Considerations and Focus Questions for the Carryover Provisions Envisioned in Revised National Standard 1 Guidelines

New Carryover Provisions

The new revised 2016 National Standard 1 (NS1) guidelines clarify and describe methods that allow Councils and their Scientific and Statistical Committees (SSCs) to consider "carrying over" a portion of the unharvested annual catch limit (ACL) of a managed stock or stock complex from one year to the next.

The four Federal fishery management plans (FMPs) on the U.S. west coast are for groundfish species, coastal pelagic species (CPS), highly migratory species (HMS), and salmon species. Carryover provisions are not a consideration for salmon management given the unique life cycle of salmon. Harvest specifications for Pacific whiting, which are managed in the Groundfish FMP, and HMS species are decided in international forums annually so carryover considerations also would not apply. Further analysis is required before determining if carryover provisions could be applied to CPS stocks. However, a carryover ABC control rule may be appropriate for non-whiting species managed in the biennial process specified in the Groundfish FMP.

This report presents an initial discussion of potential options for applying the new language regarding carryover in the NS1 guidelines to non-whiting species in the Groundfish FMP. The considerations provided here are not exhaustive; alternatives considered in any future FMP or regulatory amendment process to specify new carryover provisions would not necessarily be limited in scope by the considerations provided here. The NS1 guidelines explain that when considering carryover provisions, the Council should consider the likely reason for the ACL underage, and the appropriateness of carryover for stocks that are overfished and/or rebuilding. Fundamental to any analysis informing a new carryover provision should be anticipated outcomes in terms of costs to stock rebuilding or stock productivity relative to short and long-term benefits to west coast fishery participants and fishing communities. In addition, implementing the carryover provisions provided by the NS1 guidelines potentially requires additional analysis be completed in an abbreviated timeframe in order to allow mid-biennium transfers.

Two approaches for carryover provisions that consider changing one or more of the annual harvest specifications are described in the revised NS1 guidelines.

Approach 1: Utilizing the Annual Catch Limit Buffer.

When the ACL is less than acceptable biological catch (ABC), the unharvested ACL from year 1 can be issued as carryover to increase the ACL in year 2, as long as the year-2 ACL does not exceed the ABC (Figure 1). The Council would need to develop an efficient mid-biennium mechanism to set a higher year-2 ACL.

