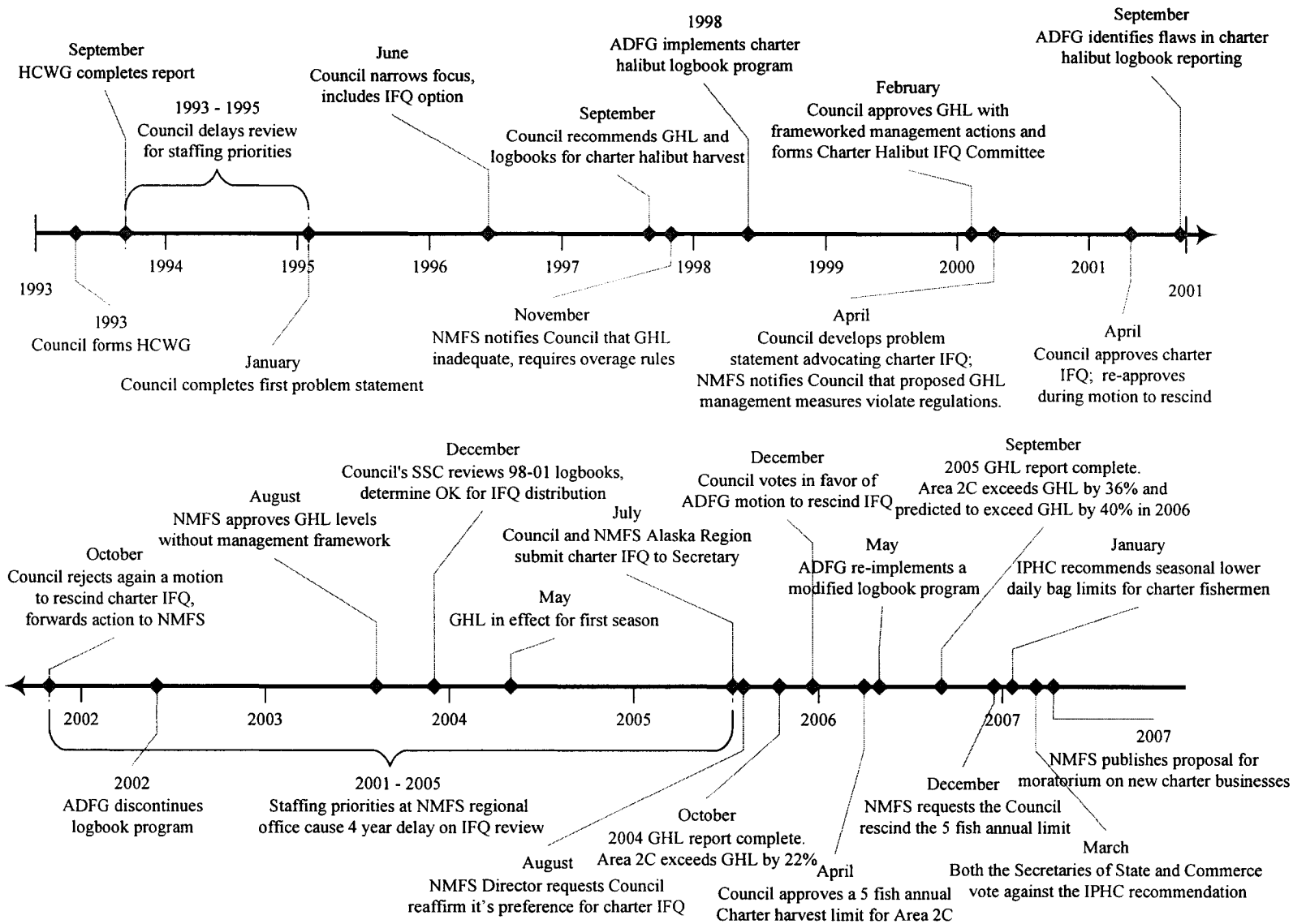

Fig. 7. Management Development in the Alaska Halibut Charter Fishery.

Four years after the Council's initial problem statement on halibut charter management, the 1997 Council approved Guideline Harvest Levels (GHL) for the charter fleet in Areas 2C and 3A. Their action allocated 125 percent of the charter fleet's average 1995 to 1999 harvests to the GHL, the extra 25 percent to allow for modest growth. The Council intended the GHL to act as a stop-gap and to provide enough time to for the Council to develop a permanent solution. The GHL amounted to 13.05 percent (1.432 million lbs) of the shared commercial/charter quota in 2C and 14.11 percent (3.65 million lbs) in 3A (68 Fed. Reg. 153). The stated intent for the GHL structure was "to maintain a stable charter season of historic length, using area-specific measures" (v, NPFMC 2001b). If landings data indicated the charter fleet had exceeded the GHL, data which is available about a year later, then a review of current management measures would begin. This process results in a minimum two-year delay between the initial GHL overage and management action (68 Fed. Reg. 153). The council initially approved no specific management measures in 1997 that would respond to a GHL overage. Without management measures, the GHL did not require secretarial review or publication in the Federal Register. The Council additionally approved new recordkeeping requirements for the charter fleet with a detailed logbook program (NPFMC 2006a).

Shortly after, the Council decided to address management structure and possible responses under the GHL (NPFMC 2001b). Closing the charter fishery mid-season was and is not considered an option; that action is counter to maintaining a "charter season of historic length" (3, NPFMC 2001b). In 2000 the Council approved and submitted a detailed framework of harvest reduction measures. These measures were in line with the historic season requirements for the charter fleet, and they would more rapidly establish

GHL restrictions based on the exceeded percentage of the GHL. After a lengthy federal review, NMFS published the GHL in the Federal Register in 2002 for final comments (67 Fed. Reg. 18).

Building on the GHL, the Council approved an IFQ program for the charter fleet in 2001 (NPFMC, 2001b). However, ADFG challenged the Council's use of charter logbooks as an IFQ allocation data source. ADFG argued that initial mis-reporting and otherwise generally flawed accounting in the logbooks meant the logbooks were unreliable and thus inappropriate as a reference for allocation, and ADFG suspended the logbook program in 2001 due to these errors (ADFG 2001). The Council's Scientific and Statistical Committee (SSC) reviewed this issue and suggested to the Council that, although the logbooks were not the best absolute measure of charter landings, upon state revision and correction the logbooks were an adequate tool for IFQ allocation (SSC 2000). Under modified assessments, the Council re-approved the IFQ program in 2001 and submitted it for federal review (NPFMC 2001c).

