

HIGHLY MIGRATORY SPECIES MANAGEMENT TEAM REPORT ON DEEP-SET BUOY GEAR AUTHORIZATION RANGE OF ALTERNATIVES

The Highly Migratory Species Management Team (HMSMT) discussed the Pacific Fishery Management Council's (Council's) September 2017 motion to adopt a range of alternatives (ROA) for authorization of a deep-set buoy gear (DSBG) fishery off the U.S. West Coast on their January 2018 webinar. The HMSMT has discussed and begun analyses examining the spatial, economic, and biological parameters of a DSBG fishery of varying sizes, to inform the Council's decisions regarding fishery size. A description of the proposed analyses is provided below. In this report, the HMSMT provides updates on its ROA analyses and suggestions for the Council to consider while moving forward. The draft analytical document, including the proposed action, purpose and need, action area, and ROA, is included as an attachment at the end of this report for reference.

Spatial Analyses

The HMSMT discussed possible approaches to analyze DSBG spatial constraints within waters south of Point Conception using scenarios with varying maximum permit numbers. Swordfish abundance and distribution are difficult to anticipate temporally, making estimations for spatial extent of a DSBG fishery variable and highly unpredictable. Additionally, DSBG-specific data available to date is extremely limited. Therefore, the HMSMT is incorporating California landings data, drift gillnet (DGN) logbook data, and DGN observer data to estimate the potential spatial extent of swordfish availability, as well as Commercial Passenger Fishing Vessel (CPFV) logbook data to attempt to partially characterize potential conflicts with the recreational fishery. As each of these data streams is incomplete and/or has other constraints (described below), examining the overlap and scale of each can help refine potential fishery parameters through manipulation of spatial and temporal frameworks (years used, concentration of effort, etc.). Final results presented in June, including rates of participation in the DGN fishery, will allow the Council to examine density of vessels based on historic swordfish fishery extent and use this information when considering each alternative number of permits.

Data Stream Constraints

1. EFP data – the spatial, temporal, economic, and biological data collected by the Pflieger Institute of Environmental Research (PIER) Exempted Fishing Permit (EFP) for 2015-2016 are the main dataset available to the HMSMT. However, this dataset is composed of effort from only five highly-supported vessels over a two-year period. 2017 data will be incorporated into further analyses, but these data will likely refine existing estimates rather than expand the scope of any analyses already under consideration.
2. California landings data – landing receipts require catch location information for only one CDFW fishing block (where the most catch was taken), which could represent a wide range of number of sets from multiple blocks. Landing receipts, while signed by fishermen, are completed by fish businesses, so information may be inaccurate.

3. DGN logbook data – logbook data requires catch location on a set-by-set basis, but compliance for logbooks is unknown and provides only a partial dataset.
4. DGN observer data – this data stream is the most accurate for catch location and composition; however, it is limited to only a fraction of total effort (10-30 percent) and temporal scale (2009/10 - 2016/17).
5. CPFV logbook data – as with landing receipts, logbooks only indicate the block where the majority of catch was taken. However, logbooks for the CPFV fleet are required for every day at sea.

Economic and Biological Analyses

The HMSMT discussed possible approaches to analyze the economic and biological impacts of a newly-authorized DSBG fishery for alternatives with different possible maximum numbers of permits. A constant returns to scale assumption may be reasonable for limited entry (LE) alternatives with small numbers of permits. Under this assumption, doubling the number of vessels fishing would double the expected numbers of swordfish caught, population impacts, revenues, costs, and profits due to DSBG operations.

This constant returns to scale assumption supports the use of an expansion estimator to expand EFP economic and biological impact rates to the maximum numbers of permitted vessels anticipated under various alternatives. The HMSMT received a copy of a manuscript¹ produced by researchers at the Pflieger Institute for Environmental Research. Using effort, catch, cost and profit data provided by the PIER EFP program in combination with other experimental DSBG trial results could provide the basis for developing expansion estimators of biological and economic impacts. This approach would be informative for a fishery with a comparable number of vessels operating to those which participated in the PIER gear trials.

