

GROUNDFISH MANAGEMENT TEAM (GMT) AND COUNCIL STAFF REPORT ON AMENDMENT 20 – ACCUMULATION LIMITS FOR OVERFISHED SPECIES

A. Introduction

At the March 2009 Council meeting, the Council adopted accumulation limits for non-overfished species and a preliminary set of overfished species accumulation limits. The Council tasked the GMT and Council staff with further analysis of overfished species accumulation limits, paying particular attention to the vessel usage limits and how they impact prosecution of the fishery. The analysis presented in this report was developed for presentation to the Groundfish Allocation Committee in May. The GMT will be having further discussion on the issue at this meeting and may present clarification or further analysis to the Council during this agenda item.

1. Accumulation Limits – Basic Policy Considerations

The Council included accumulation limits in the trawl rationalization program as a measure against excessive control and consolidation in the fishery.¹ The shoreside trawl individual fishing quota (IFQ or TIQ) program will be subject to two sets of accumulation limits: control limits that apply to ownership and control of quota share (QS); and, vessel usage limits that apply to the quota pounds (QP) a vessel may use in a year. In essence, control limits are intended to prevent entities from obtaining undue influence over the fishery through the ownership or command of large amounts of QS. They also ensure that profits associated with the exclusive privilege to access the limited public groundfish resource are shared by a minimum number of owners. Vessel usage limits, in contrast, are aimed primarily at keeping a minimum number of vessels active in the fishery for the socioeconomic benefits associated with a larger fleet (e.g., more crew employment).

In setting the two sets of accumulation limits, the Council considered the tradeoffs associated with setting limits that are “too high” versus limits that are “too low.” In short, limits that are “too high” would undermine the Council’s control and vessel usage limits policy objectives. That is, control limits that were set “too high” would allow entities to reach unreasonable levels of control or profit. With vessel usage limits, limits that were “too high” would permit more fleet consolidation than desired. The Council evaluated this side of the equation by looking at the absolute minimum number of vessels or owners made possible by the limit (e.g, a control limit of 5% would ensure at least 20 entities held QS).

Our March 2009 analysis focused mainly on the “too low” side. Conceptually speaking, limits that are “too low” would prevent excessive control and consolidation yet at an unacceptable cost to the Council’s other goals for the TIQ fishery. Control limits that were “too low” constrain organizational flexibility and might even prevent harvesting entities from owning enough QS to

¹ A more detailed summary of the policy considerations involved in setting accumulation limit can be found in Agenda Item G.4.b, GMT Report, Groundfish Management Team (GMT) and Council Staff Report On Amendment 20 - A Framework Approach For Setting Control and Vessel Usage Limits For Non-Whiting Target Species” in the March 2009 Briefing Book (www.pcouncil.org/bb/2009/bb0309.html).

operate profitably. For vessel usage limits, limits that were “too low” would prevent vessels from generating enough exvessel revenue to achieve profitability and improved harvesting efficiency.

To aid the Council’s consideration of the “too high”–“too low” tradeoffs, our March 2009 report suggested a revenue-based approach that estimated potential annual exvessel revenues associated with a set of accumulation limits based on a hypothetical but realistic trawl sector allocation and exvessel prices.

2. Additional Considerations for Overfished Species

Given the multi-species, multi-strategy nature of the fishery and its regional diversity, identifying the levels at which accumulation limits become “too low” or “too high” is an uncertain and imprecise task. For target species, however, there seemed to be a relatively wide range within which the Council could set limits and achieve an acceptable balance between policy objectives. Yet as we noted in March, the acceptable range between “too high” and “too low” appears narrower for overfished species and the implications of missing too high or too low could be more significant.²

To fit overfished species within the context of the revenue-based approach, it is instructive to think of bycatch QP as an essential input of production, like fuel or crew wages. The objective of a harvesting operation is, of course, to earn profit through the sale of landed catch and in this multispecies trawl fishery, bycatch QP will be necessary to bring in that landed catch. The importance and value of bycatch QS/QP will thus derive primarily from the target species exvessel revenue it makes possible. Vessels will be able to sell overfished rockfish in the TIQ program, yet the revenue from the sale of the fish themselves may be insignificant compared to that generated from the target species. Halibut IBQ is the extreme example in that it will have no other value given that halibut is a prohibited species and cannot be retained.

For control limits, the fact that overfished species quota is an essential input means that the basic tradeoffs between limits that are “too high” and “too low” are very similar to those for the most important target species. As we noted in March, given the high importance and non-substitutability of overfished species quota, a large amount of QS could grant the holder considerable leverage over access to target species, and hence market control over the fishery. Our focus in this report is on vessel limits; however, we raise this point again here because of the important relationship between control and vessel limits and the potential of control limits to affect vessel operations. We discuss these reasons below in detail.

For vessel usage limits, the “too low” side of the equation is also similar to the situation with target species in that small limits would hamper improvements in harvesting efficiency. A “too low” limit can be thought of as one that would give vessels no realistic chance of harvesting enough target species to achieve improved efficiency and profitability. In other words, unreasonably low limits would effectively cap the target species that a vessel harvest to something considerably less than what is allowed by the target species QP usage limits. As

² Our March 2009 report on overfished species accumulation limits can be found at Agenda Item G.4.b, Supplemental GMT Report & Supplement GMT Report 2, in the March 2009 Briefing Book.

discussed in the next section, it is on the “too high” side where considerations for overfished species vessel usage limits become different.

3. Overfished Vessel Usage Limits and Impact on Fleet Consolidation

The question of what “too high” vessel usage limits might mean to the Council’s policy objectives has been more difficult to analyze than for target species. Again, while the concern with target species was increased fleet consolidation, the relationship between letting vessels use more overfished species QP and increased fleet consolidation is not as direct. This is because (a) a vessel’s total harvest is ultimately capped by the target species QP limits; and (b) the central incentive in the TIQ program is to avoid using more bycatch QP than necessary.

To elaborate on these two points, QP will be just another production input or cost for vessels like fuel and crew compensation. Thus to harvest a given set of target species QP limits most profitably, vessels will attempt to minimize the amount of overfished species QP. Vessels will attempt to avoid fishing at a high bycatch rate because having to purchase additional bycatch QP on the market could be costly. Even with QP that vessels do not need to pay for (e.g., QP received through initial allocation), there will be an opportunity cost to using the QP inefficiently because unneeded QP could be sold to other vessels for a profit. Given these strong economic incentives, vessel usage limits for bycatch QP might even be unnecessary if the TIQ market functioned efficiently. Each vessel would find its optimal bycatch amounts given its target strategy and location and the fleet would consolidate down to no less than what would be permitted by the target species QP usage limits.

Yet, there is a lot of uncertainty surrounding this multispecies TIQ program and so it is reasonable to be concerned that the TIQ market may function less than perfectly and to expect that overfished species QP usage limits could have some impact on fleet consolidation. In general, higher limits would be expected to decrease the number of vessels operating in the fishery, yet the magnitude of this effect is uncertain and consolidation would still be capped by the absolute minimum number established by the target species QP limits. Lower limits would be expected to increase the number of vessels in the fleet with some corresponding tradeoff in harvesting efficiency.

The mechanism by which overfished species QP usage limits might affect the functioning of the QP market and fleet consolidation centers on the nature of bycatch in the multispecies groundfish trawl fishery. The TIQ program does create a disincentive against using more bycatch QP than needed, yet as discussed in the next section, bycatch rates are unknown and variable. There may be two consequences to this fact.