3.1.2 Federal Review – A Historical Perspective

After Council approval, both the GHL and IFQ experienced further procedural delays while under federal review (71 Fed. Reg. 26). Although delays are not unusual with new quota programs, these delays can be detrimental to successful limited entry establishment (McCay et al. 1995; Pautzke and Oliver 1997). The GHL's delay began with a NMFS letter to the Council on 2 April, 2002. "The current framework cannot be implemented as conceived by the Council because the Administrative Procedure Act (APA) requires that any regulatory action have prior notice and opportunity for public

comment before becoming effective" (47258, 68 Fed. Reg. 153).[15] According to reasons published in the Federal Register, "NMFS could not conclude in advance that a "good cause" finding would exist in every instance the GHL was exceeded and harvest restrictions triggered" (47258, 68 Fed. Reg. 153). NMFS's letter reversed the GHL framework measures, stripping the GHL of any effective management ability. Any management action in response to GHL overages now requires a lengthy process of public comment, Council deliberation, and federal approval.

The Council viewed implementing an IFQ program as a multi-step process, with the GHL as a necessary first step. Development in the late 1990s continued on the GHL, putting the IFQ program on hold. Only after the Council approved the GHL in 2000, did they begin an analysis to combine charter and commercial halibut fisheries under one IFQ program (71 Fed. Reg. 26). The following year, the Council approved an IFQ program for the charter fleet. One Council member moved to repeal the IFQ program at the April meeting, shortly after a Council vote approved the IFQ program. The rest of the Council then reconfirmed its approval for the program. Again in October that year, the Council defeated another motion to rescind the IFQ program (NPFMC 2001a,c). From here the IFQ program went to federal review, where it remained until 2005. While awaiting review, ADFG and the Council modified the logbook program and implemented a revised version of it in 2005.[16] Again it was a staffing shortage, this time at the Alaska Region office of NMFS, and Council priorities for NMFS staff in charge of Council action review, which caused the IFQ program approval to drag out for another four years.[17] The Alaska Region office sent the proposed regulations to the Office of Sustainable Fisheries on 20 July 2005.[18] The following month, the NMFS Director sent a

letter to the Council requesting a reconfirmation of Council support for the charter IFQ. It stated that,

> "these regulations were developed under section 5 of the Northern Pacific Halibut Act, 16 U.S.C. 773c(c), which provides that such regulations may only be implemented with the approval of the Secretary. Because of the passage of time and changed conditions in the fishery since the Council took final action on this item, and the controversy surrounding the proposed charter vessel IFQ program, I request that the Council confirm its support for the proposed program..."(NMFS 2005b)

In light of this request ADFG put forward a motion to rescind the IFQ program, the third in the IFQ program's history, bringing the process back to the Council for further consideration in December 2005. The motion was approved by a different Council than the one in place at the time of original approval. This action, on an issue already considered settled years prior,[19] is without precedent in the U.S. fisheries Council process (NPFMC 2005a; Ward 2005). The Council then created another working group to assess alternative management measures, called the Charter Halibut Stakeholder Committee. This committee presented their findings, discussed in section 4.3.4, in December 2006.

During these lengthy delays the charter fleet continued to expand, creating a significant number of charter businesses ineligible for quota under the Council approved IFQ structure (ADFG 2005a). Rapid establishment of a quota program is essential to stem this extra build-up of effort between IFQ approval and implementation (Pautzke and Oliver 1997). The share of charter businesses ineligible for quota in 2004 was substantial. In total, considering statistics for 2004 (Figure 8), only 59.73 percent of charter businesses in 2C and 60 percent in 3A were eligible under the 2001 Council approved IFQ plan (ADFG 2005a).

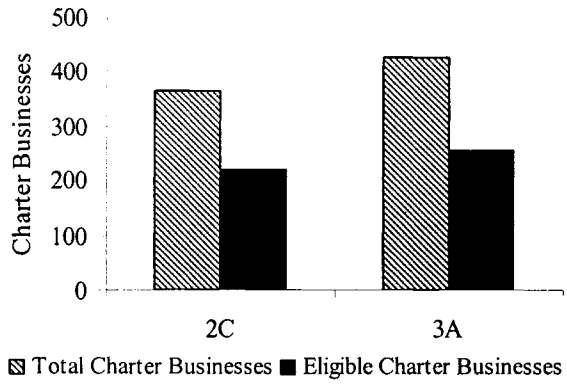

Fig. 8. Total and Eligible Charter Businesses in 2004 (ADFG 2005a).

If the IFQ had been approved as submitted to the Secretary, the charter fleet would see a dramatic drop in charter businesses as the ineligible businesses folded. This sort of displacement is politically unacceptable, as these new interests have developed significant sway with the help of former Council member Bob Penny and the independent Alaska Charter Association (ACA).[20]

Landings data from the 2004 charter season show that the charter fleet in 2C exceeded their GHL by 22 percent (NPFMC 2006a). The NPFMC staff completed a draft EA/RIR/IRFA for the GHL committee and the Council in February 2006. The earliest implementation date for *any* changes in the charter GHL management plan will occur no earlier than 2007 (NPFMC 2006a). At present, the Council has preliminarily approved a moratorium on entry to the charter fleet to control halibut harvest.

The Council is using traditional trip and catch limitations per recreational charter license as a means to reduce effort. With the most conservative restriction currently listed as an option in the 2006 EA/RIR/IRFA, a limit of 5 halibut annually, the Council still expects landings to exceed the GHL for 2006 (NPFMC 2006a). The recreational halibut harvest limits in Alaska are two fish per day and a maximum of four fish in possession at any time. Because of the apparent failure of current management to bring

charter harvests back within the GHL, the IPHC reluctantly recommended the daily bag limit for charter fishermen in Areas 2C and 3A be one fish per day at peak fishing times (IPHC 2007). This recommendation was not accepted by the Secretaries of State or Commerce. (U.S. Department of State 2007). According to data released in late September and October 2006, the 2005 and 2006 seasons showed continued disparity between the GHL and landings for both 2C and 3A (Figures 9 and 10). If bag limit restrictions remain the primary control technique for halibut landings in the charter fleet, then those bag limits will dwindle to zero with continued charter fishery growth. Although charter clients harvest other species (salmon and rockfish) during their charter trip, many clients expect halibut landings as part of their fishing experience.[21] Removing halibut from the client's overall fishing experience will be detrimental to many charter businesses. Low halibut bag limits imposed across the entire charter fleet could even encourage an effort shift to the non-guided sector, which means recreational fishermen fishing for halibut will fish from unguided, unregulated, and relatively unsafe boats when compared to any charter vessel.[22]

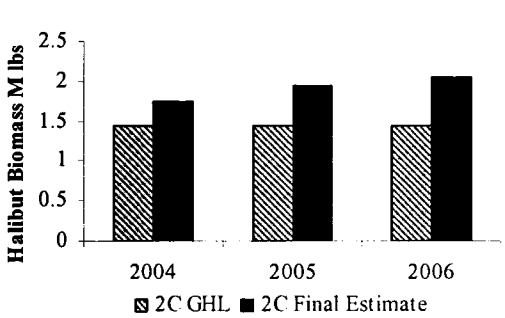

Fig. 9. Area 2C Recent Charter Harvests.[23] (ADFG 2006d. 2006 figures are preliminary).

