Managing Yields in a Groundfish Management Regime of Individual Fishing Quotas, Intersector Allocations, and Stringent Rebuilding Requirements

Potential Mechanisms Designed to Avoid Overharvest and Optimize Sector Fishing Opportunities

A Draft Issue Paper Developed by Council Staff for the Pacific Fishery Management Council's Consideration
(NOTE: suggested analyses and key questions for consideration are noted in this document in *bold italics*)

Introduction

The Pacific Fishery Management Council (Council) is considering a trawl individual quota (TIQ) program for rationalizing the limited entry trawl groundfish fishery. Concurrently, the Council is considering an allocation of the available harvest of managed groundfish stocks and stock complexes to each of four different non-tribal sectors of the West Coast groundfish fishery: limited entry trawl, limited entry fixed gear, directed open access (i.e., vessels commercially targeting groundfish without a federal permit), and recreational[1]. This intersector allocation process supports development of a TIQ program, where trawlers will need a set allocation of species to manage their fishery using individual transferable quotas and/or fishing cooperatives, as well as other Council objectives such as bycatch reduction and a more stable management regime.

The reauthorized Magnuson Stevens Act includes a new provision to end overfishing once it is detected. Overfishing is defined in federal regulations as a realized harvest rate in excess of that which produces maximum sustainable yield (MSY). In terms of absolute harvest of West Coast groundfish stocks, this would equate to a total catch in excess of the acceptable biological catch (ABC). In the Pacific Council process, precautionary management measures and frequent inseason adjustments to ongoing fisheries are used to stay within specified ABCs and OYs. While occurrences of overfishing groundfish stocks on the West Coast have been rare using this process, there have been recent instances of overfishing. Significant uncertainty in current catch monitoring systems has led to unanticipated occurrences of overharvest (i.e., harvest in excess of sector catch limits and/or sector catch projections) in recent years in both commercial and recreational fisheries. These reasons and the need to protect fishing sectors from premature closures due to catch overages in other sectors compel consideration of a different management framework.

Challenges to Managing Low Yields with Intersector Allocations

The Council has identified the four non-tribal groundfish fishing sectors for consideration of set allocations of groundfish species and complexes. The Council proposes set-asides of needed yields to account for the unavoidable, incidental groundfish bycatch in non-groundfish and tribal fisheries and total mortalities accrued in research activities. These set-asides would be deducted from the allowable harvest before intersector allocations are made. There is a high likelihood

[1] Tribal allocations may be pursued in a separate government-to-government process and treated as a yield set-aside in the analyses in the intersector allocation EIS.

that very low yields of the most constraining groundfish stocks will be available to groundfish fishing sectors once this management regime is implemented. Implicit in this process is that each sector would be responsible for maximizing their fishing opportunities while not overharvesting their allocated quotas of groundfish. Each sector has unique challenges to overcome that depend on the sector's ability to avoid constraining species and the relative uncertainty of their catch monitoring systems.

Limited Entry Trawl Management Challenges

Current fishing opportunities for the limited entry non-whiting trawl sector are most constrained on the shelf by the bycatch of canary, bocaccio (south of 40°10' N latitude), and widow rockfish; and on the slope north of 38° N latitude by darkblotched rockfish and Pacific ocean perch. Gear restrictions, depth-based rockfish conservation area (RCA) and essential fish habitat area closures, and trip limits are used to target healthy species while minimizing bycatch. At-sea observers track discards in this fishery with about 25% of the trips sampled under the West Coast Groundfish Observer Program (WCGOP).

The whiting-directed trawl sectors are most constrained by canary, darkblotched, and widow rockfish. Fixed allocations of whiting and hard bycatch caps for the three most constraining rockfish species are used to target whiting while minimizing bycatch. Attainment of the hard bycatch caps during the primary whiting season triggers closure of the non-tribal sectors even if sector whiting allocations have not been caught. Unlike the non-whiting trawl fleet, whiting vessels are exempt from RCA restrictions, but are subject to specific Chinook salmon conservation area closures adjacent to the mouths of the Klamath and Columbia rivers. Further depth-based area closures are implemented inseason if Chinook salmon bycatch approaches critical levels as determined in a consultation process pursuant to the Endangered Species Act. The at-sea fleets (catcher vessels delivering to motherships, and catcher-processor vessels) have 100% at-sea observation requirements. Whiting vessels delivering to shoreside plants are required to fully retain and deliver all their catch. Electronic monitoring is contemplated for the shore-based whiting sector to ensure maximum retention of catches.