First, anything that increases the probability of vessels reaching the target species QP limits would be expected to increase the likelihood of fleet consolidation. As described in the next section, vessel usage limits will be based on statistically derived estimates of bycatch rates. Even if the overfished species QP limits was placed exactly at the “true” average bycatch rate for a species, the variation in bycatch rates among the fleet would mean that many vessels with above average bycatch rates would be kept from reaching the maximum target species limits. The number of vessels likely to reach the maximum target species limits, and hence fleet

consolidation, would be expected to increase as the overfished species QP limits are placed higher relative to the “true” averages.

The second reason that the nature of bycatch might affect QP market function and consolidation is that vessels will have imperfect information about their QP need. There may be no incentive to use more overfished QP than necessary, yet the risk posed by the uncertainty and variation in bycatch may create an incentive to hold QP. Larger vessel usage limits would allow vessels to hold more QP in their accounts and could intensify the dynamic, thereby making QP less available on the market. And with less QP available on the market, there may be less willingness to face the risk of fishing, especially in certain areas of the coast, and thus fewer vessels and more geographic consolidation. The strength of this theoretical effect would depend on the quality of information and fleet confidence on bycatch. Again, if vessels had perfect information about bycatch, there would be no incentive to hold onto surplus overfished species QP because of the opportunity cost.

4. Estimating the Expected Bycatch

Above we noted that bycatch QP is an essential input in the “production” of landed catch. If it were an ordinary input, the Council might approach the setting of vessel usage limits according to need. That is, conceptually speaking, the Council might attempt to match the overfished species QP limits to might reasonably be needed to fully “produce” the Council’s vessel usage limits for target species. Yet, bycatch is not an ordinary input in that it is subject to uncertainty and variation meaning that the amount of overfished QP needed to “produce” a given amount of target species could vary by area, by trip, by year, by season, and so on.

Given this uncertainty, the best we can do is to examine the expected bycatch need. To do so, the Council has focused on the maximum initial allocation of overfished species QS as a starting point. The initial allocation of overfished species QS is based on a formula that applies a bycatch rate for each overfished species to each permits’ initial allocation of target species QS. The bycatch rates come from data collected from 2003-2006 by the West Coast Groundfish Observer Program (WCGOP) and are subdivided into subareas to better reflect the geographic distribution of overfished species distribution (*see* Figure 1). The formula then uses a permit’s logbook records to assign the appropriate subarea bycatch rates. The end result for each permit can therefore be thought of as the expected amount of overfished species needed to harvest that permit’s initial allocation of target species in areas they have historically fished. The Council has focused on the maximum allocation for each overfished species based on the rationale that the maximum allocations should be high enough to reasonably accommodate everyone else. That is, the permits with the highest allocations of yelloweye, canary, cowcod, and so on are representative of relatively larger target species opportunities in areas of high overfished species abundance areas, and so should accommodate those with smaller fishing opportunities and/or in areas of lower overfished species abundance.

The preliminary overfished species accumulation limits recommended would set overfished species control limits equal to the maximum allocations and then the vessel limits equal to the control limits. We discuss the allocation data in more detail below for each overfished species, here we simply note that the WCGOP bycatch rates are still statistical estimates subject to

variation and error. Applied to a particular allocation of target species quota, the rates can be roughly thought of as the mean, average, or expected bycatch needed to harvest that allocation in the subarea where the rates comes from. Thus the maximum canary rockfish QS allocation may be reflective of the average canary bycatch needed to harvest a relatively large amount of QP in a high bycatch area. Yet it is not the equivalent of applying a canary bycatch rate to the Council's set of target species usage limits. Even if it was, we would still expect that certain vessels attempting to reach the target species QP limits in high canary bycatch subareas to exceed the average rate because of the variance in bycatch estimates.

In sum, although the maximum initial allocations are the best available information for the Council to gauge expected overfished species QP needs they are still imperfect and involve significant uncertainty.

5. Adding Flexibility to the Vessel Usage Limits

The bottom line of the section above is that the maximum allocation method could still constrain a significant number of vessels because of the uncertainty inherent in bycatch. Vessel owners will have some ability to control their bycatch to some degree by deciding when, where, and how to fish. However, compared to inputs like fuel and crew wages, vessel owners will have much less control. By using the maximum allocation method, we might expect only mostly vessels close to the usage limits to be affected. Nonetheless even smaller producers could be affected, especially considering the small amounts of certain overfished species that are likely be available to the trawl sector. For example, as shown below, the Council's preliminary usage limit for yellow rockfish QS could be the equivalent of a mere 75 lbs.

For this reason, the GMT has recommended building flexibility into the Council's overfished species QP limits. In March, we suggested that the limit could be structured as a limit on unused QP that would allow vessels the flexibility to replenish their QP accounts if necessary. The Groundfish Advisory Subpanel focused on this method in their recommendations to the Council. This report focuses on providing flexibility to the fleet by establishing vessel usage limits higher than the control limits and maximum initial allocation amounts. We will provide some elaboration on the unused QP limit idea in a separate report.

B. The Concept of Risk Pools

In further analyzing accumulation limits for overfished species, we identified "risk pools" as a factor the Council might consider when attempting to strike the appropriate balance. Risk pools have been discussed for several years as a tool trawl harvesters might employ in the TIQ program for managing risk posed by individual accountability for total catch and unpredictable overfished species catch events ("lightening strikes"). Risk pool arrangements would be formed through private formal or informal contract and could take several forms.

There are two basic insights we wish to convey that suggest the Council may wish to err on the side of setting accumulation limits on the "too low" side of the tradeoff. First, as described further below, accumulation limits can affect the incentive and ability to form and maintain risk pooling arrangements. In short, setting accumulation limits "too high" might decrease the

incentive to form risk pools. Second, risk pools could provide the fleet with a means for responding to relatively small overfished species accumulation limits.

In addition, although risk pooling arrangements would be voluntary in nature and designed to protect the financial interests of harvesting entities, they could also have wider benefits to the overall performance of the TIQ program. For example, collaborative harvesting arrangements (such as risk pools) tend to improve information sharing, which in turn tends help in the avoidance of overfished species on a fleet-wide basis and improved access to target stocks.

C. The Relationship Between Control Limits, Vessel Limits, and Risk Pools

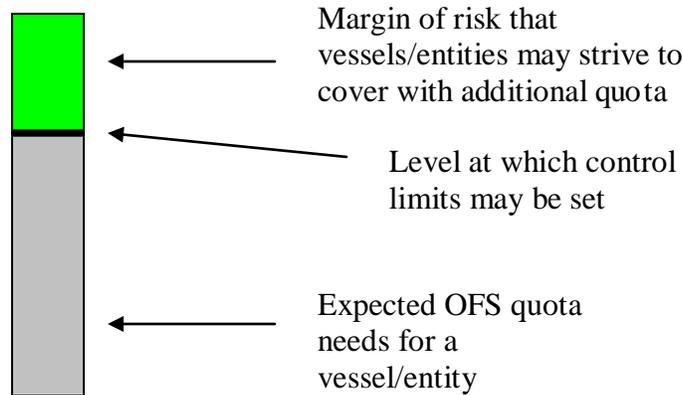
Risk pooling arrangements are likely to form among harvesters as an insurance arrangement to protect against potential financial risk. This financial risk exists because of the possibility for “lightning strike” catch events, and the high cost that is likely to exist to purchase enough overfished species quota pounds to cover that event. Through a pooling arrangement, a vessel encountering a “lightning strike” event is protected by the collective overfished species quota that is held by members of that risk pool.

