

Introduction

In recent deliberations, the Council has considered a variety of measures to limit the use of prohibited species catch (PSC) in the Gulf of Alaska groundfish fisheries. At its June 2011 meeting, the Council took action to restrict total Chinook salmon PSC mortality in the Gulf pollock trawl fisheries to 25,000 fish per year (18,316 in the Central Gulf and 6,684 in the Western Gulf). The Council has also requested staff to develop an analysis considering the effects of reductions of 5 percent, 10 percent, and 15 percent of the halibut PSC available to the Gulf trawl and hook-and-line fisheries. While these actions will increase the need for participants in these fisheries to avoid PSC to maintain catches of target species, some stakeholders contend that the management structure of the fisheries (including the management of PSC) is an obstacle to achieving PSC avoidance. Under the License Limitation Program (LLP) currently used to manage most Gulf fisheries, all PSC is counted toward a fleet PSC limit.¹ These fisheries have evolved into derbies, in which closures are timed to coincide with estimated catch of the applicable total allowable catch (TAC) or PSC limit, whichever is reached first. Participants are concerned that this fleet level management of the fisheries creates a disincentive for PSC avoidance, since many PSC avoidance measures may also decrease catch rates, which, in turn, typically reduce a vessel's share of the overall catch in a derby fishery. The strength of this disincentive could increase at lower PSC limits, since a vessel adopting avoidance measures could lose its opportunity in the fishery more quickly under a more constraining lower limit. Some stakeholders have suggested that bycatch allowances (or apportionment of the PSC limits among individuals or cooperatives) could create an effective incentive for PSC reduction at the individual level, by ensuring that a vessel's opportunity in the fishery will not be lost due to the fishery closing from reaching a PSC limit. To aid its consideration of whether to advance a bycatch allowance program for analysis (and the structure of any alternatives considered in that analysis), the Council has requested staff to prepare this discussion paper, surveying the use of bycatch allowances in other fisheries.

Discussion

A few different types of allowances could be considered individual bycatch allowances. First, and most directly, the establishment of allowances that limit the catches of a species that is not permitted to be retained could be considered a bycatch allowance. This type of allowance, however, has been implemented in very few instances (Hannesson, 2006). In 1992, as a part of efforts to reduce dolphin mortality in the Eastern Pacific tuna fisheries, fleetwide limits on dolphin mortality were apportioned among vessels, with each receiving an equal share of the total limit. Each vessel fished subject to its individual non-transferable dolphin mortality limit, which required the vessel to suspend fishing for the season once it reached that limit (Buck, 1997). Over time, as the fleet has demonstrated its effectiveness in reducing dolphin mortality, the limit has reduced substantially from its original level. These dolphin mortality limits remain in effect today (AIDCP, 2009). Although these dolphin limits are bycatch limits, they are limits of a different type from the limits on bycatch (e.g., marine mammals) than limits that might be proposed by the Council to address halibut PSC or Chinook PSC (Hannesson, 2006).

Beyond the program to limit dolphin mortality, only North American Pacific fisheries are known to establish individual bycatch limits for species that must be discarded by regulation. These programs

¹ Halibut PSC is not apportioned by area (it is Gulfwide), but is divided by a variety of factors that vary by gear type and may include target fishery or fishery complex, season, and operation type. In addition, some participants in the fisheries are subject to "sideboards" that limit the amount of halibut PSC that may be used by these sideboarded vessels.

govern trawl fisheries on the U.S. West Coast, British Columbia, and Alaska. The remainder of this paper briefly summarizes these management programs.

U.S. West Coast groundfish trawl fisheries

Historically, trip limits used were used in the trawl fisheries on the U.S. West Coast to manage catches of groundfish and associated halibut bycatch (IPHC, forthcoming). Under this management, estimated trawl bycatch mortality was deducted by IPHC from the halibut estimates of available yield prior to establishing TACs for other fisheries (PFMC, 2010), similar to other areas. In 2011, NMFS implemented the West Coast trawl groundfish individual fishing quota (IFQ) program, under which all species are allocated as IFQ, along with Individual Bycatch Quotas (IBQ) for halibut. The only species excluded from the program were those for which incidental catches are “small relative to management targets, and the inclusion of those species may have negative economic implications with little to no benefit to management” (PFMC, 2010). Halibut are not retainable, but all catches would be counted against a vessel’s available IBQ. A vessel that has fully used its IBQ would not be permitted to continue to fish. Vessels in the fishery are subject to a 100 percent observer coverage requirement.