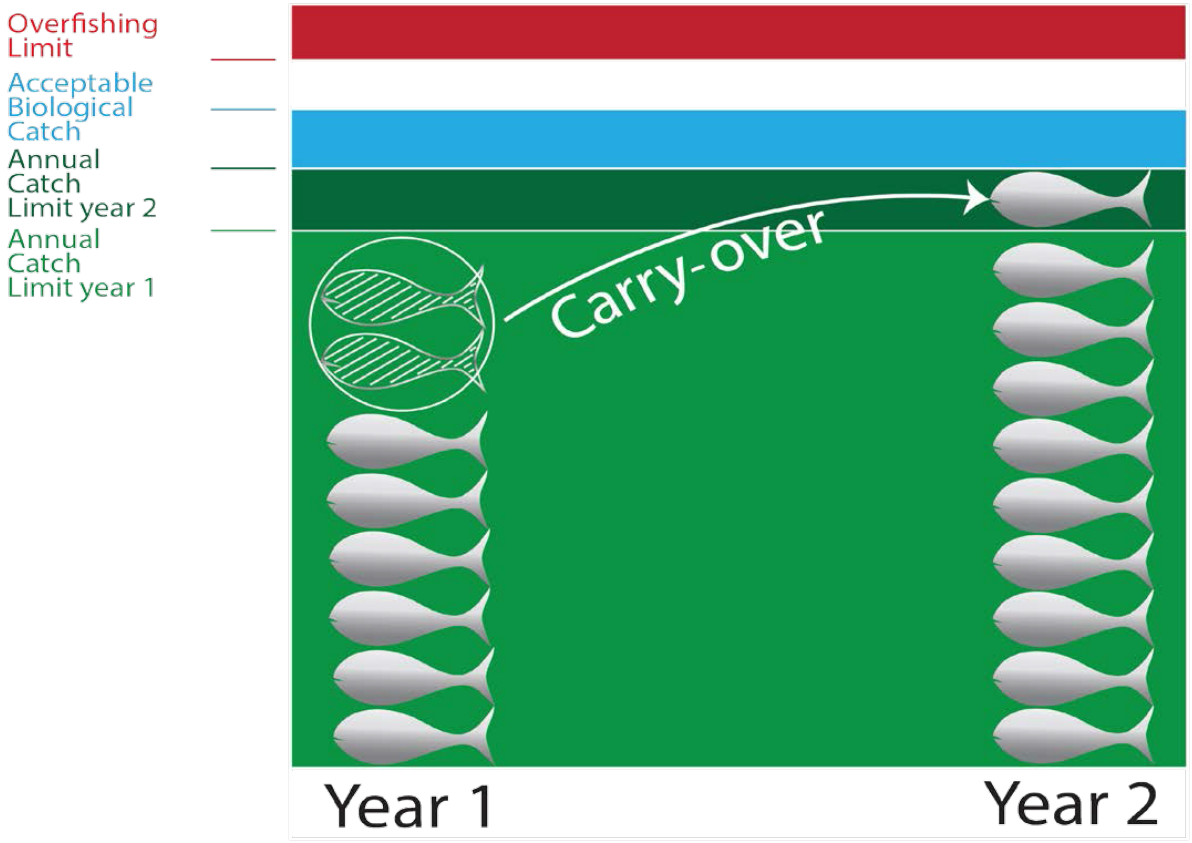

Figure 1. Approach 1 (ACL is set below the ABC) in carryover provisions considered in the revised National Standard 1 guidelines.

Approach 2: Increasing the ABC in Year 2 by the Unharvested Yield from the Previous Year.

The new NS1 guidelines also describe that an ABC control rule may include provisions for the carryover of the unused portion of an ACL from one year to increase the ABC for the next year, based on the increased stock abundance resulting from the fishery harvesting less than the ACL. This approach might be appropriate in situations when the ACL is set equal to the ABC, or when the buffer between the ACL and ABC is relatively small. The SSC or Science Center would be required to calculate a new year-2 ABC based on the increased stock abundance resulting from the underharvest in year 1. Similar to the first approach, the Council would need to develop an efficient mid-biennium mechanism to set a higher year-2 ABC/ACL (Figure 2). In general, the NS1 guidelines require that any amendment to establish a carryover ABC control rule articulate when the carryover provisions of the control rule can and cannot be used and how the provision prevents overfishing based on a comprehensive analysis (Figure 2).

