

GROUND FISH MANAGEMENT TEAM REPORT ON HARVEST SPECIFICATIONS FOR COMPLEXES AND SUB-COMPLEXES

The implementation of the revised national standard 1 (NS1) guidelines and annual catch limits (ACLs) — including the P-star (P*) approach to accounting for scientific uncertainty and the risk of overfishing — has added complexity to the harvest specifications setting process for this biennial cycle. Implementation of ACLs for the stock complexes has been particularly complicated. The Groundfish Management Team (GMT) has reviewed the Council's preliminary preferred harvest specifications alternatives (PPA) and provides the following comments for consideration by the Council. In particular, the GMT would like to highlight the ACL for the minor rockfish north complex and the possible risks of overfishing that it might create. We recommend an alternative approach.

General Considerations for management of stock complexes

Preventing overfishing using stock complexes

Although more than 90 species are managed in the groundfish fishery management plan, to date only 30 species or so have their overfishing level (OFLs) set based on stock assessments. For the remaining species, an alternative means of preventing overfishing has been necessary. Stock complexes have been the major tool by which the Council has attempted to prevent overfishing and achieve optimum yield of unassessed stocks.

Management by stock complex offers two major advantages in achieving this objective. First, stocks similarly affected by the fishery or fishery sectors can be managed with common management measures, e.g., as trip limits on the stock complex as a whole. Second, stock complexes facilitate the monitoring of landings. Lack of catch information is a major source of uncertainty in the status of many rockfish stocks because historical records did not report at the individual species level. Yet, with the state port sampling programs in place, stock complexes are sampled with methods designed to produce unbiased estimates of catch at the individual stocks/species level. This also benefits vessels and buyers because they do not have to sort and account for every species of groundfish individually.

Taken together, management measures are meant to keep catch at acceptable levels and catch monitoring is designed to determine whether catch was maintained below acceptable levels. The acceptable level of catch for the complex is thus the key question.

Determining acceptable level of catch for stock complexes – the OFL

Without stock assessments available, alternative means of calculating the OFL are needed to calculate OFLs for most every species in the groundfish stock complexes. Prior to this cycle the Council used either an average catch or swept area biomass estimate and some precautionary adjustment meant to minimize the risk of overfishing the species within the complex. For some stocks, the method used to identify the harvest level under use is undocumented and neither the GMT nor the SSC have any way of recreating those values or providing the Council with a scientific explanation of their continued validity.

For the 2011-12 harvest specifications, the SSC reviewed and accepted new methods for identifying OFLs for most of the stock complex component species, including depletion-corrected average catch (DCAC) and depletion-based stock reduction analysis (DB-SRA). These estimates replaced the previous methods and now represent the best scientific information available for identifying the stock-specific OFLs. The GMT notes that, while these OFLs were calculated on a coastwide basis and then apportioned north and south, other allocation or apportionment methodologies are not likely available at this time for any of the complexes or their component species.

Determining acceptable level of catch for stock complexes – the ABC

For each stock complex component species, the Council chose to use an acceptable biological catch (ABC) control rule that accounts for scientific uncertainty and the risk of overfishing given that level of uncertainty. The Council picked a P* value of 0.4 (“risk of overfishing”) for all stock complex component species and a scientific uncertainty estimate (“sigma”) of 1.44, the value recommended by the SSC for category 3 stocks (Agenda Item I.2.b, Supplemental SSC Report, April 2010). The ABC values that result from these choices are meant to represent the Council’s acceptable risk of overfishing for the stocks in the complex.

Determining acceptable level of catch for stock complexes – the ACL

The Council’s PPA OFLs and ABCs for stock complexes (i.e. minor rockfish north and minor rockfish south) are built on individual component stock-specific OFLs and ABCs. The ACLs, in contrast, are set only on the sub-stock complexes (i.e. minor nearshore, shelf, and slope both north and south) as a whole. While available information on stocks managed within a complex is generally less than stocks managed on an individual basis, the ACL for the sub-complexes should be set at a level that keeps catch from exceeding the best scientific estimate of ABC for each component stock in the complex. As suggested by the NS1 guidelines, the ACLs for stock complexes should be established so that they prevent overfishing of the most vulnerable stocks within the complex.¹ To do otherwise would frustrate the objective of preventing overfishing.