Due to catch monitoring uncertainty and other facets of the current management regime, none of the trawl fleets are without risk of exceeding their harvest guidelines and/or allocations. The whiting fleets, which receive almost real time reports of their total catch, are at risk of attaining the bycatch cap for an overfished species before achieving their annual whiting quotas. The non-whiting trawl fleet is at greater risk of exceeding their allocations due to greater variance of catch estimates since only about a quarter of the fleet is sampled at any one time under the WCGOP. There is also a lag of about two months for receiving landings information from fish tickets, and an even longer lag for receiving trawl logbooks; both streams of data are needed to reconcile observer data and provide final trawl catch estimates.

While the limited entry trawl fleets are observed at-sea more frequently than any other West Coast fishing sector, fishing opportunities are still compromised by random "disaster" tows, i.e., significantly large catches of a constraining species. Disaster tows are unpredictable and rare events. ***[Determine frequency and magnitude of disaster tows in the various trawl sectors from the WCGOP]***. Depth-based management is currently the most effective strategy for reducing bycatch. Seasonally variable trip limits and selective trawl gear configurations also contribute to bycatch reduction. In spite of these measures, the fleets are still hampered by overcapacity and uncertain fishing prospects due to unpredictable disaster tows. Therefore, to achieve mandated economic and conservation objectives, the Council is considering rationalizing

the limited entry trawl sector using individual transferable quotas and/or a cooperative system, enabling vessels to combine quotas, risks, and profits.

Under the contemplated trawl rationalization system, quota pounds would be allocated and could be transferred between vessels. Vessels could no longer fish once their allocation of quota pounds for a target or bycatch species is exhausted. More quota pounds would need to be purchased to cover any deficits before that vessel could again go fishing. This mechanism should reduce bycatch given a strong economic incentive for fishermen to more carefully and selectively prosecute their fishery. However, the risk of sector catch overages (i.e., catches exceeding the sector's annual allocation of a given species) would not be entirely eliminated since a single disaster tow of a more constraining species (e.g., canary rockfish) could easily be large enough to exceed the sector's allocation and adversely affect further fishing opportunities for that sector and possibly other sectors as well. (The worst case scenario is a disaster tow or series of tows that are sufficiently large to risk exceeding the species' OY or ABC and prematurely closing the IFQ fishery). Furthermore, the availability of quota to cover catch overages may be scarce. It is also possible that the demand for quota pounds of the most constraining stocks may drive the price of this quota up to a point where it is not economically feasible to continue fishing. These inherent risks are not fully mitigated with a TIQ management system.

Limited Entry Fixed Gear Management Challenges

Current fishing opportunities for the limited entry fixed gear sector are most constrained on the shelf by canary and yelloweye coastwide, bocaccio south of 40°10' N latitude, and cowcod south of 34°27' N latitude. Depth-based RCA closures and seasonally varying trip limits are used to target healthy species while minimizing bycatch. At-sea observers track discards in this fishery, although the fleet is observed at less than a 25% rate under the WCGOP. ***[Determine the current WCGOP sample rate].***

The primary target groundfish species for the limited entry fixed gear sector are nearshore species, which are managed using limited entry state permits in California and Oregon (there are no nearshore commercial fisheries allowed in Washington waters), sablefish, and slope rockfish. Fixed gears are particularly effective at targeting rockfish in high relief, rocky habitats. The management measures most often used to manage harvest in this sector are trip limits and specification of the non-trawl RCA. There is very little information to justify seasonally varying the boundary lines of the non-trawl RCA due to the lack of a logbook program and other area/season-specific catch information. Therefore, the non-trawl RCA has been static since its inception and its configuration is likely to remain unchanged given the very low harvest rates allowed for canary and yelloweye rockfish in their respective rebuilding plans. This fact also limits further fishing opportunities for this sector. Any liberalization of management measures in the latitudes and depths these species are distributed increases the risk of exceeding harvest guidelines and quotas allocated to this sector.

Open Access Management Challenges

Current fishing opportunities for the directed open access sector are most constrained on the shelf by canary and yelloweye coastwide, bocaccio south of 40°10' N latitude, and cowcod south of 34°27' N latitude. Depth-based RCA closures and seasonally varying trip limits are used to target healthy species while minimizing bycatch. At-sea observers track discards in this fishery, although the fleet is observed at a very low rate under the WCGOP, especially south of 40°10' N latitude. ***[Determine the current WCGOP sample rate north and south of 40°10' N latitude].***

Like the limited entry fixed gear sector, the primary target groundfish species for the directed open access sector are nearshore species, sablefish, and slope rockfish, and the same types of management measures are used for this sector. However, trip limits for the directed open access sector are typically much less than those for the limited entry fixed gear sector. Beginning sometime in 2007, any open access vessel landing groundfish species on the West Coast will be required to carry a vessel monitoring system (VMS) to ensure compliance with the RCA closure.

