GROUNDFISH MANAGEMENT TEAM REPORT ON METHODOLOGY REVIEW
PRELIMINARY TOPIC SELECTION

The Groundfish Management Team (GMT) reviewed the briefing book material available under this agenda item and had a joint session with the Scientific and Statistical Committee (SSC) to discuss priorities for the methodology review in 2017. The GMT recommends the following topics for review, using the guiding principles described in Council Operating Procedure 25 (COP 25) to develop our preliminary recommendations for this meeting. The guidelines outlined in COP 25 include what methodological changes would or would not need SSC review: "Examples of issues that could merit a full review include new model algorithms, methods for incorporating base data into models, catch forecasting methods for major PFMC stocks, and technical changes to stock complexes or conservation objectives. Examples of issues that do not merit full review include updating existing data sets in models, adding new stocks to models, and changing data ranges used to estimate parameters in models. Issues in this latter category will be reviewed within the GMT, and can be implemented without formal review by the SSC and approval of the Council; provided both the Council and SSC receive updates on such changes; however, if warranted, the Council may require additional review by the SSC."

The goal is to have the SSC review GMT methodologies during the March or April 2017 Council meeting, due to the SSC's other workload during the remainder of 2017 (i.e. stock assessments). The below list of methodologies is a preliminary list recommended for review based on availability to revise projections models this winter, and the GMT will present a more detailed course of action at the November Council meeting. The GMT will also bring forth the summary and status of all current models for the November Council meeting briefing book.

Evaluation of Discard Mortality Rates

In June, the Council recommended evaluating the existing commercial non-trawl nearshore and recreational discard mortality rates for groundfish, developing new rates for some species, and considering expansions of mortality rates when descending devices are used (see Agenda Item F.6, Supplemental Attachment 6, June 2016, items 63, 66, and 69). Ensuring that discard mortality rates are accurate is important since they are used by the West Coast Groundfish Observer Program (WCGOP) to estimate total mortality in GMT commercial projection models, estimates of recreational total mortality, and in stock assessments.

Given the timeline and workload considerations mentioned above, the **GMT recommends limiting the scope of this curent review of discard mortality rates to the assumptions used in the commercial nearshore discard mortality rates for canary rockfish, yelloweye rockfish, and cowcod for "sport like" jig gears** (and analyzing additional species if time allows); included in this review would be a discussion of the potential commonalities and differences between the commercial nearshore jig fishery and the recreational fishery. In addition, the GMT plans to work with WCGOP to improve estimation procedures that utilize the discard mortality rates to generate estimates of total discard mortality. The GMT is meeting with WCGOP in October 2016 and this will be a priority discussion topic for that meeting.

The GMT believes that conducting a comprehensive review of research completed since the rates were initially developed, considering expansions of mortality rates when descending devices are used, and exploring revisions of the recreational discard mortality rates will take longer to analyze than available in the above mentioned timeline. Therefore, the GMT will notify the Council in the future when data are sufficiently available for further discussion and analysis.

Sablefish and lingcod IFQ discard mortality rates

The annual estimates of groundfish mortality, prepared by WCGOP, include discard survival credits for sablefish and lingcod (i.e., 50 percent for trawl for both species; 20 percent for fixed gear (FG) sablefish; 7 percent for FG lingcod). However, within the shorebased individual fishing quota (IFQ) program, total catch, regardless of survival, is debited from vessel quota pound (QP) accounts, and tracked inseason against the trawl allocation and annual catch limits (ACLs), and there is no QP adjustment. Industry has requested the **consideration of an IFQ survival credit for discarded lingcod and sablefish, and particularly for the discard of undersized lingcod**—for which discard is currently required (though can be changed through routine inseason action). Such a measure may increase total utilization. This topic is currently on the Council's Year-at-a-Glance for June 2017 (Agenda Item G.6, Attachment 1). This action may involve confirmation of, or updates to, (based on recent research) the mortality rates that are currently used for sablefish and lingcod. The 7 percent discard mortality for lingcod is based on hooking mortality in the Ablin and Karpov (1995) study, and forms the basis of all discard mortality rates for species without swim bladders. The GMT believes this rate was last reviewed by the SSC in 2008 for the 2009-2010 harvest specifications and management measures cycle. The GMT has not had the opportunity to review the basis for the sablefish discard mortality rates, but will do so for the November Council meeting.