¹50 C.F.R. § 600.310(d)(9):

If the stocks within a stock complex have a wide range of vulnerability, they should be reorganized into different stock complexes that have similar vulnerabilities; otherwise the indicator stock should be chosen to represent the more vulnerable stocks within the complex. In instances where an indicator stock is less vulnerable than other members of the complex,

The Council could adopt OFLs and ABCs at the sub-complex level, i.e., minor nearshore rockfish north, minor shelf rockfish north, minor slope rockfish north, and similar for the three southern sub-complexes. OFLs for each sub-complex would be the sum of the OFLs for all species within the sub-complex—the same approach currently used to determine OFLs at the major complex level. The Council could then choose a P* for each sub-complex that, when combined with the SSC’s characterization of scientific uncertainty, determines ABCs for each sub-complex. This approach is consistent with the basis for the SSC’s recommended OFLs and focuses the Council’s decisions regarding risk on groups of species that are frequently caught together.

Even though species-specific OFLs are managed at the complex level, the ACL should be set with the species-specific OFLs and ABCs in mind. The purpose of the ACL is to prevent catch from exceeding the ABC. As described below, if not set appropriately the GMT sees the potential for sub-complex ACLs to allow catch of particular species that would exceed its stock-specific ABC.

Review of the Council’s preliminary preferred stock complex alternatives

The GMT sees two problems with Council’s preliminary preferred ACLs for sub-complexes. The first is that they are likely to result in transferring catch from the shelf and reassigning it to the nearshore (primarily) and slope sub-complexes. For instance, the greenstriped rockfish OFL in 2011 is >33% of the sum total of all the ‘minor rockfish north’ OFLs. Because this is a non-targeted species with low vulnerability and projected catches are well below this number, there is risk that this additional catch, when aggregated at the complex level, could then be applied to potentially overharvest a highly vulnerable species such as quillback rockfish. In other words, the minor rockfish north complex is “inflated” by the very large (1,208 mt) OFL contribution of greenstriped rockfish especially compared to recent catch (Table 1). Some of that 1,208 mt from a shelf species could be used to greatly exceed the OFL for highly vulnerable nearshore species such as quillback (8.7 mt), or any of the relatively small stock-specific OFLs in the minor nearshore or minor slope north sub-complexes.

The second is that the PPA ACLs for the shelf and slope sub-complexes are higher than the summed ABCs for their component stocks and the summed OFLs for minor nearshore rockfish north. This is problematic as these ACLs are not based on any of the currently accepted catch-calculation methods (i.e. the best available science as recommended by the SSC). Rather they represent status quo numbers, the basis for which cannot be entirely reproduced, that add up to less than the aggregate ‘minor rockfish north’ ABCs and OFLs. Thus, there is no method available to calculate such ACLs, just methods to calculate the OFLs and ABCs by which to compare them.

management measures need to be more conservative so that the more vulnerable members of the complex are not at risk from the fishery.

Table 1 demonstrates the resultant ABCs under different scenarios of scientific uncertainty (σ) and probabilities of overfishing (P^*). Total catch for 2007² and 2008³, as estimated by the West Coast Groundfish Observer Program, are also shown for comparison. In these examples, P^* s are specified by sub-complex to demonstrate the Council's flexibility in handling ABCs at the sub-complex level. In all cases of σ and P^* , the current preliminary preferred ACL for the minor nearshore rockfish sub-complex exceeds the ABC, which occurs because the ACL also exceeds the sub-complex OFL. For the minor slope rockfish north, $P^*=0.45$ or the use of the original SSC-designated category for each species (rather than treating each species in a complex as a category 3) allows the ABC to be greater than the preliminary preferred ACL. These sub-complex numbers do not take into consideration reallocation of catch from a bycatch species (e.g. splitnose) to a vulnerable species (e.g. rougheye). This is similar to the issue raised with greenstriped and quillback rockfish above except that catch is shifted to a more vulnerable species within a sub-complex (i.e. minor slope rockfish north) rather than between sub-complexes. To avoid this, the Council could adopt a low P^* value for each of the non-target species that have low vulnerability to reduce their overall contribution to the sub-complex OFL.