Control limits can have an effect on the development of risk pools. If control limits are set at a high enough level, an individual may acquire enough quota that he/she is less inclined to form pooling arrangements with others. This may happen because that individual can acquire enough quota that they meet what they expect to need as well as cover their expected margin of risk. If individuals can cover the risk associated with a potential “lightning strike” event independently, there is little reason to develop pooling arrangements with others. However, the fact that an individual has acquired sufficient quota share (which creates annual quota pounds) to cover his or her operations does not mean that the overfished species management problem has gone away. This overfished species management problem may indeed be universal across the trawl fishery for several reasons that have been described during the development of the trawl rationalization program³. In fact, it may be exacerbated to some degree if individuals holding overfished species quota share elect to hoard their annual quota pounds to cover their own risk margins rather than sharing that quota through the market or through a pooling arrangement.

If one believes that insurance-like mechanisms such as risk pools will be necessary within the industry, then the formation of those risk pools can be facilitated by setting quota share control limits on overfished species relatively low and in this way make it difficult for an operator to accumulate enough quota share to independently cover their expected overfished species needs into the future. Instead, setting control limits relatively low would tend to lead to cases where the annual OFS quota pounds may not be sufficient to cover the amount of risk for an entity. This latter point leads to the thrust of the OFS control limit approach. Control limits on quota share can be set at a level that encourages the development of risk pools. To do so, the control

³ Several situations may exist in the case of overfished species that may make overfished species management a universal problem. Quota hoarding may ensue, diminishing the amount of quota available on the market and exacerbating the cost harvesters must realize to cover a lightning strike event. If the cost becomes too large, some may forego acquiring quota to cover a deficit and instead elect to face an enforcement action. This type of behavior creates problematic conditions for a variety of reasons. Furthermore, as past fishery practices have shown, lightning strike events may occur which can take a substantial portion of a sector’s allocation of an overfished species (if not the entire allocation), meaning participants in the fishery will continue to be joined at the hip to some degree.

limit should be set at a level that may accommodate the expected need of overfished species, but not allow for the accumulation of quota shares to the degree that one can cover their own perception of risk independently. This concept is identified in the following figure.



Vessel limits for overfished species can be viewed somewhat differently. In some cases the vessel limit of quota pounds will be the de facto entity level quota pound limit. This might occur in the case of owner-operators for example. From this perspective, a vessel owner operator would want to be able to have access to enough quota pounds to cover an unexpectedly large incidental catch event and to continue fishing after that event has occurred. Therefore, vessel limits would need to be set at a large enough level that they allow that vessel to acquire OFS quota pounds from their risk pool, cover that incidental catch event, and still allow the vessel operator to continue fishing – within some degree of reason.

Another important consideration for vessel limits is the fact that vessel limits may help protect participants within a risk pool from one another. For example, if a risk pooling agreement is formed with a relatively weak contract, one vessel could continually take relatively large amounts of overfished species, depleting the collective overfished species quota that exists among the members of that pooling arrangement, and negatively impacting other members of that pool. A vessel limit ensures that the take of one vessel is limited and in certain cases this may help protect participants in a risk pool from one another. This protection would tend to facilitate more stability among members of that pooling arrangement.

D. Developing Overfished Species Control Limits

During the consideration and establishment of non-overfished species control and vessel limits, the GMT proposed an approach which would take into account regional target strategies. A similar approach can be taken for overfished species, even though the motivation for overfished species control limits is different than that of target species. This approach would conceptually set a limit that accounts for the expected need of various fishing operations along different areas of the coast and in different strategies. Fortunately, the Council’s decision to allocate overfished stocks using “finer area bycatch rates” uses a method that can be described as allocating overfished species based on regional differences and fishing strategies. Since this approach allocates based on area-based bycatch rates, logbook information on a permit by permit basis,

and the initial allocation of quota share, it can be reasonably stated that the bycatch rate allocation approach takes into account the expected overfished species that may be needed by operations in different areas of the coast based on where they fish and what target opportunities they will realize through the initial allocation of quota share. Because of this reason, the analysis showing the initial allocation of overfished species quota share also helps to inform appropriate control limits.

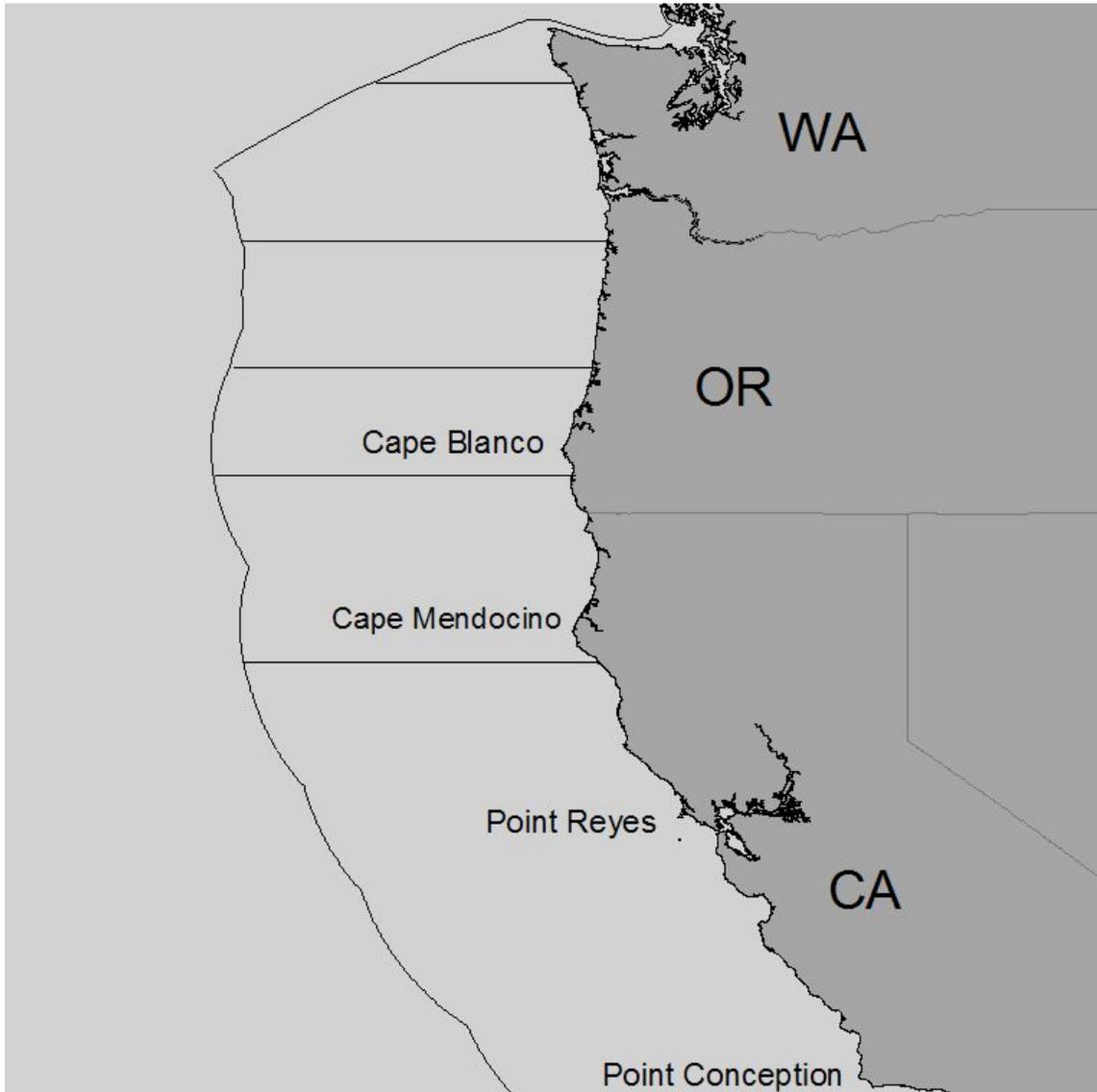


Figure 1 Map of Finer Areas Used in Initial Allocation

When considering overfished species control limits it is appropriate to consider control limits on QS at levels that accommodate the expected amount/needs of OFS quota share, but not so high as they may allow the accumulation of quota in a manner that would allow individuals to hedge against perceived risk. To allow quota share holders to accumulate quota shares to a point where they can independently cover their perception of risk would tend to reduce the need for entities to reach out to other quota share holders and form risk pooling arrangements with their quota pounds. These pooling agreements have financial benefits to harvesters within that pool, but also