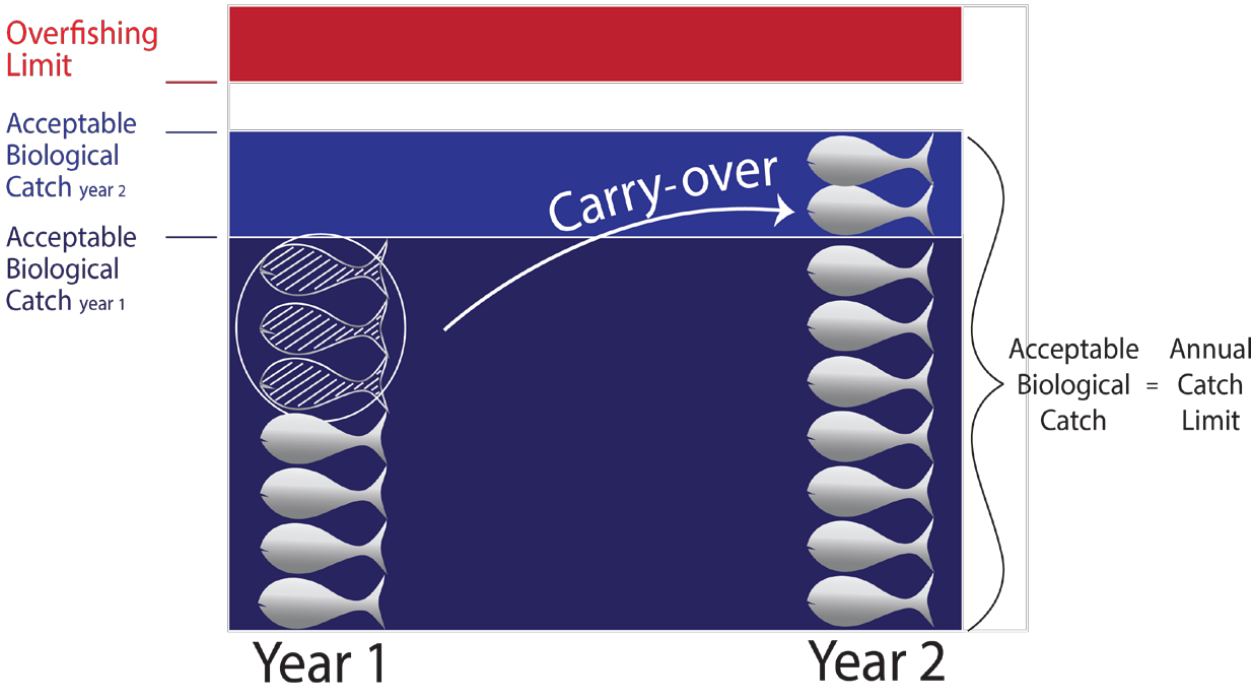

Figure 2. Approach 2 (ACL is set equal to ABC) in carryover provisions considered in the revised National Standard 1 guidelines.

Managing Carryover With Catch Uncertainty

A key question relative to both approaches is, **how can the approach work on an annual basis given the year lag in reconciled estimates of annual total mortality (i.e., landings plus dead discards) of groundfish stocks provided by the West Coast Groundfish Observer Program?**

If only reconciled total mortalities are adequate to conduct analyses and specify a new ACL in year 2 (approach 1) or in specifying a new ABC and ACL in year 2 (approach 2), then it will be difficult to envision an FMP amendment that allows one or both of these carryover approaches to be applied in the 2-3 month timeframe that would be required. However, a carryover provision could be developed under either approach if the uncertainty in the amount of catch and other mortality estimated in year 1 could be analyzed and incorporated into the process. At the minimum, any new carryover provision will need to account for that uncertainty to prevent overfishing in year 2. It is likely that any carryover provision specified for any groundfish stock would only have updated catch information to inform the decision – all other mortality would need to be projected.

Managing Carryover With Assessment Uncertainty

Each actively managed stock in the Groundfish FMP is assigned to a category that addresses the relative uncertainty in estimating the overfishing limit (OFL) for that stock. A stock with a more uncertain estimate of its OFL is managed with a relatively larger ABC buffer (i.e., the amount of yield between the OFL and the ABC). This relative uncertainty in estimating the OFL is factored into the groundfish management framework by designating the size of the ABC buffer through the

use of two factors: the sigma (σ) designation, which addresses scientific uncertainty in estimating an OFL, and the overfishing probability (P*) designation, which represents the level of risk tolerance in potentially exceeding an OFL (i.e., the risk of future overfishing). The Council will have to consider the level of **uncertainty in estimating the OFL and their risk tolerance in developing a carryover provision.**

Managing Carryover of Target, Precautionary Zone, and Overfished Stocks[1]

Carryover provisions would likely provide fishery benefits. However, a carryover of the harvestable surplus of target stocks provides direct fishery benefits only if the fishery is not constrained by the ACL of a co-occurring stock or stocks. It is likely that carryover provisions could vary by stock or classes of stocks depending on forecasted spawning stock biomass and depletion trajectories, ACL attainment rates (there may be a consideration of predicted effects at the permit level for quota species with high sector attainment rates in the limited entry trawl fishery), the level of constraint posed by the ACL of any co-occurring stock (this can vary regionally and by fishery on the west coast), and needs of affected fishing participants and fishing communities.