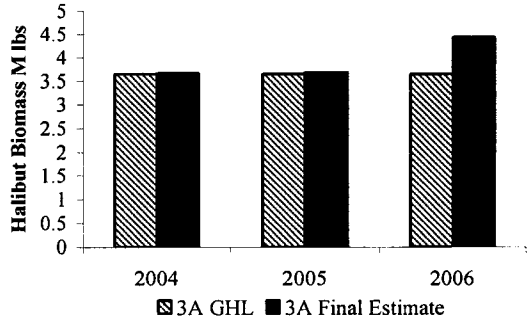

Fig. 10. Area 3A Recent Charter Harvests.[24]

4. ANALYSIS

Recreational fishery landings are generally quite small when compared to landings in commercial fisheries. The crux is that, although small in comparison, recreational landings are not inconsequential (Coleman et al. 2004). The previous discusses the impact that one portion of one recreational fishery can have on a commercial fishery for the same species. At the Council level this management is evolving with difficulty, largely due to vagaries about what kind of fishing effort the Council is attempting to guide. Building on the work of Kearney (2001) and Murphy (2006), I present a 'hybrid approach' for charter halibut management, aimed primarily at fishermen with allowances for charter operators. It combines the existing recreational permit and bag limit structure with a form of equitable distribution using a lottery for halibut.

4.1 KEARNEY'S TAXONOMY

Kearney (1994) discussed the absence of basic information on recreational fisheries that managers need in order to begin assessing recreational fisheries. He asked who will be affected by absent research on recreational fisheries (Kearney 1994). Most observers would answer quite simply 'recreational fishermen,' or at least fishermen who are *not* fishing commercially. To identify these fishermen more clearly for management purposes, Kearney classified recreational effort into eleven different non-commercial fishing subgroups. Kearney's list is preliminary; in-depth study of each category does not yet exist. Still, his list is a start to clarifying the various types of effort under the

recreational umbrella. Once the type of effort is clear, it should clarify which pre-existing tools fit best that particular type of effort. Kearney's (2001) groups are:

1. **Licensed Commercial Fishers;**
2. **Unlicensed Operators** who sell their catch;
3. **Accumulators**, who use large catches as food for extended groups or for barter;
4. **Competitors**, including those to whom the capture of more fish than others is primary;
5. **Hunters**, motivated by the chase and the kill;
6. **Sportspersons**, to whom the challenge, the skill, the odds, the adrenalin rush and the satisfaction of a job well done are important, but so is a feed of fish;
7. **Recreational Enthusiasts**, to whom the outing is most important but for whom a feed of fish is still a prize;
8. **Social Fishers**, to whom the camaraderie and fellowship are most important;
9. **Adventurers**, who like the hunter savour the chase, but not the kill, and release their catch;
10. **Lovers of Open Space**, who if they do have a line in the water, do so purely to justify being outdoors;
11. **Observers**, particularly underwater enthusiasts;
12. **Preservationists**, who are there to prevent ecosystem change.

Excluded from recreational fisheries are those groups who sell their catch commercially, transfer their catch to others in trade, or who intend to catch no fish. This excludes traditional definitions of commercial fishermen, unlicensed fishermen selling their catch, accumulators, observers, and preservationists. These twelve groups work within roughly four basic fishery outputs: Harvest, trophy, catch and release, and no-catch. Harvests for this purpose are defined as any amount of catch which other fishermen might consider either large or beyond the immediate use of one person. A trophy fishery generates a lesser take than that of a harvest fishery per individual fisherman, but trophy fisheries frequently target the largest (and most fecund) fish. No fish are kept in catch and release, although there is a limited mortality through fish hooked, exhausted, and/or improperly released. There is also a limited mortality, a 'taking,' with no-catch type fisheries. We cannot assume that because a person is not

there to kill a fish, his or her presence will not create some mortality through excessive harassment or some secondary interaction. A strict definition of a taking is provided by the U.S. Endangered Species Act of 1973 (2006). It lists a take as any action meant to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct" (16 *USC* 1532(3):18). All of these definitions, the inputs, outputs, and links among are ripe for critique and discussion, which I provide below.

4.2 Murphy Proposal

The Charter Committee received the Murphy Proposal in 2006. Murphy's Proposal is based on a queue system and distributes halibut to recreational fishermen using purchased tickets or stamps. His proposal is a list of provisions for establishing a queue. Under each provision, Murphy details a number of options for how to implement the provision. There are 7 provisions in the proposal, and they are:

1. Halibut Harvest Tickets,
2. Harvest Record,
3. Halibut Management Database/User Interface,
4. Entry model,
5. Enforcement,
6. Allocation: in effect and separate for Areas 2C and 3A,
7. User Fee Fund/Allocation growth.

Murphy's ticket provision offers distribution methods which vary from favoring those able to plan well in advance, to staggered availability from one day to an annual ticket (including an associated daily bag limit). His proposal dictates that halibut tickets be non-transferable and refundable if un-used. Once all halibut tickets are distributed, Murphy offers three options: continue or close entry to the fishery; cease ticket sales, or

lease or buy quota from the commercial sector. Of the latter two options, quota is purchased through a system of user fees available for that purpose.

Once used, each halibut ticket then becomes a harvest record, including fish statistics and catch site. There are several options for handling the completed tags, including no collection/voluntary submission of tags, mail-in reporting, online-reporting, dockside drop-boxes, and active dockside scanning and collection of tags.

To manage these tags, Murphy suggests an electronic database. This database is used for issuing halibut tickets, recording harvest information, and maintaining a publicly accessible ticket count as tickets are reported by one of the methods listed above. Murphy assigns no specific body to maintain this database, but ADFG is the most likely candidate. It is the only management body that works regularly within the recreational fisheries; NMFS and the Council are arms-length.

Murphy provides three options for entry of new charter businesses to the fishery. One is an open entry model, where the number of charter businesses is market-driven. The second is a limited entry model, made so by a moratorium on entry, and the final model is a combination, allowing open entry in areas with an underdeveloped fishery, and limited entry in other areas. Enforcement is a matter of fishery officers checking fishermen for valid licenses and properly dated harvest tickets.