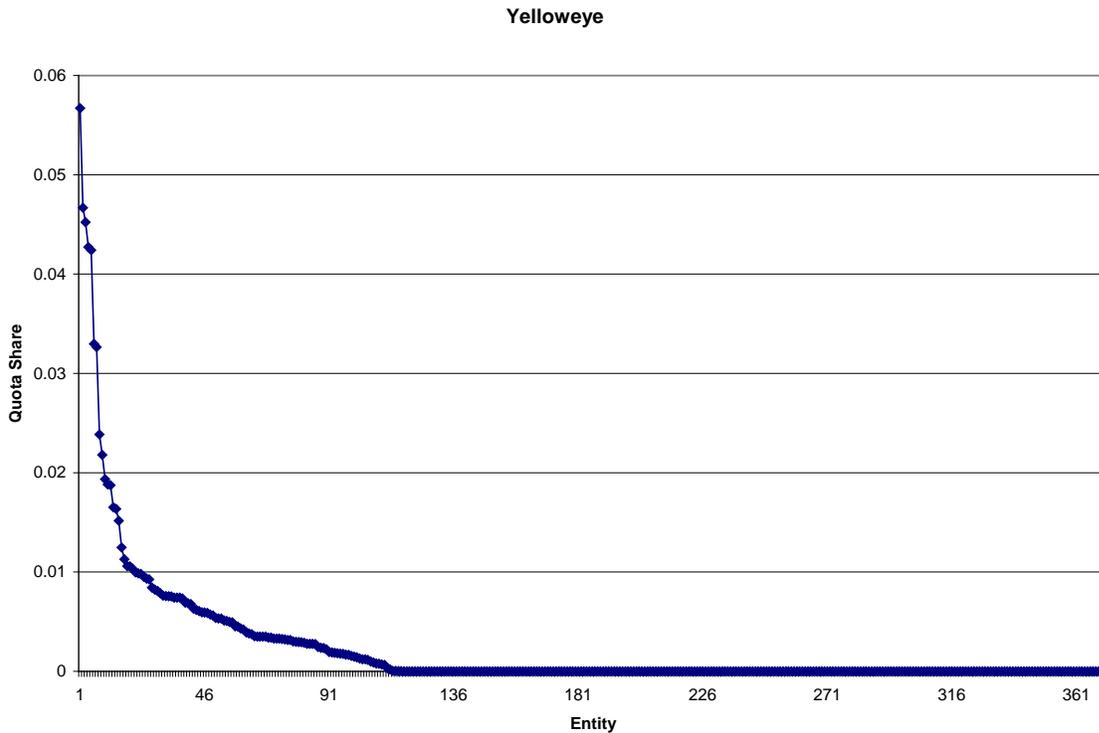
have fishery benefits as such arrangements tend to encourage information sharing which helps the broader fishery avoid overfished species.

Unfortunately, establishing the expected need of one operation may be vastly different from the expected need of another operation, yet a control limit will apply equally to both entities. If a control limit is established for canary rockfish which allows vessels operating in relatively high areas of canary abundance to cover their expected need, then this control limit will be much higher than the expected need of entities operating in low canary abundance areas. To facilitate the maximum amount of pooling, one might be inclined to set control limits that are less than the expected need of entities operating in relatively high canary areas. However, to do so appears to be directly at odds with the Council's decision to use "finer area rates" in the initial allocation of quota share.

The Council's conscious use of finer area bycatch rates for the initial allocation of quota share allocates relatively more overfished species to those entities with a history of operating in areas with relatively large populations of overfished species. Setting a control limit at a lower level would tend to run counter to this initial allocation approach, especially if there is no grandfather clause or opportunities for divestiture. For this reason, we assume that the Council's intent is to make an initial allocation of overfished species in a manner that distributes relatively more to those entities historically operating in areas of relatively high overfished species populations. To the extent practicable we approach overfished species control limits from the perspective of maintaining the Council's apparent intent for the initial allocation of overfished species while also facilitating the development of risk pooling arrangements. The result tends to be the setting of control limits that are higher than the initial allocation of most (if not all) entities. While this approach may allow entities in low bycatch areas to acquire more quota share than they expect to need (because they will not be constrained by the control limit, but may need less than the control limit), we believe that it is most important for risk pools to form among entities operating in high overfished species abundance areas. Based on our experience with the fishery, it is within these areas that the potential "lightning strike" events appear to be largest and the need for pooling arrangements to be greatest. Therefore setting control limits at a level that accommodates the expected need (but no more) of entities operating in high bycatch areas would tend to encourage pooling among those entities where the need for pooling is greatest. Pooling among these entities will tend to have the largest benefit from both the individual financial perspective, but also to the management perspective. Most of the gains in overfished species avoidance at the aggregate level will need to be realized by these vessels operating in relatively high bycatch areas. Greater degrees of cooperation and information sharing appear to be stimulated by cooperative-like arrangements, such as risk pools, and such collaboration will tend to increase the probability of avoiding overfished stocks.