For open access or LE alternatives which permit larger numbers of vessels, the constant returns assumption becomes problematic. The law of diminishing returns posits that lower marginal output will eventually occur as the number of vessels participating in a fishery increases. Beyond some point, additional vessels will catch less swordfish at a higher average cost per unit weight of swordfish landed and sold, and may be forced to sell it for a lower average price than the initial entrants to the fishery.

Given the limited amount and scale of EFP fishing to date, there is no direct evidence regarding the number of participating vessels where diminishing returns to effort and resulting decreasing returns to scale would begin to affect the fishery. The HMSMT plans to work on developing expansion estimators of small-scale DSBG fishery impacts and to discuss further analyses which could help inform discussion of potential limits to DSBG fishery expansion at their March 2018 meeting.

¹ Sepulveda C.A. and S.A. Aalbers, (In Press). Exempted and Research Trials for Swordfish, *Xiphias gladius*, in the Southern California Bight. Marine Fisheries Review.

Protected Species Impacts

Elephant seals are the only protected species recorded taken by the gear thus far. The estimated take of other protected species cannot be calculated at this time, and it cannot be assumed to be zero based on the amount of EFP data collected to date. Evaluation of the risk of protected species takes would have to be described qualitatively based on their known distribution and ecology in the absence of data to quantify take rates.

Clarifications to the Range of Alternatives

The attached description of the range of alternatives is based on the Council's September 2018 motion. The HMSMT seeks further clarification on the Council's intent with respect to some elements of the alternatives as discussed below.

Gear Definitions

A member of the public recommended adding a requirement to the gear definitions that the required circle hooks have no more than 10° offset, as is required for circle hooks in the Hawaii longline fishery. The HMSMT seeks guidance on whether this requirement should be added to the gear definition.

Use of Multiple Gears on a Single Trip (section 2.2.5)

The Council's motion states "All landings must be tagged or marked to identify the gear used." The HMSMT interpreted this to mean that fish landed with either configuration of DSBG must indicate on state landing receipts which configuration (standard buoy gear or linked buoy gear) was used, but tagging/marking of fish to distinguish them from fish caught using other fishing gear will only require designation of "DSBG."

Species Retention (section 2.2.9)

The Council's motion states "All legal HMS are allowed [to be landed]." In the attached description of the alternatives based on the motion, the HMSMT interpreted this as "All HMS FMP Management Unit Species (MUS) may be retained and landed. All other species may not be retained or landed." Experience with DSBG thus far through research and EFP testing shows that in addition to swordfish, opah, escolar, yellowfin tuna, and bigeye thresher shark have been caught and landed. Aside from yellowfin tuna, these species are not HMS Fishery Management Plan MUS and based on the HMSMT's interpretation of the Council's motion, would have to be discarded. The HMSMT seeks clarification about whether this interpretation is consistent with Council intent, or what is meant by "legal HMS" since HMS can be defined in different ways (for example, according to the species listed in UNCLOS Annex 1). The legality of landing any species is a function of particular requirements (e.g., possession of a permit), but in this context the meaning of "legal" is ambiguous. It may be more straightforward to list any species that would be regulated differently with respect to landings and retention for DSBG fishery permittees than for other HMS permit holders.

Definition of the Area Where a Limited Entry Permit Is Required (section 2.3)

The description of the alternatives defines the area where an LE permit would be required as south of 34° 27' N. latitude (Point Conception). However, alternative definitions of the LE permit area have been proposed in public comment ([Agenda Item H.3.b, Public Comment 1, November 2017](#)) and considered by the HMSMT. Preliminary spatial analysis of historic DGN data suggests the highest concentrations of DGN effort to be largely to the east of the Channel Islands. An alternative definition discussed by the HMSMT is east of a north-south line (longitude) from Point Conception (e.g., 120°28'18"W. longitude) to the Mexico border. Inshore waters would then be subject to the LE permit requirement rather than the entire Exclusive Economic Zone south of 34° 27' N. latitude. Based on current EFP data to date, no effort has been conducted in waters farther west. Advantages to this definition include a more precise evaluation of an LE fishery using waters with high historic swordfish effort as well as the concentration of recreational fishing effort; the flexibility for larger DSBG vessels with no interest within this area to fish seaward of Southern California without an LE permit, potentially expanding the profitability and supply from this domestic fishery; and the ability for enforcement bodies to monitor a LE fishery within reasonable offshore distances. The Council's Enforcement Consultants could identify any enforcement concerns with open access vessels passing through a nearshore LE area to reach open fishing grounds.