To allocate halibut Murphy proposes two options, both of which split allocation between Areas 2C and 3A. The first option allocates halibut to both charter and non-charter sectors. All halibut fishermen with recreational halibut licenses require halibut tickets, with identical restrictions for both sectors. The second option allocates halibut tickets to the charter sector only, leaving the non-charter sector untouched.

Murphy's final provision is a user fee fund. This fund facilitates growth in the charter halibut fishery. Ticket fees, grants to the fishery, and other investments contribute to quota purchase for unhindered access by new entrants to the fishery if the charter fishery meets its annual allocation mid-season. Currently fee collection is only permitted for administrative purposes, not for direct enhancement of the fishery itself (Murphy 2006). An element recently brought to the Charter committee is a form of catch sharing between the charter and commercial sectors, where in-season commercial quota leasing could prevent the need to increase ticket sales specifically, providing charter businesses the ability to continue operations. Charter fishery user fees would help fund this process.[25]

4.3 A Hybrid Approach

Building on Kearney's (2001) taxonomy and Murphy's (2006) focus on an equitable distribution method, I propose a hybrid approach to charter halibut management. This approach combines tools already in use in natural resource management, but not so far in fisheries. Working under an existing GHL or other annually determined charter allocation of halibut, the hybrid approach I propose includes both a modified recreational halibut permit and lottery-style distribution. First I will consider Kearney (2001) and Murphy (2006); modifying some of their concepts to suit the aims of a hybrid plan. I then discuss the hybrid plan itself.

4.3.1 Kearney Discussion

According to Kearney, "regarding fishing as a recreational rather than food-gathering activity is largely a developed country perspective" (20, Kearney 2002b). Kearney argues that many developing countries do not collect data on recreational fisheries, because these countries find that recreational fisheries are too insignificant to warrant policy attention. I take another message from the statement above. It is Kearney's assumption that a recreational fishery is explicitly *not* a food-gathering activity, but rather is performed with the fishing experience (and enjoyment in catching and eating a small amount of fish) paramount. His list of fishing inputs reflects this idea. Large amounts of fish are not typically harvested recreationally by individual fisherman. If they are, it is only through competition among fishermen, or for accumulation of fish for trade. Trade is itself not part of a U.S. recreational fishery, since fish landed under recreational auspices are legal only for personal use. What is missing is a recreational fishing effort classification where the main purpose is to accumulate food stores beyond a single meal for the fisherman and his or her immediate family. This is what may be called a 'food-fishery.' Although it may not fit what people commonly consider recreation, it is still an activity pursued under recreational licensing in the United States. People participating for this reason are what I will call 'stockpilers.' This user type agrees with the frequent description of the halibut fishery as a 'meat fishery.'[26] Adding stockpilers to Kearney's (2001) list the visual relation of recreational fishing inputs and outputs in the Alaska halibut charter fishery may be described as follows (Figure 11).

Inputs	Outputs			
	Harvest	Trophy	Catch & Release	No-Catch
Licensed Commercial Fishers	•			
Unlicensed Fishing	•			
Accumulators	•			
Stockpilers	•			
Hunters	•	•		
Sportspersons		•	•	
Recreational Enthusiasts		•	•	
Social Fishers			•	
Adventurers			•	
Lovers of Open Space			•	•
Observers				•
Preservationists				•

Fig 11. Fishing inputs and outputs. (Adapted from Kearney 2001)

Bryan (1977), Holland and Ditton (1992), and Oh and Ditton (2006) also provide descriptions of similar angler expectations in their studies, though with very different conclusions about the overall effort types in each particular survey demographic, as discussed in the literature review. Kearney's list is intended to provide descriptions foundational for further applied research. The present proposal is a step in that direction. A statistical survey of charter effort is beyond the scope of this paper, so I must rely mostly on conversations with people involved in the fishery for my analysis. However, in the course of my research, it has become apparent that designing a questionnaire for fishermen to determine their reasons for fishing, similar to that used by Holland and Ditton (1992), and Oh and Ditton (2006) would benefit charter fishery management in the long run.

4.3.2 Murphy Discussion

Murphy states that providing for compensated, orderly growth in the halibut fisheries is essential for the future of the charter fishery.[27] Without it, the charter fishery

risks an in-season cessation of halibut ticket sales. This could devastate those sections of the charter fleet which market to NAN fishermen (mostly cruise ship passengers).

Wikle (1991) cited concerns about the organizational component of queues (like Murphy's halibut tickets). But the primary concern with a queue regards the fisherman's time commitment. Those most able to spend time waiting, or who have sufficient flexibility in their fishing schedule, are most likely to secure harvesting privileges. Out-of-state fishing effort (in Alaska for only a short time) would be less likely to benefit from any redistribution than in-state effort. Reissuing un-harvested halibut tickets in-season would benefit all halibut fishermen, but mostly those fishermen whose valuation of an additional halibut increases while fishing, even though they considered the pre-season value of securing halibut prohibitive (Koh et al. 2006). That is, the fishing experience itself gives rise to an increased willingness to pay more for the privilege to catch an additional fish *after* fishing has begun.

If all the tickets went on sale at some point in the pre-season, there is a high probability they would be bought before the season opens. This would discriminate against anyone wishing to supplement their permitted allocation in-season. Barzel (1974) notes that to avoid discrimination of this sort, tickets would have to be available twice, once while the fisherman is planning the trip, and again in-season as halibut abundances and allocation permit. This could be achieved in a number of ways. One possibility is to have two pools of tickets. Another option is to allow the return of unused halibut tickets as Murphy (2006) suggests, which would also redistribute halibut to NAN fishermen.

A key difference between Murphy's ticket program and the halibut lottery discussed below is the targeted recreational fisherman effort type. Although Murphy

provides two options for allocation in the current proposal, it was not his original intent to discriminate between the two recreational halibut sectors. In an effort to solicit more support from the Council, the state, and involved stakeholders, Murphy leaves this as an option in his later (2006) proposal. Selecting Murphy's second option (halibut tickets for the charter fleet only) would create a hybrid management scheme. I disagree with his first option, which uses halibut tickets as the sole distribution method for the entire recreational halibut fishery. With a cap (GHL, fishery CEY, etc.) on the allowed recreational halibut harvest, Murphy closes the fishery to anyone without a halibut ticket under his first option. The method I describe below is a hybrid plan, where users wishing access beyond the allowed bag limit would purchase additional harvest privileges as available.