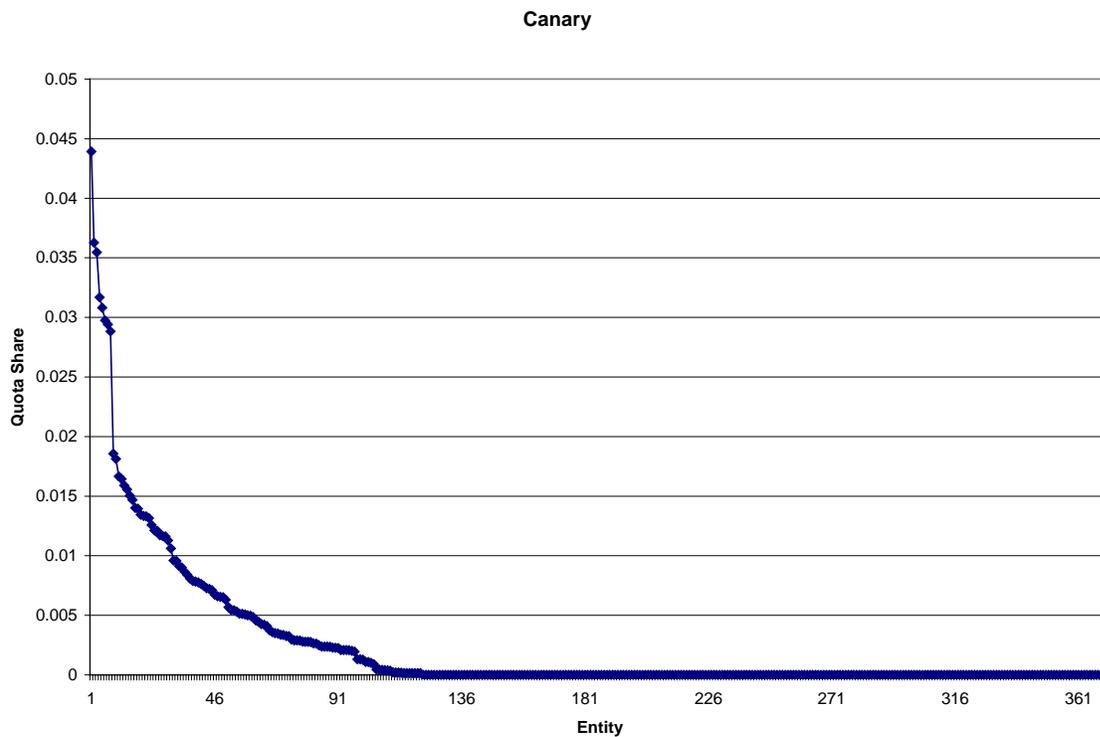
Yelloweye Rockfish

The following figure illustrates the yelloweye rockfish initial allocation results for a combined shoreside sector. From this figure, it is apparent that a handful of entities receive much larger amounts than others. However, this appears to have been a conscious intent on the part of the Council when the Council voted to use “finer area bycatch rates” for the initial allocation. The handful of entities that receive relatively higher amounts of initial allocation than others operate in a distinct area where yelloweye are more abundant. To accommodate their average, or expected, rate of yelloweye encounters it may be appropriate to set accumulation limits in a manner that accommodates these individuals, but no more. This control limit level would be approximately 5.7%. If current catch amounts are reflective of a future allocation to the sector, this 5.7% would equate to 75 lbs.



Canary Rockfish

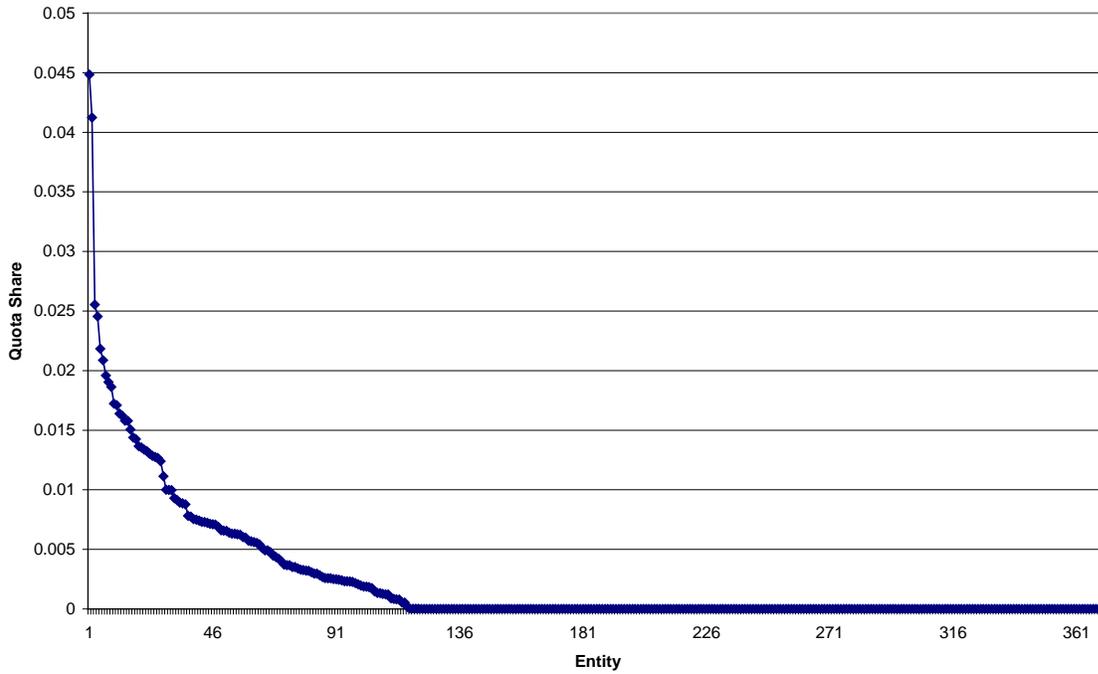
The canary rockfish initial allocation plots are fairly similar to the case of yelloweye. Through the Council's decision to use "finer area rates" for the initial allocation of OFS, a handful of entities receive initial allocations that are noticeably larger than other permits. This results from the fact that those permits have historically operated in areas where canary rockfish are more abundant and the use of finer area bycatch rates in the initial allocation allocates relatively more canary to those entities. This is combined with shoreside whiting activity and the pro-rata bycatch allocation made to those permits based on their whiting history. The resulting initial allocation results are the weighted average of the two initial allocation formulas to derive the common shoreside trawl sector initial allocation results. To accommodate the average, or expected, amount of canary rockfish necessary for entities that are expected to operate in relatively high canary bycatch areas, the control limit on canary may be set at approximately 4.4%. If existing catch levels are reflective of a future allocation, this may equate to 1,571 lbs.



Darkblotched Rockfish

The use of “finer area bycatch rates” in the initial allocation of OFS quota shares to non-whiting activity, and a pro-rata distribution of darkblotched to vessels with whiting history results in the initial allocation estimates shown in the figure below. To accommodate the expected need of vessels operating in relatively high darkblotched abundance areas, the control limit may need to be set at the maximum initial allocation, or 4.5%. Applying this percentage to the Council’s intersector allocation decision and applying that to the status quo OY yields an equivalent poundage of 25,000 lbs.