The directed open access sector is at great risk of exceeding specified harvest guidelines and quotas primarily due to the lack of effort controls and the paucity of at-sea observations of discards in the sector. Effort is currently controlled by varying the trip limits and, most frequently, the daily or weekly limits in the daily-trip-limit (DTL) sablefish fishery. This strategy is, at best, an inexact instrument for controlling open access effort. The Council is currently contemplating a limited entry scheme for the directed open access fishery, whereby any vessel catching and retaining groundfish in federal waters would be required to have a federal permit. This process is at too early a stage to predict fleet size, qualification criteria for a federal permit, or any of the effects of implementing a limited entry system for this sector.

Recreational Management Challenges

Current fishing opportunities for recreational groundfish fisheries are most constrained by canary and yelloweye rockfish coastwide, bocaccio south of 40°10' N latitude, and cowcod south of 34°27' N latitude. Seasons, bag and size limits, and depth-based closures are used to manage recreational groundfish catch. Retention of cowcod, canary, and yelloweye rockfish is prohibited coastwide to prevent targeting. A small bocaccio bag limit is specified in California to reduce discards and accommodate unavoidable bycatch. State and federal harvest guidelines are set for many of the harvestable stocks. Federal harvest guidelines are also specified for canary and yelloweye rockfish to control the amount of discard mortality allowed for the sector. Automatic management actions, such as season and/or depth-based closures, are invoked when it is projected that these federal harvest guidelines will be prematurely attained.

Recreational catch monitoring is based on stratified, random creel surveys in each state and the resulting mortality estimates for the sector are highly variable. Discard estimates are particularly uncertain since they are primarily based on angler interviews, with unobserved estimates of the magnitude and species composition of discards. There is an at-sea observer and mandatory logbook program for Commercial Passenger Fishing Vessels (CPFVs or charterboats) in California; total mortality estimates for this fleet are therefore more precise. The precision of overall recreational catch projections is compromised by this uncertainty and the highly variable nature of effort. Angler effort is hard to predict sine it is influenced by the relative abundance of various target species, weather, and competing fishing and non-fishing activities. These factors contribute to a high risk of recreational fisheries exceeding harvest guidelines and quotas. ***[Determine recreational groundfish sample rates by state and mode. Variance of catch estimates- landings and discards- by state and mode?]***

Tribal Management Challenges

There are four tribes that fish groundfish (Makah, Quileute, Hoh, and Quinault), all located in Washington. Current fishing opportunities are most constrained by canary and yelloweye rockfish. Of the four tribes, only the Makah Tribe fishes with trawl gear. Therefore, the Makah tribal fishing opportunities could also be constrained by darkblotched rockfish and Pacific ocean perch. The Makah Tribe requires full retention of groundfish and has an at-sea observation program to monitor compliance and provide area-specific bycatch information to the rest of the fleet. The Makah observer program targets a sample rate of 15% of all trips on a monthly and annual basis.

While tribal fishing activities are not subject to RCA restrictions, they are restricted to their usual and accustomed fishing areas, which are limited to discrete areas off the central and northern Washington coast. Two of the most constraining stocks on the West Coast, canary and yelloweye rockfish, are most abundant off the northern Washington coast within the usual and accustomed fishing areas of the Makah, Quileute, and Hoh tribes. Conducting tribal fisheries in areas where the most constraining stocks occur poses a significant risk of exceeding tribal sector allocations for those species.

Potential Mechanisms Designed to Avoid Overharvest and Optimize Sector Fishing Opportunities

There are a variety of mechanisms currently used by the Council to avoid overharvest and optimize fishing opportunities, such as buffers, bycatch caps, and sideboards. Other mechanisms, such as multiyear OYs and carryover provisions, are not currently used by the Council to achieve these objectives, but are posed for Council consideration to meet the challenges of managing harvest under a system of fixed sector allocations and trawl individual quotas.

Buffers

Buffers are residual yields at the beginning of a season not anticipated to be caught by any directed fishery. The Council often specifies management measures that are not expected to catch the entire OY of a given species. Any left over yield is reserved as a buffer to be used by any sector or dedicated to a given sector if catch is higher than anticipated. Buffers are particularly useful for managing total catch in a sector when catch accountability is highly uncertain. In theory, the higher the catch uncertainty of a given stock, the larger the buffer should be. As catch data is collected inseason, reducing annual catch uncertainty over the course of a season, fishing opportunities may be enhanced by reducing the buffer to allow higher mortality that is still within a specified annual catch limit or OY. This management strategy tends to break down when catch uncertainty is very high and time runs out in the season before management measures can be adjusted to achieve but not exceed OYs. Therefore, the risks and benefits of buffer management need to be constantly weighed to achieve mandated conservation and economic objectives.