Still, Murphy's instinct as a charter operator is to include "the entire recreational fishery, since applying restrictions to just the charter sector will encourage more recreational fishermen to fish from private boats, thus avoiding comprehensive tallying of fish caught, but more importantly, exposing more novice boatmen to the dangerous waters of Alaska."[28] Safety while fishing is always a concern, whether the fishing is a commercial or recreational endeavor. According to USCG testimony "the Coast Guard is not concerned with any growth in [the charter] industry sector with respect to safety." (9, NPFMC 2005a). This means that additional USCG licensed charter boat captains and vessels on the water do not pose a safety concern. The USCG testimony states that "it's common sense that...there's more experience in a commercial boat, no matter what kind of commercial boat it is, versus a recreational boat" (12, NPFMC 2005a). Future study

should be dedicated to considering any effort shifts to unguided halibut fishing as charter fishery management evolves.

4.3.3 The Hybrid Approach

Distribution among the varied recreational user types in the charter fishery requires a hybrid approach using flexible resource management tools, such as combinations of tools for both open-access and limited-access management. This is uncommon in fisheries management. For the most part management negotiations focus on finding the single tool most appropriate for a group instead of a suitable combination of tools. Instead of this focus, management should put more attention on the goals and intentions of fishermen in a particular fishery. The following is a brief discussion of available information on the characteristics of halibut charter fishermen, applicable to Southeast Alaska, although it has implications for the rest of the charter fishery as well.

The Alaska charter businesses attract an extremely diverse group of users (Criddle 2004). The charter operators facilitate halibut fishing for locals and travelers, for cruise ship passengers and week-long vacationers. People travel from all over the world to experience catching halibut. Visiting Sitka's Rocky-Gutierrez airport reveals large amounts of charter-caught halibut, boxed and frozen, and headed home with pleased fishermen. Lodges dot the Alaska coast from the Aleutians to the Canadian border, but fishermen along the Southcentral coast are frequently Alaska residents catching halibut for winter use. Southeast Alaska is where lodges dominate, offering luxury accommodations for wealthy out-of-state fishermen. According to ADFG, halibut fishermen in the charter fishery share at least one trait: many fishermen value halibut

primarily for the meat halibut provides, and have thus created a meat-fishery using recreational effort.[29]

In a 2005 study, the McDowell Group presented a detailed picture of the charter fishery (for all allowed species) in Sitka. Although non-specific about the particular species targeted by fishermen, it is an enlightening study. For example, the 2005 estimated overall economic impact of the Sitka charter fishery reached $31 million (US). Of that total, charter clients spent approximately $23.1 million (US) in direct charter-related expenses (McDowell Group 2005). To generate this revenue, Sitka hosted about 10,400 non-cruise charter clients,[30] who fished from 213 boats operated by 121 independent businesses. The bulk of these charter clients fished under full vacation packages, spending four to five nights in Sitka, and paying an average of $2,000 for their fishing trip. A brief description of the typical non-cruise client in Sitka for 2005 is as follows. The fisherman is a 53-year old male, likely from the West coast of the United States, with a college degree and an annual income around $120,000 (US). He is most likely a member of a party of 4-5 like-minded fishermen. Men dominate the charter fishery in Sitka, accounting for nearly 90 percent of the non-cruise clients. Only 31 percent of clients were under 45. Of the 57 percent of clients with at least a college degree, 35 percent held advanced degrees. California, at 32 percent, boasted the single highest source for Sitka non-cruise charter clients. Washington State accounted for another 24 percent, and the entire Western U.S. (including California and Washington) accounted for 74 percent of charter clients (McDowell Group 2005). This is a synopsis of one port in one year, and it does not include cruise ship passengers. If we include cruise ship passengers, other groups drawn to Sitka, and all the charter halibut fishermen

in other Alaskan ports, we are certain get a much more diverse group of fishermen than suggested by McDowell (2005)

Rough estimates from ADFG show a substantial portion (more than 60 percent) of out-of-state charter effort in Area 2C. Area 3A shows a greater involvement of Alaskans in the charter fishery, around forty percent. Area 3A is also closer to Alaska's two main urban centers, Fairbanks and Anchorage. Halibut fishing effort from those cities and the surrounding area focuses on the Southcentral Alaskan coast. One reason why in-state charter effort is higher along the Southcentral coast may be because non-coastal Alaskan residents have greater costs associated with keeping and maintaining a personal vessel (transport and storage primarily). These fishermen find it more economical to hire a charter. Southeast Alaska residents, because of their close proximity to the sea, likely have lower costs in keeping a personal vessel, resulting in lower in-state demand for fishing charters.[31]

The present halibut distribution method does not satisfy this diversity, evident from the drawn out process to develop a long-term management strategy for the charter halibut fishery. Observing current charter management, we can assume that charter halibut harvests will remain under either a GHL or some other form of fixed or floating harvest cap, so the challenge is now to find a distribution tool for the charter fleet's limited allocation. This tool must be able to account for the expectations of out-of-state package deal fishermen, cruise ship passengers, and Alaska residents alike. Applying the input types discussed above (Figure 11) to the charter halibut fishery, we would expect to find any number of competitors, hunters, sportspersons, recreational enthusiasts,

stockpilers, and to a lesser extent social fishers, adventurers, and lovers of open space on the water at the same time, albeit unevenly distributed along Alaska's coast.

Recent research recommends lotteries as the best choice for new limited access programs in recreational fisheries, since lotteries provide an "eminently fair" allocation method (23, Hardin 1969; Wilen 2001; Cox and Walters 2002; Criddle 2004). Koh et al. (2006) also suggest that a lottery is more equitable than a queue. I propose that halibut management consider lotteries already in place, such as those lotteries ADFG conducts for big-game distribution.