The program “established a trawl mortality limit that would be applied to both legal and sublegal size fish. The groundfish trawl allocation would be set at 15 percent of the Area 2A (waters south of the U.S./Canada border) total constant exploitation yield (TCEY) for legal size halibut, not to exceed 130,000 pounds for the first four years of the trawl rationalization program, and not to exceed 100,000 pounds starting in the fifth year. The allocation scheme would represent a reduction by about half of halibut bycatch in the groundfish trawl fishery compared to current, status quo catches” (PFMC, 2010). As noted, under the former management, trawl fisheries were not constrained by halibut catches, but an estimate of the legal-size portion of those catches was deducted from the available yield prior to establishing a TAC for the halibut fleet. This will still occur under the IQ program.

British Columbia Multispecies Trawl Fisheries

In 1997, Fisheries and Oceans Canada implemented the an Individual Transferable Quota program in the British Columbia groundfish trawl fishery. That program includes allocations of quota for groundfish, as well as halibut bycatch, which may not be retained in the trawl fishery. Halibut mortality ITQ is transferable among licenses in the trawl fishery, subject to use caps. In addition, underages and overages are both carried over in limited amounts. Any vessel with an overage in a season is limited to mid-water fisheries (which have minimal halibut bycatch), as long as the overage has not been covered by a transfer. Vessels in the fishery are subject to 100 percent at sea monitoring of all tows. The fleet is divided into two categories. One category is required to have 100 percent observer coverage; the other, which is limited to fishing only in the Strait of Georgia (inside of Vancouver Island), is required to have 100 percent electronic monitoring at sea. Observers record data concerning the length and condition of all discarded halibut to assign a mortality rate on a fish-by-fish basis (IPHC, forthcoming).

Prior to the implementation of the halibut mortality limit in the trawl fishery, annual mortality was estimated to range from 1.2 million pounds to 2 million pounds. To achieve halibut mortality reduction in the fishery, the trawl mortality limit was set by DFO at 1 million pounds. Since the program was implemented, annual halibut mortality in the fishery has not exceeded 500,000 pounds, and has typically been approximately 250,000. This reduction likely stems from both the individual accountability for halibut mortality and the individual accountability for groundfish catches (which has effectively prevented groundfish TAC overages) under the ITQ program (IPHC, forthcoming).

Central Gulf of Alaska rockfish fishery

In 2007, NOAA Fisheries implemented a pilot catch share program, developed by the Council, in the Central Gulf of Alaska rockfish fishery. In addition to allocations of target rockfish and valuable incidental catch species, this program apportions a halibut PSC limit among cooperatives in the fishery.

As in all North Pacific trawl fisheries, retention of halibut is prohibited making these apportionments individual bycatch allowances. Catches of halibut are counted against each cooperative's apportionment of the halibut PSC limit. Cooperative halibut apportionments are transferable to other cooperatives. In addition, any cooperative halibut apportionment that is unused at the end of the rockfish season is available for use in other trawl fisheries through the end of the year.

The program established a halibut mortality limit for the fishery of based on historical halibut mortality – approximately 225 metric tons during the applicable qualifying years. Since the program's implementation, the usage of halibut mortality in the fishery has decreased substantially, with cooperatives using less than 30 percent of their total halibut apportionment in any year. The decline is achieved through a variety of measures, including increased use of pelagic trawl gear and the security of exclusive rockfish allocations, which allow participants in the fishery to move from areas of high halibut catches without risking loss of a share of the total catch from the fishery. The incentive for reducing halibut catches is enhanced by the late season rollover of unused halibut to other trawl fisheries.

Since the rockfish pilot program was of limited term - expiring at the end of the 2011 season - the Council adopted a catch share program for the fishery, which NOAA Fisheries will implement for the 2012 season. The new program maintains the allocations of rockfish and incidental catch species, as well as the apportionment of the halibut mortality limit. This apportionment of halibut mortality recognizes the decreased halibut usage by the fishery under the pilot program by lowering the halibut available to the fishery to 85 percent of the historical annual halibut usage – 192 metric tons after the reduction. The reduction of approximately 27 metric tons will remain in the water and unavailable for use by any fishery. In addition, the rollover of unused cooperative apportionments is reduced to 55 percent of the unused halibut mortality (rather than the fully amount of unused mortality that is available for other trawl fisheries under the pilot program).

Amendment 80 Fisheries

In 2008, NOAA Fisheries implemented Amendment 80 to the Bering Sea and Aleutian Islands Fishery Management Plan, which established a catch share program for the Bering Sea and Aleutian Islands non-pollock catcher processor groundfish trawl fleet. The program allocates several target groundfish species, along with apportionments of red king crab, *C. opilio*, *C. bairdi*, and halibut prohibited species catch. The overall PSC limits are set based on historical catches in the fisheries. These overall limits are then divided among cooperatives based on their respective members target species allocations. The program also provides a limited access fishery for eligible vessels that elect not to join a cooperative. The allocation of groundfish and apportionments of PSC available in the limited access fishery are made from the residuals after issuances to cooperatives.