Should the Council wish to further consider this as an option, the HMSMT can incorporate it into the analyses for the June Council meeting.

Number of Permits to be Issued (section 2.3.4)

Recognizing that under permit qualification alternative 3, the number of permits that could be issued for a particular set of criteria may not equal the round numbers listed in the permit number alternatives, the HMSMT has qualified these alternatives as "up to" the number of permits in an alternative (up to 10, up to 50, etc.).

General Considerations

The HMSMT needs to determine a maximum expected number of vessels to analyze under open access. Analyzing an overly large number of vessels in a fully open access fishery or open access fishery north of Point Conception increases uncertainty of the expected effects of a DSBG fishery. It also masks the differences in expected effects of the number of vessels in the alternatives for an LE fishery south of Point Conception.

Qualification to Obtain a Permit (section 2.3.5)

The HMSMT notes that the first two LE permit qualification alternatives (no qualifications, General HMS permit required) do not specify the way in which permits would be distributed. Alternative 2 establishes possession of the General HMS permit as a criterion. However, there is no restriction on obtaining this permit, and as of 2017 there are 1,626 valid General HMS permits. Given these conditions, this criterion would not impose any practical restriction on the number of qualified permittees. Without specific qualification criteria, permits could be distributed on a first come, first served basis; by lottery; or by auction. Any such distribution

method would have to be evaluated to determine if it is consistent with the requirements of the Magnuson-Stevens Act. The HMSMT seeks guidance on what method or methods for allocating permits should be analyzed under these alternatives.

HMSMT Recommendations on Permit Qualification

For LE permit qualification alternative 3, the HMSMT suggests using the HMSMT's permit issuance tiers as initially described in [Agenda Item J.6.a, HMSMT Report 1, September 2017](#) as a way to gradually expand the size of the fishery over a period of time. This would allow for evaluation of additional information on fishery performance as it becomes available. The HMSMT would also suggest that if such an approach is used, some amount of observer coverage continue, so as to document bycatch interactions. This would also give the Council an opportunity to hear from fishery participants about emerging issues, such as conflicts with other commercial or recreational fisheries, and recommend action as needed.

The HMSMT recognizes the Highly Migratory Species Advisory Subpanel's request in [Agenda Item J.6.a, Supplemental HMSAS Report 1, September 2017](#) to alter the order of permit issuance tiers as well as revise the method in which permits would be issued to EFP participants. Revised numbers for potential qualifying permit recipients for the HMSAS proposal could not at this time be determined, as the addition of DGN crew as a tier was the only substantial change requested. However, analysis of the total number of permits issued in potential varying orders of criteria is time consuming and not very informative without the addition (or subtraction) of a criterion, because the reordering of any given set of qualifying criteria only minimally changes the total number of permits that could be issued (small changes in the total number are a result of individuals who meet more than one qualifying criterion). Additionally, the Council will need to set a control date(s) for EFP issuance and participation for this criterion to be evaluated, as well as the number of crew to be considered for each gear type (DGN and DSBG EFPs). Again, accurate analysis of such numbers is still difficult due to the unknown identity of crew members, and the Council should consider how they wish to verify/establish a person's eligibility as a swordfish vessel crew member.

PFMC
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Authorization of a Deep-Set Buoy Gear Fishery for Swordfish in Federal Waters off the West Coast

1.0	Introduction	2
1.1	Background	2
1.2	Proposed Action	2
1.3	Purpose and Need	2
1.4	Action Area	3
2.0	Alternatives	3
2.1	No Action Alternative	3
2.2	Action Alternative 1: Authorize an Open Access Fishery	3
2.2.1	Gear Description	3
2.2.2	Gear Tending	4
2.2.3	Gear Deployment/Retrieval	4
2.2.4	Use of Multiple Gears on a Single Trip	4
2.2.5	Permitting	4
2.2.6	Geographic Area	4
2.2.7	Fishery Timing	4
2.2.8	Species Retention	5
2.2.9	Fishery Monitoring	5
2.3	Action Alternative 2 Authorize a Limited Entry Fishery South of Point Conception	5
2.3.1	Permit Possession	5
2.3.2	Permit Renewal	5
2.3.3	Permit Transfer	5
2.3.4	Number of Permits to be Issued (Fishing Capacity)	6
2.3.5	Qualifications to Obtain a Permit	6