The GMT notes that lingcod is scheduled to be assessed in 2017, which may affect the timing of this mortality rate review since the assessment should be using the same discard mortality rate as proposed for the individual fishing quota action.

Nearshore Bycatch Projection Model

The nearshore catch projection model uses the bycatch rates from WCGOP multiplied by the GMT's projected landings by area and depth strata to estimate bycatch, and was last reviewed by the SSC in 2013. The **GMT proposes to revise the model for improved use in management** by exploring the following changes; 1) re-examine discard mortality rates (as noted above), 2) address uncertainty using revised methodologies for calculating the coefficient of variation (CVs) or a bootstrap approach, 3) changes to area stratification, and 4) development of species-specific bycatch rates. These improvements may allow us to better develop landing target strategies (e.g., trip limits) within overfished species limits, but the benefits are expected to be less than revisiting the discard mortality rates and their respective use in estimation procedures.

Non-nearshore Catch Projection Model

The current non-nearshore catch projection model multiplies the WCGOP bycatch rates by the sablefish projections by strata to produce point estimates of bycatch, but currently only estimates impacts north of 36° N. latitude. **The GMT intends to look at the model performance by exploring changes to the CV estimation methodology with WCGOP and considering expanding the model to estimate catches south of 36° N. latitude**.

At this time, no model exists to estimate OFS impacts from directed shelf trips. Currently there is a small directed shelf fishery off of California, given the increase in the 2017-2018 ACLs of bocaccio and canary rockfish and the slight liberalization of the rockfish conservation area (RCA) south of 40° 10' N. lat., there is potential for increased participation in the fishery. Therefore, the GMT would like to explore the feasibility of creating a model to capture impacts from directed shelf trips south of 42° N. latitude in addition to expanding the current non-nearshore model (based on sablefish) south of 36° N. latitude. The GMT intends to explore these concepts at their joint meeting with WCGOP in October and will provide feedback to the SSC and the Council in November. Based on initial discussion, the GMT feels exploration of a directed shelf model is a priority over exploring expanding the current non-nearshore model (i.e., sablefish model) south of 36° N. latitude.

Stock Assessment Methodologies

The GMT is in agreement with the SSC that there needs to be flexibility to review stock methodologies outside of the COP 25 timeline, i.e., review stock assessment methodologies only in even years. As an example, there is a Council-sponsored workshop on productivity/maximum sustainable yield (MSY) scheduled for December 2016, during which new stock assessment methodologies may be presented that are pertinent to the 2017 stock assessment cycle, potentially including updates to the steepness prior and a three-parameter stock-recruit relationship.

The GMT also recommends that the newly released **beta version of Stock Synthesis 3.30 be simulation tested and reviewed by the SSC** prior to use in the 2017 stock assessments.

GMT Recommendations

- **Review the discard mortality rate assumptions used in the commercial nearshore discard mortality rates for canary rockfish, yelloweye rockfish, and cowcod for "sport-like" jig gears, as the top priority.**
- **Revise the nearshore bycatch projection model for improved use in management.**
- **Evaluate model performance of the non-nearshore catch projection model and expansion to south of 36° N. latitude.**
- **The SSC review any new methods resulting from the production workshop, and that the beta version of Stock Synthesis 3.30 be simulation tested in time for the 2017 stock assessment.**

PFMC
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- Albin, D. and K. Karpov. 1995. Northern California sport fish project lingcod hooking mortality study. CDFG Cruise Report 95-M-10. 12p.