The analytical burden and complexity of considerations involved in developing carryover provisions will likely vary by stock from a relatively few set of considerations and a lighter analytical burden to a more complex set of considerations informed by a more complicated analysis, particularly for an overfished stock or when there is the potential for protected species interactions. Using a management strategy evaluation (MSE) may be a good analytical approach to estimate the effects and tradeoffs of proposed carryover provisions, especially when effects and considerations are predicted to be more uncertain or complex. However, MSE analyses are time- and resource-intensive.

In most cases, the main constraint to fishing opportunities is the harvestable surplus of one or more overfished stocks. Relaxing constraints of a constraining overfished stock with a carryover provision would tend to leverage greater access to healthy co-occurring stocks. However, rebuilding considerations (e.g., the Magnuson-Stevens Act (MSA) requirement to rebuild in the shortest time possible, taking into account the biology of the stock, the needs of fishing communities, etc.) need to be part of any analysis informing a new carryover provision for an overfished stock.

Likewise, extra consideration may be required in analyses informing a carryover provision for a stock managed in the precautionary zone. As for overfished stocks, the analytical burden for stocks managed in the precautionary zone may be relatively higher and may vary by stock. Sablefish, a stock that has long been managed in the precautionary zone, is a good example of a stock with more tradeoffs to evaluate when considering a carryover provision. Sablefish is a valuable target species with high economic importance. A carryover provision, even if small in actual weight,

[1] The terms "species" and "stocks" are conflated in west coast groundfish management nomenclature. However, the more accurate term should be stocks since all west coast rebuilding plans and assessments that inform harvest specifications are spatially limited by management jurisdiction or spatial data availability relative to all (most?) current actively-managed groundfish species' distributions.

would likely provide tangible short-term socioeconomic benefits. This needs to be balanced with the stock recovery objective (rebuild to the biomass management target (B_{MSY})), which has not proceeded according to expectations informed by assessment forecasts. Stock rebuilding trajectories and the level of risk tolerance should be a consideration in developing a carryover provision for any stock managed in a rebuilding plan or in the precautionary zone.

Stock status of overfished and precautionary zone stocks and the predicted time to reach the biomass target are important considerations when deciding whether to implement a carryover provision. Implementing a carryover provision for a stock like darkblotched rockfish, given its 2015 status (39 percent depletion with a 40 percent target), would likely have had a demonstrable positive socioeconomic effect given how constraining the stock is in the trawl fishery. Given the positive rebuilding projection, one would conclude the risk of inhibiting timely rebuilding by implementing a carryover provision was low and the likely socioeconomic benefit would be high. However, the calculus might be different for a stock like yelloweye rockfish. The short-term benefits of implementing a carryover provision for yelloweye would undoubtedly be high given how constraining the stock is to commercial and recreational line fisheries on the shelf and nearshore areas north of Pt. Conception. However, the slow rebuilding progress of the yelloweye stock, which is largely attributed to its low productivity, needs to be considered. Conservation concerns are necessarily weighted higher for a stock like yelloweye than for a stock like darkblotched.

Frameworking Carryover Provisions in the Groundfish Fishery Management Plan

The Council could consider a Groundfish FMP amendment (or amendments if there is a desire to consider amending other FMPs) that incorporates a framework allowing these carryover provisions. Incorporating both approaches may increase flexibility and provide more management options to meet Council and NMFS objectives as codified in the MSA and Federal FMPs.

This action is directly connected to deciding biennial groundfish harvest specifications and management measures and could be decided in the 2019-2020 specifications process. The framework could specify that more detailed analyses that address the complexity of considerations that might be part of implementing a stock-specific carryover could be part of any future specifications decision, and such changes would require regulatory amendments. This allows the Council to weigh the tradeoffs of implementing the carryover provision in the second year of any biennial management cycle on a stock-by-stock basis. It may be beneficial to select the stocks judged most eligible for possible carryover implementation in the 2019-2020 management cycle and do the more detailed analyses for these stocks in the next specifications process. These analyses could better inform how these provisions would generally be predicted to work in the groundfish management framework, which should facilitate an FMP amendment process. It may also facilitate implementation of the carryover in 2020, should the need arise.