1.0 INTRODUCTION

1.1 Background

Since March 2016, the Council has been developing a range of alternatives to authorize a fishery using deep-set buoy gear (DSBG). At the June 2017 Council meeting, the Highly Migratory Species Management Team (HMSMT) submitted for Council consideration a report describing a preliminary range of alternatives ([Agenda Item H.3.a, HMSMT Report](#)). The Council then provided guidance for further development of the alternatives and the HMSMT submitted an updated range of alternatives ([Agenda Item J.6.a, HMSMT Report 1](#)) at the September 2017 Council meeting. The Council adopted a motion narrowing the range of alternatives to focus on the implementation of a limited entry permit program for fishing with DSBG in the Southern California Bight. The Council is scheduled to further revise the range of alternatives as necessary and adopt a preliminary preferred alternative for fishery authorization at its March 2018 meeting. The Council would then take final action to select a preferred alternative at its June 2018 meeting.

Based on the Council's September 2017 motion, the range of alternatives adopted is described below, along with the proposed action and purpose and need drafted by the HMSMT.

1.2 Proposed Action

The proposed action is to authorize a DSBG fishery targeting swordfish and other highly migratory species under the Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species (HMS FMP). DSBG would be identified as a legal commercial fishing gear in the FMP and pursuant regulations. Management measures for the fishery could be established in the FMP or in Federal regulations under the FMP's management framework.

1.3 Purpose and Need

The purpose of the proposed action is to encourage the use of a fishing gear in the West Coast commercial swordfish fishery that minimizes bycatch and bycatch mortality of finfish and protected species (including sea turtles, marine mammals, and seabirds) to the extent practicable while allowing for the fishery to remain economically viable. Research and exempted fishing trials with DSBG have demonstrated that this innovative gear type has minimal protected species interactions and finfish bycatch. Economic viability encompasses support for a swordfish fishery conducted by vessels with West Coast home ports, and increased availability of locally-caught swordfish in the market.

The proposed action is needed as a component of a West Coast swordfish fishery that effectively addresses the 10 national standards for conservation and management enumerated in the Magnuson-Stevens Act, Section 301, in particular [National Standards](#) (NS) 1 (optimum yield) and 9 (minimize bycatch). DSBG is also needed as a commercially viable addition to the suite of legal swordfish gear types, to provide sustained participation in the swordfish fishery by West Coast fishing communities. In doing so, authorization of the fishery would also address NS 8.

1.4 Action Area

The action area for authorizing a DSBG fishery is the Federal waters of the U.S. Exclusive Economic Zone off the coast of California and Oregon. The action area does not include state waters, which generally extend 3 nautical miles (nm) from shore, but extends further than 3 nm from shore in some areas.

2.0 ALTERNATIVES

2.1 No Action Alternative

DSBG would not be authorized as a legal gear under the HMS FMP. Swordfish are currently targeted using fishing gears authorized for use and managed under the HMS FMP, including harpoon and large-mesh drift gillnet (DGN). The Hawaii shallow-set longline fishery also lands swordfish and other HMS to West Coast ports. If DSBG is not authorized, these gears would remain as the primary fishing gears supplying U.S.-caught swordfish to the U.S. West Coast.

2.2 Action Alternative 1: Authorize an Open Access Fishery

Under this alternative the fishery would be authorized with the following management measures.

2.2.1 Gear Description

As noted in its June report, the HMSMT has adopted terminology, in order to maintain consistency, prevent confusion when discussing the fishery further, and allow the Council to establish one permit for multiple gear configurations. Deep-set buoy gear (DSBG) refers to the overarching gear type in its multiple configurations. Under the umbrella of DSBG, there is currently standard buoy gear (SBG) (previously referred to as “traditional” buoy gear) and linked buoy gear (LBG). Both of these gear types would be initially authorized.