ADFG holds lotteries for several terrestrial hunts, including Elk, Moose, Sheep, Muskox, Brown Bear, Caribou, and Mountain Goat. This means ADFG already has experts in lottery allocation, and this expertise could benefit implementation of a lottery for the charter halibut fishery. The easiest means to implement a lottery for halibut in Alaska would be to adapt ADFG's computer program to the fishery. After an 18-point check of all applications in the current ADFG lottery program, the program randomly assigns a number to each valid applicant.[32] At present, applicants to the hunt lotteries may not apply for the same hunt two years in a row.[33] Conducted twice annually for the Winter and Spring draws, applications with the lowest numbers receive a permit until all the permits for the various hunts are distributed. ADFG employs one full-time programmer to run the lottery. In addition, ADFG employs six student interns seasonally, four full-time data entry staff who process the entire lottery program, and a program coordinator.[34]

Koh et al. (2006) recommends multiple lotteries under one allocation to meet the needs of different user groups. I propose a modification to hold two halibut draws. One

draw would service licensed recreational fishermen for use either privately or on a charter. The second draw would provide charter operators with extra halibut tickets that they can pass to clients who might not have won extra halibut in the fishermen's lottery. This element is crucial for success, since charter operators depend frequently on repeat customers. They must be able to provide similar experiences to prior years for customers to return, and waiting to see if a client receives additional halibut in a lottery is unacceptable to many.[35] To prevent charter operator abuse of these tickets, such as increased trip fees pocketed by the charter business, the ADFG fee for these tickets would pass directly to the charter fisherman who uses the ticket. This should not be a concern for the clients, since the client would have paid for an additional ticket if he or she had won the lottery anyway. Charter operators would be required to notify clients of the additional state fees before the client uses the ticket, and the collection of fees could be done at either dockside from the client to ADFG employees, or sent in by the charter operator on behalf of the client. Additionally, charter operators could use these tickets for themselves or their crew (if properly licensed for recreational halibut fishing). Questions still linger about how this split would evolve. How many tickets could a charter operator receive? Would that number be determined from their trip history, or a percentage of that history? Would this split create 'charter barons' who hold greater control over the fishery, excluding new entrants from much growth?

A lottery is the most equitable method for distributing the remaining halibut among those fishermen with who take time to plan their fishing trip, such as week-long lodge guests or Alaska residents. A lottery does little for no-advance notification (NAN) fishermen, such as cruise ship passengers who decide to fish only a day or two in

advance. At this time, the only data I have on fishing trip planning is the McDowell Report, focusing mostly on out-of-state effort. Participants in the study made their initial decision to travel eight months prior to the actual trip, on average. Participants took on average two additional months to plan their trip before making major travel arrangements, or 5.8 months in advance (McDowell 2006). Other anecdotal information on trip planning suggests that charter clients in 3A are mostly Alaska residents, and that clients in 2C are predominantly from out-of-state.[36] In-state effort does not require extensive planning (e.g., travel and lodging), so it may be safe to say that a 6-month delay between actual booking and traveling to fish is a longer than average time span, considering all fishery participants. After the application deadline, the current Alaska lotteries take about six weeks to complete and provide draw results online (ADFG 2005b, 2006c). This timeline would strain the patience of many fishermen who planned their trip months earlier. Conducting a halibut lottery several months in advance would accommodate trip planning for those willing to pay for anticipated landings greater than the regular license would permit.

The hybrid plan using a lottery may be implemented as follows. ADFG provides an estimate of the coming season's halibut harvest in October the year prior.[37] Once harvest estimates are available, management would provide enough halibut for the coming years' anticipated effort to allow at least a halibut or two per recreational license annually. At this new lower halibut removal level, ADFG would take the surplus (otherwise landed with higher bag limits as exists today) and distribute it in draw permits for the coming season's lotteries. Allowing time for fishermen to apply, and then following the six-week timeline already in place for other Alaska game hunts, a halibut

lottery should be complete in time for the beginning of that year's fishing season. Since most participants (65 percent) used the internet for trip planning, research, and booking, providing an online application for a lottery is ideal in addition to any printed materials (McDowell 2006). Below is an outline for the hybrid plan, presented in order of implementation.

1. Determine halibut allocation to charter users under GHL, fishery CEY, separate accountability alternative (Falvey 2006), or other cap program.

2. Determine halibut bag limits for charter users to **X** per day and/or **X** per year, as allowed by abundance estimates and estimates of user demand.

3. The bag limits for the coming season are based on an estimate of effort for that season, and should represent only a portion of the overall halibut harvest. The remaining halibut from the annual allocation will be distributed through a lottery or queue.

4. Conduct surplus halibut distribution.

> **A.** Conduct a seasonal lottery on a per fish basis for fishermen planning their trips. Access to the numbers of fish distributed to fishermen could vary higher than current bag limits, up to the total allocation for the charter fleet.
>
> **OR, depending on Council and public preference**
>
> **B.** Following the Murphy Proposal (2006), provide access for pre-season stamp purchase for fishermen planning their trips. The maximum number of stamps per fisherman is pre-determined to not exceed **X** per day and/or **X** per year.

5. Current Dockside monitoring practices and the logbook program through ADFG would continue.

6. Whether through a lottery or stamp program, fishermen would be obliged to check their tags with ADFG (dockside monitors) at the conclusion of their trip, regardless of actual landings. Tags not checked would count as landed fish, adding some average amount to total charter landings, and fishermen not returning tags would be penalized in some fashion, such as by exclusion from the fishery for some period of time.

Other modifications will be needed to prevent cheating and methods to cover the overhead required to collect tags and record recreational harvests. Murphy's (2006) user

fee provision, which would provide a dedicated cash flow for administration of the hybrid plan, is useful. In addition, determining recreational halibut permit bag limits and the numbers of halibut tickets or draw tags permitted for each fisherman requires access to detailed information on halibut landings and fishing effort in the charter fleet. Proposing these limits is a task for managers, and I leave the various limits unspecified in my proposal. One possibility for this reduction could come from the recent suggestion of the Halibut Coalition. This group of commercial IFQ holders recommended a reduction in charter halibut bag limits to one halibut per day per charter client across Alaska. This may help in some ways, but simply reducing bag limits will discriminate against the stockpiler fisherman.[38] Still, reducing bag limits for recreational charter users to a level below the predicted halibut harvest cap currently in use is a key step to implementing the hybrid approach. The cap is currently a GHL, but depending on current management negotiations the cap could be a GHL, fishery CEY, or some other form of cap which reflects the desired definition of optimality in stock management. A limited bag limit for the recreational halibut license allows anyone wishing the experience of catching a halibut (with at least one halibut allowed) to do so. The bag limit would facilitate NAN fishing experiences, such as those users coming from cruise ships and other forms of tourism not directly aimed at fishing.

The current suite of options under Council consideration is a patchwork of more traditional tools. They include provisions for limiting charter vessel trips to one per day, preventing crew aboard charter vessels from retaining halibut while on charter, establishing annual allowed harvests per recreational permit to four or five halibut, creating a minimum harvest size, creating a maximum harvest size for the second halibut

harvested, daily bag limits of one fish for either a month in the season or for the entire season establishing a season closure in August or September, and/or a weekly one-day closure. In addition, the Council is also considering a moratorium on additional vessel entry to the charter fishery, charter inclusion in the commercial quota program, and a hard cap in lieu of the current GHL (NPFMC 2006c). The hybrid plan would replace this patchwork of distributional tools with one succinct combination that has the potential to better meet the needs of the increasing number of fishermen who rely on the charter fishery.