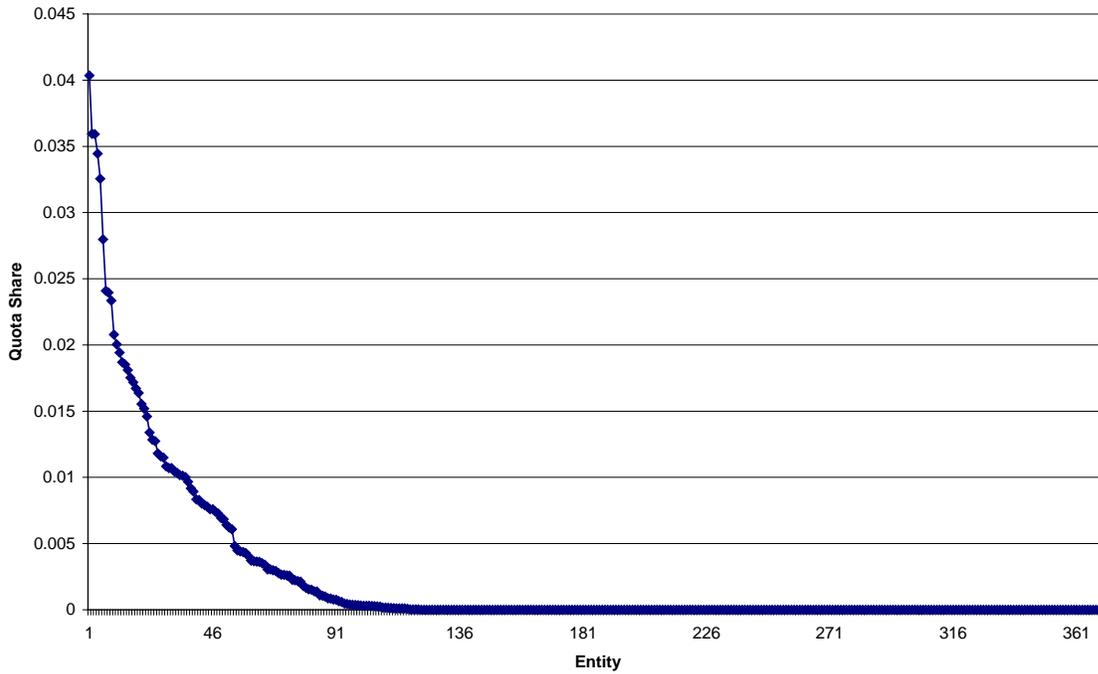
Darkblotched



Pacific Ocean Perch

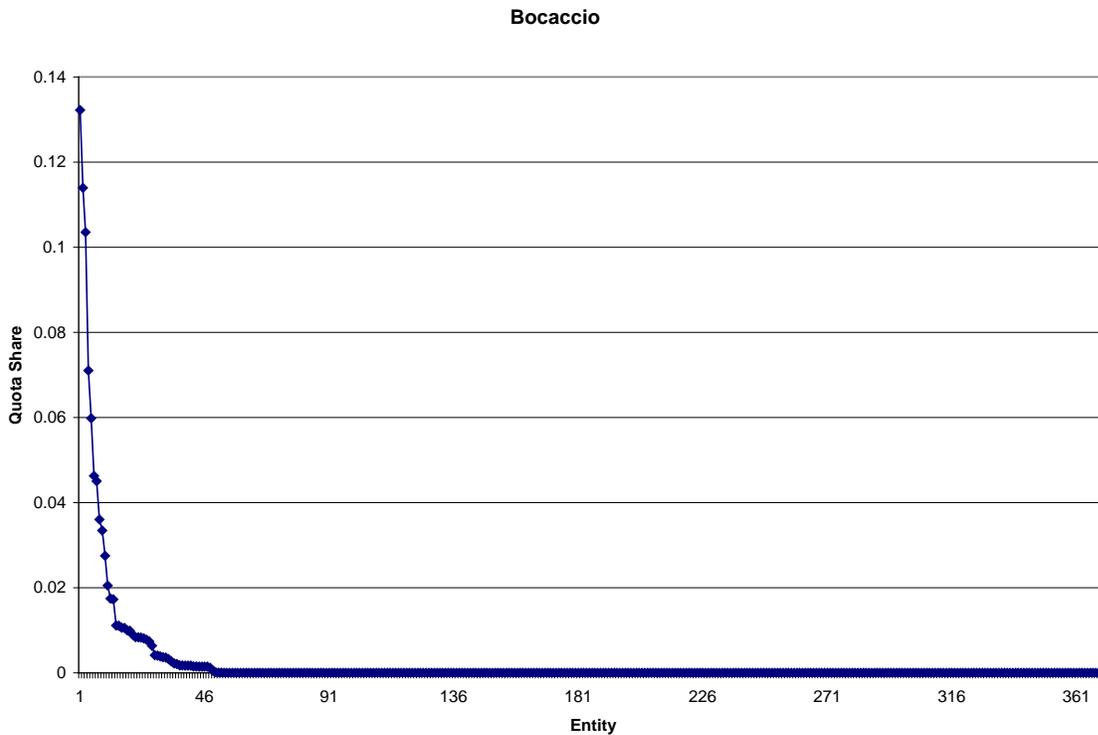
If the intention is to accommodate the expected needs of entities operating in areas where Pacific ocean perch are relatively abundant, then an appropriate control limit may be at the maximum initial allocation level. Based on the estimates in the figure below, this figure would be approximately 4%. Applying this percentage to the Council’s decision on intersector allocation and the status quo OYs yields an equivalent poundage of 14,374 lbs.

Pacific Ocean Perch



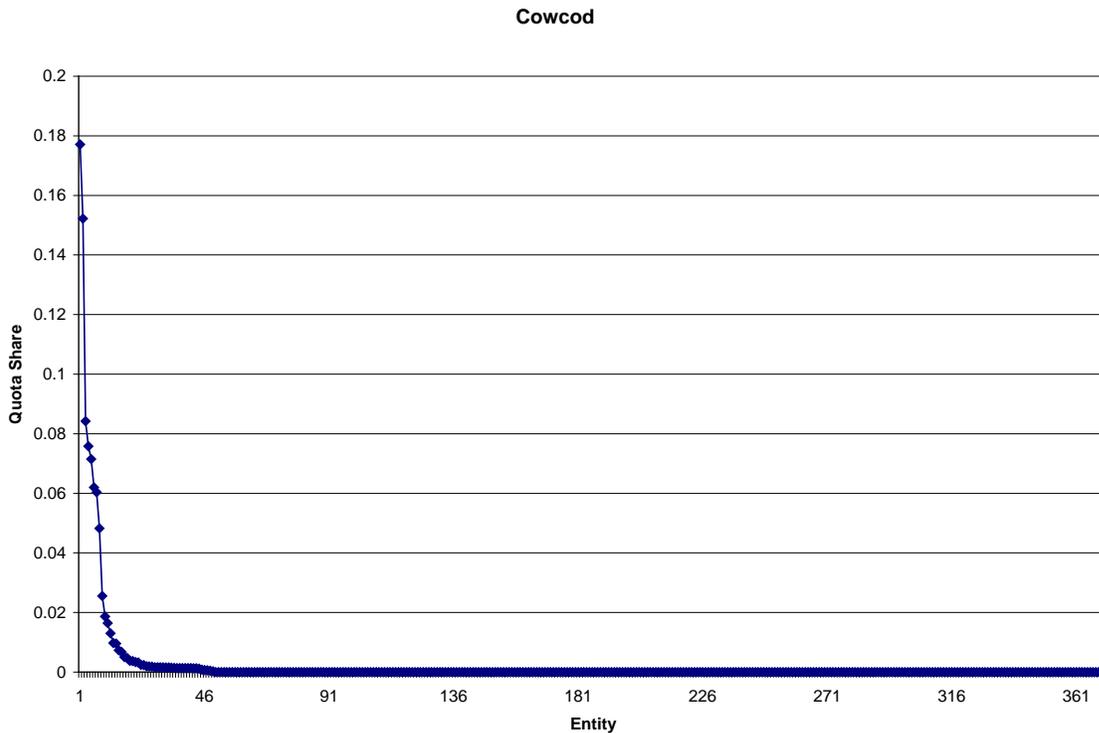
Bocaccio

Bocaccio is an interesting case. The Council's use of a bycatch rate approach for initial allocation of OFS is intended to reasonably accommodate potential OFS quota share needs. However, the application of this approach to bocaccio results in a handful of permits receiving initial allocations of bocaccio that are orders of magnitude larger than most other permits. Based on initial allocation analysis, one permit may receive approximately 13.2% of the initial allocation of bocaccio, absent some accumulation limit. This level of initial allocation for the quota shares of an overfished species has raised some concern among Council staff and some members of the Groundfish Management Team simply because of the amount of fishery access that is indirectly controlled through the holding of this level of overfished species quota share. Nevertheless, if one believes that the initial allocation formula does indeed represent the need of entities operating in relatively high bocaccio abundance areas, then an appropriate control limit may be up to 13.2%. However, if one believes that the handful of permits at the upper end of the spectrum would truly gain too much control over the fishery, then a more measured approach may be to set a control limit that is somewhat less than the highest potential initial recipients. This level may be on the order of 8%. Applying 13.2% and 8% to recent harvest of bocaccio in the trawl fishery and assuming this is reflective of a future sector allocation yields 3,579 and 2,169 lbs respectively.



