HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON DEEP-SET BUOY GEAR AUTHORIZATION – FINAL RANGE OF ALTERNATIVE AND PRELIMINARY PREFERRED ALTERNTIVE FOR NUMBER OF LIMITED ENTRY PERMITS

In Agenda Item G.5.a, HMSMT Report 1, the Highly Migratory Species Management Team (HMSMT) summarized results from some of the analyses it had completed, and listed outstanding items it intended to bring to the Council at the June meeting. This report revisits some of those summarized results, includes additional information on outstanding items, and poses additional considerations of the HMSMT in evaluating the range of alternatives adopted by the Council during the March 2018 meeting.

Updates to spatial analysis in HMSMT Report 1:

HMSMT Report 1 describes "the cumulative maximum spatial extent of drift gillnet (DGN) fishery since establishment of the Pacific Leatherback Conservation Area (PLCA), as reported on landing receipts. It covers 163 unique California Department of Fish and Wildlife (CDFW) blocks, with an area of 2,015,404.0 nm^2. This area would accommodate 102,695 five nm^2 diameter deep-set buoy gear (DSBG) footprints without overlap." This area estimate was incorrectly labeled as square nautical miles, when in fact it is square meters. The correct area of these 163 blocks is 58,446.7 nm^2, and would accommodate 2,978 five-nm^2 diameter DSBG footprints without overlap. While the difference in these numbers is substantial, it does not change the HMSMT's overall conclusions that the spatial aspect is not likely to be a limiting factor in authorizing a DSBG fishery.

Outstanding Items from HMSMT Report 1:

The HMSMT indicated, under the biological analysis section that it would provide an estimate of individual DSBG-caught swordfish weight and extrapolate this to provide an estimate of projected swordfish catch under each number of permits for the limited entry (LE) option, and compare this to the harvestable surplus for the WCNPO stock. Additionally, HMSMT Report 1 proposed a Bayesian analysis that could integrate spatial, biological, and economic factors into a single analysis, incorporate uncertainty into a simulation model, and determine which factor (spatial, biological, or economic) is likely to be the constraining factor under varying permit number scenarios. The HMSMT provides updates on these items below.

Projected Swordfish Catch

The most recent stock assessment indicates a surplus of 4,924 mt per year for this stock, with current West Coast fisheries (DGN, pelagic longline, harpoon, DSBG, misc.) landing an average of 536 mt total per year (2008-2017). Further information on the swordfish stock status will become available with the release of a new swordfish assessment later in 2018.

Using the average weight per swordfish (133.4 lbs) from the PIER Exempted Fishing Permit (EFP) logbook data, Table 1 provides the estimated total weight of expected swordfish catch under the different LE permit numbers and indicates that under none of these permitting scenarios would projected catch from a stand-alone DSBG fishery would exceed the harvestable swordfish surplus. These estimates are likely to be conservatively high regarding the level of expected swordfish catch, as they do not consider local depletion effects which may limit CPUE with higher numbers

of active permits. If DSBG effort were to be additional to current swordfish fishing effort, there would still be considerable swordfish surplus available for harvest.

Table 1. Estimated swordfish catch under different limited entry permit number alternatives.

Number of Permits	Projected Number of Swordfish	Projected Volume (MT)	Projection Exceeds Surplus?	Projection + West Coast Average Exceed Surplus?
10	696	42.11	NO	NO
50	3,481	210.63	NO	NO
150	10,442	631.82	NO	NO
250	17,403	1,053.02	NO	NO
300	20,883	1,263.59	NO	NO

Proposed Bayesian Analysis

The HMSMT feels that a more integrated analytical approach may prove useful in informing the Council's consideration for DSBG authorization beyond what could be considered in the three separate analyses for the following reasons:

(1) The three separate analyses may not adequately reflect potential interaction effects that could limit the economically viable number of permits.

(2) Given the limited extent of currently available DSBG data, each of the analyses (i.e., of spatial, biological, and economic factors) has uncertainty surrounding outcomes.

(3) It is unclear how new data collected through the EFPs could further inform analyses prior to final Council action.

The HMSMT believes that a Bayesian methodology that integrates all three analyses into a single approach, considers additional variables, and incorporates uncertainty may help better determine which factor (spatial, biological, or economic) is the most likely to constrain the fishery under varying permit numbers scenarios. This integrated approach may provide a more comprehensive examination of results than is possible by performing each analysis in isolation. Changes in CPUE for different numbers of active vessels can be modeled in the spatial analysis, which can then be used to inform the economic analysis.

<u>Additional HMSMT Considerations:</u>

The HMSMT has heard concerns regarding aspects of both an open access fishery and a limited entry fishery. These concerns regarded an unnecessarily high number of permits being issued under either an open access fishery or limited entry fishery, which could lead to potential negative spatial impacts (e.g., crowding and gear conflicts with recreational fisheries), biological impacts (undesirable bycatch or interactions with protected species, and harvest effects on the swordfish stock), and economic impacts (reduced DSBG profitability). Of particular concern, is the potential for latent DSBG permits to result due to speculative interest. However, latent permits do not affect the aforementioned spatial, biological, or economic aspects of the DSBG fishery.

Concerns specific to limited entry include:

- necessity for determining the optimal number of participants in a DSBG fleet given limited data available at this time,
- selecting an appropriate set of qualifying criteria for participants to obtain permits,
- creating speculative interest in the fishery, and
- inhibiting the fleet's capability to self-rationalize.

The HMSMT considered these concerns and feels the analyses in HMSMT Report 1 demonstrated that certain spatial (e.g., crowding and gear conflicts) and biological (e.g., bycatch) factors are unlikely to constrain DSBG fishing activities, even if 300 permits were issued (i.e., the extent of permits considered under an open access alternative). Economic analyses show that swordfish market price may be affected by the volume of swordfish landings, although the effect is difficult to quantify given relatively small volumes of DSBG landings so far compared to other sources of swordfish supply to the West Coast. The potential for biological impacts affecting swordfish stock status are also unlikely under any authorization scenario.

As the HMSMT has presented before, the Council could consider a limited entry option that would initially authorize a lower number of permits and phase in additional permits over time. However, this approach still requires the Council to specify an initial number of permits based on the limited data available, and extends the need to discern an optimal fleet size into the future.

Open access could be implemented until a potential concern is identified at which time the Council would develop a proposed action appropriate for the situation, rather than the Council attempting to predict possible issues. Any necessary changes to management could be addressed during the biennial management process. It is possible that some concerns may be managed through measures other than limited entry, such as time/area closures or effort limitations.

The HMSMT recommends that the non-transferability provision in the range of alternatives be maintained at this time, as it would reduce the potential to generate speculative interest in the DSBG fishery.

PFMC
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