4.3.4 Constraints on Management Change

The hybrid plan, or any other plan for the charter fishery, faces significant obstacles. Those obstacles are the procedural delays inherent in the Council management process, discussed earlier. Only in September 2006, did ADFG release the final charter halibut harvest estimates for 2005. A full year, and another charter season, has elapsed between the close of the 2005 season and ADFG's release of a final harvest estimate. Harvests in Area 3A were a little higher than anticipated, with 3,689,000 pounds of halibut landed. This is only one percent above the area's GHL. Harvests in Area 2C were again far above the established GHL. Charter fishermen in Southeast Alaska landed nearly 2,000,000 pounds of halibut, 36 percent over the 2C GHL of 1,432,000 pounds. This surprised ADFG, which estimated that Area 2C would exceed the 2005 GHL by only 207,000 pounds.[39] ADFG estimates that the charter fishery in Area 2C will again have exceeded the GHL, this time by more than 40 percent, for the 2006 charter halibut season (NPFMC 2006c).

As noted earlier, the charter committee presented their final recommendations at the Council meeting in December 2006, and focused on reducing harvests in Area 2C. Acknowledging these recommendations, the Council began the review process for a wide range of options, presented above (minimum size limits, crew harvest provisions, etc). At least another year will go by while the Council deliberates on the charter halibut fishery, with further delay at the federal level. According to the Special Assistant to the Commissioner of ADFG,

> "These [2005] estimates demonstrate the need for a greater diversity of management tools that can be timely and proactively applied to control harvests within established allocation guidelines. The Department [ADFG] continues to believe the best mechanism to achieve this is an amendment to the Halibut Act to allow a state delegation for selected management authorities."[40]

Although recreational fisheries are normally the purview of state management, halibut are managed at the Council level as per regulations in the Halibut Act (16 U.S.C Sec. 773). ADFG does have indirect enforcement and data-gathering responsibilities for halibut at the Council level, but the substance of management promulgation remains out of their control. The Council process is purposefully laborious in an effort to include as many voices in the decision making process as possible. Considering the issues present in Alaska's charter halibut fishery, the Council process fails to promote effective management. Management decisions are reached within months in ADFG, whereas it takes years at the Council and federal levels. Usually citizen advisory committees bring issues to the Alaska Board of Fisheries (Board), as is the case with Council issues. After debate, the Board may send an issue to the Commissioner of ADFG. Following two reviews, one by the Attorney General and another by ADFG, the resolution to an issue is implemented. This frequently happens in less than a year. The Commissioner can also

issue emergency orders for more rapid implementation of management changes (Ginter 2006). One example is the emergency order issued for the 2006 charter halibut fishery in Area 2C. In an effort to reduce landings (of any species) from charter vessels, the order prevented charter boat captains, guides, and crew from keeping fish while on a charter (NPFMC 2006c).

The situation in Canada presents an interesting basis for comparison. The Minister of Fisheries in British Columbia announced a 12 percent ceiling in 2003 for the combined charter and non-charter recreational halibut harvests. The 12 percent derives from the overall commercial-recreational harvest weights in British Columbia, and was set to provide room for additional growth in the recreational fishery. This cap mimics a similar proposal for a charter harvest cap in the United States, now awaiting review by the IPHC (Falvey 2006).[41] In 2001, the recreational halibut harvest in Canada was at nine percent of overall landings. In 2005, it was predicted that recreational halibut harvests had met their twelve percent cap. Now Canada is faced with controlling recreational halibut harvest growth. The tools considered are quota purchase from the commercial sector to increase recreational harvests, or decreasing bag limits and fishing times. The recreational halibut fishery lacks infrastructure and solid organization in Canada, preventing any easy transfer of quota to the recreational sector. An option is to increase recreational license fees to account for halibut quota purchase, but the process of increasing fees is time-consuming, taking at least three years to complete (Gislason 2006). Canada faces a similar challenge to that of the Council in Alaska. Exchanging the elaborate Council process for Ministerial oversight in Canada might yield a faster

resolution, but imposing new rules on a group of fishermen who treat their individual right to fish halibut as a birth right will prove difficult.

5. CONCLUSIONS

For fourteen years, the Council process has failed to provide a solid management plan for the Alaska charter halibut fishery. Management at the Council and National level has failed to grasp the complexity of the recreational halibut fisheries in Alaska, stemming from a nearly absent consideration of why people fish. Understanding why people fish is a much more complex task when the purpose to fish is not income. Because the Council process traditionally concerns itself with commercial fisheries, there is no mechanism or expertise in place to analyze a fishery by effort type. ADFG and other state fisheries management organizations have done a better job with recreational fisheries because of long time involvement in recreational fisheries management. ADFG could do well with halibut, but because of the Halibut Act (16 U.S.C Sec. 773), ADFG's management scope is limited for recreational halibut fisheries. This arrangement is far from ideal, but it is what exists at the present time.

A review of current literature on recreational fisheries provided direction to a more appropriate assessment method for the charter halibut fleet. The identification of recreational user types, the effort inputs unique to each type and each recreational fishery, is fundamental to an understanding of the recreational fishery. It is also an element apparently absent from Council management practice. State fisheries management has made some progress in this regard, perhaps in part because the literature on recreational user types is still very limited. Working within the bounds of current natural resource

management practice in the U.S., I have proposed a way in which charter halibut management might be improved. It includes an assessment of recreational effort inputs. Following the work of Kearney (2001) and others, this sort of assessment is possible, though a daunting task to many. Federal and regional management is unfamiliar with this sort of impact study. Although consideration of recreational effort inputs is not in writing with ADFG, consideration of management impacts on recreational fishermen are already an integral part of their management process. This is encouraging for assessments of recreational fisheries outside of the Council process, such as inshore and inland U.S. fisheries. Globally, and dependent on local management practices, a review process for recreational user types would probably benefit the maintenance of other recreational fisheries as well.

At more informal levels, many involved in fisheries already see the need to accommodate different fishing preferences. Murphy's (2006) proposal shows promise in this regard. There are still better ways to provide for diverse fishing interests as reflected in the hybrid plan proposed in this paper, but Murphy's interest to provide an equitable distribution through queuing for halibut is also one major step in the right direction. Other fishermen have also commented on the Alaska charter fishery's unique diversity.[42] The unique element is the personal stake charter operators have in the fishery. Charter operators are not the legal harvesters of the fish their clients target. Instead charter operators provide fisheries expertise, from fish finding abilities to safety at sea, that allows the recreational halibut fishery to flourish. This is why I support a split in halibut ticket availability between charter operators and charter fishermen. Under my proposal

charter operators would make their allocation in tickets available to their own clients in response to demand.