For additional context, Table 2 supplies the recent catches (2007-2008) for each sub-complex by sector. The Council preliminary preferred ACLs are greater than past catches in every sub-complex and area.

The GMT believes there are two major reasons why the Council should use the SSC-prescribed OFLs and ABCs to compute the final sub-complex ACL : 1) consistency and transparent use of the best scientific information available and 2) consistency with the Magnuson Stevens Reauthorization Act (MSRA). The ACLs should be calculated from the sum derived from the species-specific OFLs and ABCs in order to fully specify the catch allocations and avoid the type of overfishing concerns demonstrated by the greenstriped and quillback rockfish examples. This establishes a link from OFL to ABC to ACL, as directed by the MSRA, and provides a transparent and defensible method by which the catches are determined. Finally, in order to achieve the flexibility afforded by specifying P^* at the subcomplex level as illustrated in Table 1, **the GMT recommends the Council specify OFL and ABC as well as ACL for each of the subcomplexes.**

² Bellman, M.A., Heery, E., and J. Hastie. 2008. Estimated discard and total catch of selected groundfish species in the 2007 U.S. west coast fisheries. West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

³ Bellman, M.A., Heery, E., and J. Majewski. 2009. Estimated discard and total catch of selected groundfish species in the 2008 U.S. west coast fisheries. West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

Table 1. Total catch by sub-complex (2007-2008) and the resultant ABCs given various assumptions of P* and scientific uncertainty (σ).

Treating all stocks within complexes as category 3 stocks ($\sigma = 1.44$)						
2007 Catch (TM Report)	133	153	522	466	365	149
2008 Catch (TM Report)	97	62	484	394	212	189
OFL	116	2032	1462	1156	2238	907
ABC	Minor Rockfish North			Minor Rockfish South		
P*	Nearshore	Shelf	Slope	Nearshore	Shelf	Slope
0.49	112	1960	1410	1115	2159	875
0.45	97	1696	1220	965	1868	757
0.4	81	1411	1015	803	1554	630
Preliminary preferred ACL	155	968	1160	650	714	626

Treating each stock with its "original" (SSC-approved) category and resultant σ						
2007 Catch (TM Report)	133	153	522	466	365	149
2008 Catch (TM Report)	97	62	484	394	212	189
OFL	116	2032	1462	1156	2238	907
ABC	Minor Rockfish North			Minor Rockfish South		
P*	Nearshore	Shelf	Slope	Nearshore	Shelf	Slope
0.49	113	1981	1433	1123	2163	892
0.45	99	1791	1324	1001	1885	836
0.4	85	1579	1201	868	1585	771
Preliminary preferred ACL	155	968	1160	650	714	626

Table 2. Catches by sector of the minor rockfish sub-complexes by management area for years 2007-2008.

2007	Minor Rockfish North			Minor Rockfish South		
	Nearshore	Shelf	Slope	Nearshore	Shelf	Slope
Commercial	75	127	517	70	54	148
Recreational	58	20	0	396	308	0
Research	0	6	5	0	3	1
Total	133	153	522	466	365	149

2008	Minor Rockfish North			Minor Rockfish South		
	Nearshore	Shelf	Slope	Nearshore	Shelf	Slope
Commercial	51	49	480	90	41	189
Recreational	46	12	0	304	171	0
Research	0	1	4	0	0	0
Total	97	62	484	394	212	189