Since implementation of the program, the use of all apportioned PSC species by Amendment 80 fishery participants has declined substantially relative to historical usage. This outcome is expected, as the apportionments are binding limits set base on historic usage. Consequently, remaining within the constraint limits usage to at most historical levels. Since the fisheries, at times, were constrained by PSC (particularly halibut), a more telling figure is the amount of PSC used per groundfish harvested. In the first two years of the program, halibut PSC usage per ton of groundfish decreased to less than 70 percent of the historical average of the years leading up to the program (specifically 2003 through 2007). This decrease in PSC usage occurred in both the limited access fishery and in cooperatives. Cooperatives used approximately 70 percent of their halibut apportionments in the first year and approximately 83 percent of their halibut apportionments in the second year. The limited access used all of its apportionment in the first year and approximately 85 percent of its apportionment in the second. This relatively high usage of apportionments (in comparison to those observed in other programs) is not surprising, given the nature of these fisheries and the preceding management. Specifically, the fisheries governed by Amendment 80 have historically been subject to a limit on halibut PSC. In addition, that halibut PSC limit often

constrained the fisheries, resulting in unharvested TAC at the end of the year. In part, as a result of these constraints, the Amendment 80 fleet expended considerable effort to reduce its halibut PSC in the years leading up to the program. Efforts were made to reduce mortality of discards, improve halibut avoidance through sharing information on halibut catch rates, and reduce catch rates by the development of halibut excluders. Once the program was implemented, reduction gains would be tempered, because the more accessible means of addressing halibut PSC had already been adopted. In addition, the fleet could be expected to use a greater share of the available halibut as it sought to more fully harvest the available groundfish TAC, which would have been forgone due to the constraint of the general halibut PSC limit in place prior to Amendment 80.

Past consideration of Individual Bycatch Allowances

In addition to the programs referenced above, the Council in the past has considered the development of systems of individual bycatch allowances for halibut PSC. In 1993, NMFS staff presented a discussion paper to the Council considering a variety of IFQ program options, including IFQ for only target species, IFQ for only PSC species, and IFQ for both target and PSC species (NMFS, 1993). The paper suggested that allocating IFQ for target species only could have the advantage of simplifying monitoring of the fishery. The paper, however, expressed concerns with the allocation of IFQ for target species only would do nothing to address PSC concerns and may not end a race for fish, if fleetwide PSC limits are constraining. The paper suggested that IFQ for both target species and PSC could end the race for fish, but may be costly to monitor. In addition, the paper expressed some concern with the development of methods for allocating IFQ for PSC. Specifically, the concern was expressed that PSC histories may have the effect of rewarding poor performance. Instead, the paper recommended basing allocations of PSC on groundfish allocations using expected catch composition as the basis for the allocation.² IFQ for PSC only might be advocated as a simpler administrative approach that could advance some of the benefits of a catch share fishery. Participants would have an incentive to reduce PSC usage, gear conflicts might be avoided, and individual accountability for PSC could be established. The paper, however, suggested that without IFQ for target species, the most valuable fisheries might still be prosecuted as a race for fish. This race could result in the use of most of the individual PSC allocations being used in those more valuable target fisheries, leaving a substantial share of other fisheries unharvested. In addition, any fisheries that are not constrained by the allocated PSC would be unaffected by the program. Despite these shortcomings, management of the PSC allocations would require 100 percent observer coverage, effectively imposing the cost of a fully rationalized fishery on the participants, while not providing the benefits that are derived from target species allocations.

In 1996, the Council, at the suggestion of some stakeholders, considered the development of a Vessel Bycatch Account (VBA) program that would have allocated shares of PSC species within the trawl fisheries in the Bering Sea and Aleutian Islands and Gulf of Alaska groundfish fisheries (NMFS, 1996). The Council created a committee that developed options for a vessel bycatch accounting program for consideration (VBA, 1998a; VBA, 1998b). A variety of legal, enforcement, and administrative concerns slowed the development of the program alternatives. Ultimately, the committee's output was subsumed by broader efforts to rationalize the fisheries (IPHC, forthcoming). Over time, the administrative, legal, and enforcement challenges associated with individual bycatch allowances have been overcome in certain cases, as shown by both Amendment 80 and the rockfish program.

Conclusion

Although bycatch allowances have received substantial attention from analysts recently, few management programs allocate bycatch allowances of the type that might be considered to address Chinook salmon PSC or halibut PSC. Those programs that have allocated bycatch allowances typically have done so as a part of a broader catch share program that includes allocations of quota for target species. These programs

² A similar approach was used for division of PSC among participants in the rockfish program and Amendment 80.

appear to have effectively reduced bycatch from the levels observed prior to the program. In some cases, the gains may be exaggerated, relative to gains that might be expected for some species (particularly halibut) in North Pacific fisheries, since the fisheries lacked bycatch limits prior to the issuance of individual bycatch allowances.

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