Articulating user-group types will help recreational fisheries management find its footing globally, but it will not cure this delayed management response to the Alaska halibut charter fishery. The Halibut Act prevents the sort of state management attention available to other U.S. recreational fisheries. Too much responsibility rests with the Council and NMFS in this case, and not enough with the management body closest to the halibut charter fishery. Dynamic options such as the hybrid plan I propose will struggle under the deliberate Council process. If ADFG held management responsibility for all recreational halibut effort, I trust that a long-term resolution would come to the current charter management impasse. State management is familiar with the tools in the hybrid plan, and ADFG could provide an efficient transition from hunting lotteries to a lottery for halibut with their in-house expertise. The Council process was created to provide more regional or localized oversight to U.S. fisheries. Now the Council, through the Halibut Act, has taken oversight away from the group most readily equipped to manage the recreational non-charter and charter halibut fisheries. When ADFG has the ability to manage the recreational charter halibut fishery, we can expect to see positive change.

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7. NOTES

[1] Rob Bentz, Personal Communication, 28 April 2006.

[2] Rob Bentz, Personal Communication, 28 April 2006; Douglas Vincent-Lang, Personal Communication, 19 February 2007.

[3] The alternative is a hard cap, which requires real-time monitoring. Once harvests in a fishery with hard caps reach a certain level, the fishery is closed by an emergency order. Soft caps allow for a longer review of alternatives to curb over-harvesting.

[4] Jane DiCosimo, Personal Communication, 6 October 2006

[5] Douglas Vincent-Lang, Personal Communication, 19 February 2007.

[6] Kim Titus, Personal Communication, 4 October 2006. "One of the more significant stumbling blocks administratively to this idea for Alaska is that we do NOT have a hunter/angler ID number, therefore we have difficultly identifying individuals over time. Sounds trivial, but it is not; when a hunter signs up as J. Smith, Jonathon Smith, J. Smith Jr., etc. tracking individuals over time becomes a king size mess without an ID number."

[7] Rob Bentz, Personal Communication, 28 April 2006.

[8] Dan Falvey, Personal Communication, 23 July 2006; Scott Meyer, Personal Communication, 25 July 2006.

[9] Dan Falvey, Personal Communication, 23 July 2006; Scott Meyer, Personal Communication, 25 July 2006; Jane DiCosimo, Personal Communication, 6 October 2006.

[10] For perspective on this lengthy delay, consider that the Law of the Sea Convention took fourteen years, just two years more, to create the world-wide network of 200-mile Exclusive Economic Zones. These twelve years (and growing) are for the management plan of one fishery in one country.

[11] Douglas Vincent-Lang, Personal Communication, 19 February 2007.

[12] Linda Behnken, Personal Communication, 23 March 2006.

[13] Jay Ginter, Personal Communication, 24 February, 13 March 2006; Jason Gasper, Personal Communication, 15-16 March 2006

[14] Jay Ginter, Personal Communication, 24 February, 13 March 2006

[15] The Administrative Procedures Act of 1946 (2005) is meant to provide a certain transparency in the rule-making process. It basically requires a period of public comment on any proposed rule, according to certain criteria, before a rule is final. This provides for the public comment period and published proposed rules in the Federal Register (NMFS 1997). There is a clause for exceptions if a certain rule finds good cause, in that "public procedure [i.e. comment] would be impracticable, unnecessary, or contrary to the public interest" (Title 5, *U.S. Code*, section 553(b)(B), 2005 edition).

[16] Rob Bentz, Personal Communication, 28 April 2006.

[17] Jay Ginter, Personal Communication, 3 March 2006.

[18] Jason Gasper, Personal Communication, 15 March 2006.

[19] It is of note that ADFG never supported the IFQ program, from the program's inception to its eventual removal in late 2005. Douglas Vincent-Lang, Personal Communication, 19 February 2007.

[20] Bob Ward, Personal Communication, 9 January 2006.

[21] Daniel Falvey, Personal Communication, 23 July 2006.

[22] Rex Murphy, Personal Communication, 22 September 2006.

[23] Jane DiCosimo, Personal Communication, 6 October 2006.

[24] Jane DiCosimo, Personal Communication, 6 October 2006.

[25] Rex Murphy, Personal Communication, 23 November, 2006.

[26] Douglas Vincent-Lang, Personal Communication, 12 October 2006.

[27] This idea originated from retired ADFG commissioner McKie-Campbell. Douglas Vincent-Lang, Personal Communication, 19 February 2007

[28] Rex Murphy, Personal Communication, 22 September 2006.

[29] Douglas Vincent-Lang, Personal Communication, 12 October 2006.

[30] Most cruise-ship passenger information concerning their spending habits (including fishing) is confidential and was indicated as such in the McDowell report.

[31] Douglas Vincent-Lang, Personal Communication, 12 October 2006.

[32] Steven Schwartz (Personal Communication, 2 October 2006) at ADFG provided a little more detail about the 18-point application check. "The applications are checked for completeness - some fields are required by regulation. The hunt field is checked in several ways – Is the number valid, is that hunt offered this year. The hunts and money must balance – did the hunter pay for all the hunts they applied for – did they pay more that was necessary. Does the hunter meet the requirements for the hunt – some hunt are Alaska residents only – some are nonresidents only, some require guides, some require certification for weapons such as archery or black powder or muzzle loaders. Applicants are restricted to a certain number of species they can apply for...etc."

[33] ADFG receives numerous requests annually to switch their lottery to a point system. Please see section 2 for a brief discussion of point systems in lotteries.

[34] Steven Schwartz, Personal Communication, 2 October 2006.

[35] Douglas Vincent-Lang, Personal Communication, 19 February 2007.

[36] Bob Ward, Personal Communication, 23 August 2006; Dan Falvey, Personal Communication, 15 July 2006; Linda Behnken, Personal Communication, 22 July 2006.

[37] Jane DiCosimo, Personal Communication, 6 October 2006.

[38] Douglas Vincent-Lang, Personal Communication, 14 December 2006.

[39] Jane DiCosimo, Personal Communication, 6 October 2006.

[40] Jane DiCosimo, Personal Communication, 6 October 2006.

[41] The IPHC is in the assessment business, not the allocation business. They make recommendations, adopted domestically, for commercial allocation, but they do not regularly determine allocation between sectors as the separate accountability alternative proposes. This will be a major issue in the months to come. Douglas Vincent-Lang, Personal Communication, 19 February 2007.

[42] Bob Ward, Personal Communication, 23 August, 2006.