Cowcod

Cowcod is similar to bocaccio. The application of the bycatch rate allocation approach results in a few entities receiving initial allocations of cowcod QS that are orders of magnitude larger than most others. Like bocaccio, Council staff and some members of the Groundfish Management Team have some concerns about the ability of an entity to accumulate quota shares up to this level (nearly 18%) because of the amount of fishery access that is controlled by the holding of overfished species quota share. Nevertheless, if one believes that this approach does indeed reflect the expected need of entities operating in areas where cowcod are found, then control limits up to 17.7% may be appropriate. However, if one believes that the handful of permits at the upper end of the spectrum would truly gain too much control over the fishery, then a more measured approach may be to set a control limit that is somewhat less than the highest potential initial recipients. This level may be on the order of 8%. Applying these percentages to recent harvest volumes in the trawl fishery and assuming they are reflective of a future allocation decision yields 507 and 229 lbs respectively.



Widow Rockfish

Widow rockfish must be viewed in terms of its interaction with the Pacific whiting component of the shoreside fishery. Recall that the shoreside whiting and non-whiting fisheries will be merged in this program. Also recall that widow rockfish may be rebuilt at the advent of the rationalization program, however this is not for certain. Therefore, the Council may wish to set accumulation limits in two ways – one if the widow rockfish stock is rebuilt, another if widow is not rebuilt.

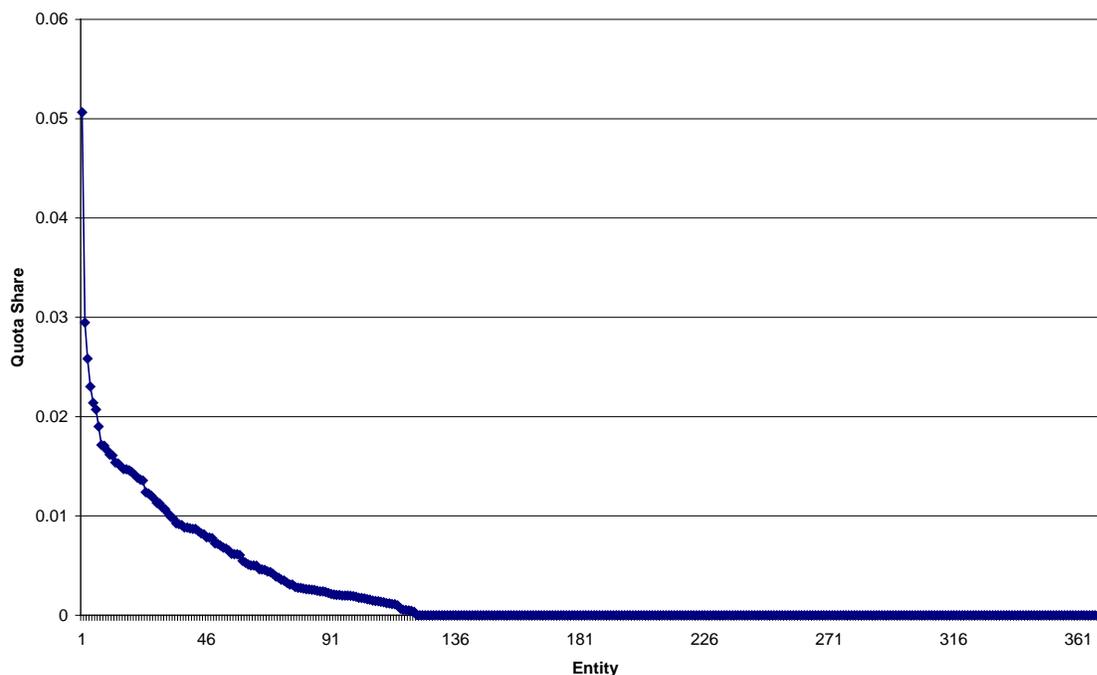
In recent years, individual shoreside whiting vessels have encountered over 20 metric tons of widow rockfish due to a classic case of “lightning strike” catch events. However, most vessels have not encountered these volumes of widow rockfish. Using the Council’s decision on intersector allocation and applying that decision to the 2010 widow OY, a 20 metric ton catch event may represent approximately 7% of the combined shoreside sector allocation.

During the time period when widow was a target species, non-whiting vessels prosecuted much larger volumes than are currently harvested by whiting vessels. If the widow rockfish allocation were to be made as if it was a target species, one permit may receive approximately 8% of the shoreside allocation, applied to the Council’s decision on intersector allocation and the 2010 widow OY, this may represent approximately 51,600 lbs. Applied to a 2,000 mt OY (a possible rebuilt OY based on the last assessment) and applying the Council’s decision on intersector allocation yields 218,874 lbs.

Alternatively, if widow is allocated based on a bycatch rate, one entity may receive 5.1%. This 5.1% level translates into a poundage that is not too dissimilar from some of the typical incidental catch made by shoreside whiting vessels under current conditions. Therefore if the intention is to accommodate expected needs for vessels operating in a condition where widow is overfished, a 5.1% control limit.

If widow is rebuilt, it may be more appropriate to consider a control limit in the context of various target strategies. If 2,000 mt is a good approximation for a rebuilt widow rockfish OY, then the combined shoreside sector would be expected to be allocated 1,241 metric tons. The largest initial allocation under a non-overfished status is approximately 8%, and this translates into roughly 218,874 lbs, or \$109,437 based on \$0.50 per pound. An 8% control limit is in line with target species control limits recommended by the GMT that are somewhat regionally specific, such as thornyheads (6%), slope rockfish (10%). Given the somewhat regionally distinct distribution of widow rockfish, and the fact that prosecuting widow requires the capacity to handle midwater gear suggests targeting opportunities for this species will be somewhat specialized, like thornyheads and slope rockfish. Therefore, a control limit on the same order of magnitude as other species with moderately distinct regional focus appears to be appropriate.

Widow



Summary of Recommended Control Limits By Species

Species	Control Limit
Yelloweye	5.70%
Canary	4.40%
Darkblotched	4.50%
POP	4.00%
Bocaccio with upper range	13%
Bocaccio without upper range	8%
Cowcod with upper range	18%
Cowcod without upper range	8%
Widow (rebuilding)	5%
Widow (rebuilt)	8%

E. Developing Overfished Species Vessel Limits

Vessel limits establish the amount of quota pounds that can be placed on a vessel during a year. If vessel limits are set higher than control limits, vessels owners will be able to acquire QP from other owners to supplement their own quota holdings. With overfished species, QP above and beyond what is allowed by the QS limits can be acquired through risk pools or market trading.

In addition, as OYs change, the corresponding amount of poundage that can be placed on a vessel will also change. In dealing with overfished species, it will be important to maintain an appropriate relationship between the quota pounds capped by the vessel limit and the control limit on quota shares if one wishes to construct accumulation limits in a manner that encourages the development of risk pools. Therefore, it may be important to revisit vessel limits every two years during the biennial spex process – especially if OYs for overfished species change substantially.