Bycatch Caps

Bycatch caps are yield set-asides of species specified for a sector that, when attained, would trigger closure of a fishery. Bycatch caps are currently used on the West Coast to manage groundfish bycatch in whiting-directed trawl fisheries and, in most cases, approved exempted fishing permit (EFP) activities. The non-tribal whiting sectors are currently managed with bycatch caps for canary, darkblotched, and widow rockfish. When these caps are projected to be attained, the non-tribal whiting fishery automatically closes even if whiting quotas have not yet been attained. Bycatch caps specified for approved EFPs are used to close fishing activities by a participating vessel or vessels when they are attained. (EFP bycatch caps are often specified for individual vessels and all participating vessels on a monthly and/or annual basis). Bycatch caps are allowed under the groundfish FMP, but they have not yet been used more extensively.

Bycatch caps are often very small yield set-asides that require almost real-time reporting of total catch to be effective. Therefore, management using bycatch caps is compromised when sector catch accountability is poor. In such cases, there is an increased probability of a sector's catch overage co-opting fishing opportunities for other sectors, especially when the stock's OY is low.

Sideboards

Sideboards are very much like bycatch caps, but with perhaps more flexibility. A sideboard is a catch threshold that, when attained, would trigger an automatic action to reduce or eliminate mortality of that species. Such automatic actions include adjustment of RCAs, implementation of new regulations seaward or shoreward of the RCA, and/or trip limits. For instance, if a canary rockfish sideboard was specified and attained inseason in the non-whiting trawl fishery, the automatic action could be closure of all areas shoreward of the trawl RCA. Such an action would eliminate further catch of canary rockfish while still allowing opportunities to fish on the slope for flatfish and species in the Dover sole-thornyheads-sablefish (DTS) complex. While such an action may adversely affect vessels incapable of fishing in deep water, other vessels in the fleet would retain some fishing opportunity.

Carryover Provisions and Multiyear Optimum Yields

The use of buffers, bycatch caps, and sideboards are all effective strategies for reducing bycatch, but they alone will not eliminate the risk of exceeding sector quotas and OYs for some species. If each sector is ultimately responsible for limiting its bycatch, there would be less risk of one sector's overharvest compromising fishing opportunities for other sectors. An incentive/disincentive mechanism may be needed to change fishing behaviors to more selectively harvest healthy target species, while avoiding species of concern. Such a mechanism is managing constraining stocks with carryover provisions and multiyear OYs.

Carryover provisions would allow a transfer of yield surpluses or deficits of some species at the sector level (or permit/co-op level under a TIQ program) from one year to the next. Sector accounts would be settled by the end of the prescribed multiyear OY period. Management risk of exceeding a sector bycatch limit in any one year could then be spread over a longer period. Any one sector, or trawl vessel/co-op under a TIQ program, could consider a management strategy in the first year of a multiyear OY period and, if the annual bycatch target was exceeded, could adopt more conservative management measures in following years. This reduces the risk that management miscues might pre-empt future fishing opportunities for that or other sectors, and promotes more precautionary and selective fishing practices.

Stock life history characteristics should be considered when determining an appropriate multiyear OY period. Faster growing stocks with shorter mean generation times and fewer age classes should probably be managed with shorter OY periods. The most constraining rockfish stocks on the West Coast (i.e., cowcod, canary, and yelloweye rockfish) have many age classes in their populations and might be better managed with longer OY periods. Factors such as mean generation time and recruitment variability may be important considerations in selecting a risk-averse multiyear OY period.

Another consideration in determining the length of a multiyear OY period and implementing a carryover of sector or vessel yield surpluses and deficits is how this strategy could be managed across a period when new assessments are being approved for management use. Currently, all the overfished species are assessed every other year (i.e., as frequently as possible under the biennial management regime) to understand whether progress has been made in rebuilding these species. Other stocks may also potentially be assessed during a multiyear OY period. This begs the question of whether a carryover mechanism can work when an OY changes as a result of a new assessment partway through a multiyear OY management period. One possible solution may be to carry over yield surpluses and deficits based on the proportion of the OY this surplus or deficit represents. For instance, if a sector exceeds its previous year's quota by 10% and a new assessment of that stock resulted in a change to the OY, the new quota for that sector would be reduced by the proportion of the sector's previous catch overage (i.e., 10% of the OY) applied to the new OY. ***[SSC: Are there any adverse biological stock effects managing groundfish species under such a mechanism?]***

Managing OYs over a longer period may also be more responsive to new mandates in the Magnuson-Stevens Act to end overfishing. While current Council practices have led to few incidents of overfishing in recent years, spreading overfishing risk over a longer period may reduce the frequency of overfishing. The Council and NMFS may need to pose these considerations when developing new National Standard 1 Guidelines interpreting the re-authorized Magnuson-Stevens Act. The groundfish FMP and current groundfish rebuilding plans would need to be amended to accommodate multiyear OYs.