Yelloweye Rockfish

Available data from the WCGOP shows the size and frequency of individual discard events. This information shows that over the life of the observer program, discard events of yelloweye have occurred which are as large as 150 pounds. A vessel incurring one of these discard events almost certainly encountered additional yelloweye rockfish throughout the year.

If the existing shoreside trawl take of yelloweye (approximately 0.6 mt) serves as a guide for future allocations to the shoreside trawl sector, then a 200 pound yelloweye event may represent 15%, while a 150 pound event may represent 11% of the shoreside trawl allocation. Percentages of this magnitude are not inconsequential. The appropriate vessel limit is in some ways a balance between allowing a vessel to cover an incidental encounter of yelloweye and continue fishing, versus imposing a restrictive fishing standard, that if met, would require that vessel to stop fishing.

The GMT recommended control limit percentages translate into roughly 75 lbs of yelloweye rockfish (assuming status quo catch amounts are reflective of future sector allocations). In order to accommodate this need, plus some margin for an accidental tow, a reasonable limit may allow an additional 50 to 75 lbs. Additional margins of this size may allow for some accidental events, but would still hold vessels to a higher standard than what appears to occur under status quo conditions. This would translate into a vessel limit of 9.5% to 11.4%.

Canary Rockfish

Available data from the WCGOP shows the size and frequency of individual discard events of canary. This information shows that over the life of the observer program, discard events of canary have occurred which are as large as 150 pounds, however the information made available is also truncated at 150 pounds, meaning events may have occurred which are larger. To help fill this potential gap, we examine the Washington Arrowtooth Flounder EFP data. Since this EFP occurred under conditions similar to a rationalized fishery – and in an area where canary are relatively abundant – the results may be particularly useful. This information shows that during the EFP, some vessels incidentally caught as much as 1,000 lbs of canary during the year. When taking into account the whiting component of the shoreside fishery, some of these whiting vessels have encountered nearly 1,000 pounds of canary rockfish during the 2004 – 2007 time period. If vessels participate in both whiting activity and non-whiting activity then an appropriate vessel limit may be 1,000 to 2,000 lbs above the amount implied by the recommended control limit. Assuming status quo catch levels are reflective of future allocations for this species, the resulting vessel quota pound percentage is approximately 7.2% to 10%

Darkblotched Rockfish

Darkblotched rockfish displays some different characteristics in the fishery compared to other types of rockfish. In general, it appears that darkblotched rockfish are not subject to the same “disaster tow” risk as other types of overfished species. This can be explained due to their tendency to aggregate to a lesser degree than other types of rockfish (Parker, 2005. Personal communication). Since it appears that considering a disaster tow or lightning strike catch event for this species may not be entirely appropriate, it may be more appropriate to use the Council’s predominant decision in setting vessel limits for non-overfished species, which is to allow the vessel limit to be 1.5 times the control limit. Taking this approach yields a vessel limit of 6.8%.

Pacific Ocean Perch

Pacific ocean perch can be viewed similarly to darkblotched rockfish. They do not appear to be as subject to “disaster tows” or “lightning strikes” as other types of overfished species, but they are a species that limits access to other types of target species. Since it appears difficult to use incidental catch amounts for purposes of setting a vessel limit, it may be more appropriate to continue with the Council’s primary policy in setting vessel limits for non-overfished species, which is to set the vessel limit at 1.5 times the control limit. Using this approach yields a vessel limit of 6%.

Bocaccio

Bocaccio is one of the two highly constraining species to southern trawl activity. Available fishery data is more limited for this species than some others because of the relatively small number of trawl vessels operating in the area. However, by examining WCGOP data on discard events, we see that individual discard events have occurred which exceed 150 lbs, though this information is truncated meaning catch events may actually be larger. Furthermore, when examining west coast research landings, we see that trips have taken in excess of 4,000 lbs of bocaccio in recent years. The highest initial allocation of bocaccio (if applied to status quo trawl sector harvest amounts) would result in quota pound equivalents of approximately 3,579 lbs for the year. If a vessel were to incidentally encounter bocaccio that is of the same magnitude as the highest research trip, that vessel may need roughly 4,300 lbs, or a vessel limit of 15.8%. However, given that research data is not reflective of fishery practices, accommodating this degree of unintended catch does not seem necessary.

If the intention is to set a vessel limit that allows for some margin of uncertainty above a control limit, then an appropriate level might be the poundage implied by the control limit, plus some additional percentage. Available information suggests that a reasonable margin for uncertainty may be an additional 1,000 to 2,000 lbs. Using status quo catch volumes as an indicator of potential future allocations, and assuming the lower GMT recommended control limits, an appropriate vessel limit may be 15.4% using this approach. This limit translates into approximately 4,169 lbs using recent harvest amounts as an indicator of future allocations.

Cowcod

Cowcod is the other highly constraining species to southern trawl activity. Like bocaccio, available fishery data is relatively limited for this species because of the small number of vessels operating in the area. Available observer data and research data indicates that some encounters of cowcod have been as high over 150 lbs. The highest initial allocation of cowcod applied to status quo sector catch levels may result in a quota pound equivalent of approximately 507 lbs. If the Council elects to set control limits at the highest initial allocation level, then there may be no need to set vessel limits at a different level than control limits. However, if the Council elects to adopt a control limit that is lower than the highest potential initial allocation level (possibly 8%), then a vessel limit that is higher than the control limit may be appropriate.

Data from the WCGOP indicates that discard events of cowcod have occurred which exceed 150 pounds. However, those events appear to have occurred only in one year. In many years the larger discard events are less than 100 pounds. Based on this information, an appropriate margin for accidental catch events may be on the order of 100 pounds. If the control limit is set at 8%, this may mean that an appropriate vessel limit is 11.5%.

Widow

Like the control limit for widow, an appropriate vessel limit appears to be quite different depending upon the status of the stock. Under existing conditions, some shoreside whiting vessels have incidentally encountered upwards of 20 metric tons, or close to 7% of a future widow allocation to the trawl fishery if the stock is still overfished (though most vessels catch far less). Given the potential for “lightning strikes” to occur with widow rockfish, it may be appropriate to set vessel limits that are higher than the control limit. Assuming an overfished status for widow rockfish, and the GMT recommended control limits for an overfished widow stock, an appropriate vessel limit may allow for some reasonable margin above the control limit to accommodate some unintended catch events. Based on available data, a reasonable margin may be an additional 10 metric tons. Applying this amount to the GMT recommended control limits under an overfished status yields 8.5%, or 54,989 lbs.

If widow rockfish are rebuilt, an approach for setting appropriate vessel limits could be similar to the approach taken for non-overfished species. In most cases the Council elected to set vessel limits that were 1.5 times the control limit. Taking the GMT recommended control limit of 8% and expanding by 1.5 yields a vessel limit of 12%.

F. Summary Recommendations for Overfished Species Accumulation Limits

Species	Control Limit	Control Limit LBS	Vessel Limit	Vessel Limit LBS
Yelloweye	5.7%	75	11.4%	150
Canary	4.4%	1,571	10.0%	3,572
Darkblotched	4.5%	25,000	6.8%	37,501
POP	4.0%	14,374	6.0%	21,561
Bocaccio with upper range	13.2%	3,579	15.4%	4,176
Bocaccio without upper range	8.0%	2,169	15.4%	4,169
Cowcod with upper range	17.7%	507	17.7%	507
Cowcod without upper range	8.0%	229	11.5%	329
Widow (rebuilding)	5.1%	32,944	8.5%	54,990
Widow (rebuilt)	8.0%	218,875	12.0%	328,312