Definitions:

Standard Buoy Gear (SBG) - An actively tended vertical gear configuration that is designed to target west coast highly migratory species. An individual piece of SBG consists of a vertical monofilament mainline suspended from a non-compressible float (>45 lb. flotation) and strike indicator float system that uses a minimum 3.6 kg weight to expedite sink rate and facilitate strike detection. A collective gear set includes ten individual pieces of gear that can fish up to three hooks each (30 total hooks maximum; minimum size 16/0 circle hooks) that must be positioned below 90 meters (m) deep when fishing. Each piece of gear must also include a locator flag with a light attached, a radar reflector and vessel/fisher identification compliant with all current state requirements and regulations.

Linked Buoy Gear (LBG): An actively tended gear type in which two or more pieces of standard buoy gear (SBG) may be linked together by means of a horizontal monofilament mainline; no more than three gangions/hooks are connected to this horizontal line per individual piece, not the vertical lines. Serviceable links between each LBG section are suspended at a minimum depth of 11m (36 feet) below a non-compressible float system (>45 lb. flotation) that allows for strike

detection (based on SBG design standards). No more than 30 hooks (minimum size 16/0 circle hooks) can be deployed simultaneously, and all hooks must be fished below 90m. No more than 10 sections of LBG may be used at one time, and the overall horizontal footprint of the gear must be less than 5nm. Terminal buoys must include a locator flag with a light attached, a radar reflector, and vessel/fisher identification compliant with all current state requirements and regulations.

2.2.2 Gear Tending

All pieces of gear must remain within a 5 nm diameter area and the vessel may be no more than 3 nm from the nearest piece of gear. These requirements promote active tending, which is a key feature of the use of this gear type.

2.2.3 Gear Deployment/Retrieval

Gear may not be deployed prior to local sunrise and must be onboard the vessel no later than 3 hours after local sunset.

2.2.4 Use of Multiple Gears on a Single Trip

Gear types other than DSBG may be used on the same trip when DSBG is used, as long as the requirement to actively tend DSBG is met. This requirement will limit the gears with which fishermen could concurrently fish with DSBG and maintain maneuverability to allow for active tending of DSBG and/or staying within the active tending boundary. Other gears could be set and retrieved on the way out to and returning from sea, and DSBG fished in between, potentially at a large distance from the other gear.

All landings must be tagged or marked to identify the gear used. This would facilitate properly attributing catch to the gear type used on a trip. Additional requirements may be necessary so that catch can be accurately recorded by gear configuration on the fish ticket/landings receipt. Any such identification would identify fish caught with DSBG but not further distinguish between fish caught with SBG versus LBG, as is required on landing receipts.

2.2.5 Permitting

A new gear endorsement for DSBG would be added to the existing Federal General HMS permit. The nature of the gear endorsement would depend on whether SBG or both SBG and LBG are authorized (see gear definitions above).

2.2.6 Geographic Area

The fishery would be authorized in all Federal waters offshore California and Oregon.

2.2.7 Fishery Timing

This fishery may operate throughout the year.

2.2.8 Species Retention

All HMS FMP Management Unit Species may be retained and landed. All other species may not be retained or landed.

2.2.9 Fishery Monitoring

Existing HMS FMP regulations governing observer coverage (50 CFR 660.719) establish a requirement that any HMS-permitted vessel must accommodate a NMFS certified observer when required by the agency. The level of observer coverage is determined by the agency.

HMS FMP regulations also require logbooks (50 CFR 660.708). NMFS, in consultation with the Council, would need to determine how to implement logbook and data submission requirements for the DSBG fishery. In a future report, the HMSMT may provide additional recommendations on logbook data fields specific to the DSBG fishery.

2.3 Action Alternative 2 Authorize a Limited Entry Fishery South of Point Conception

This alternative would include all the management measures described above for Alternative 1 and would in addition implement a limited entry (LE) permit, which would be required to fish DSBG south of Point Conception, defined as south of 34° 27' N. latitude.

2.3.1 Permit Possession

The HMS LE DSBG permit is held by a person or individual entity who must designate a vessel on the permit. The designated vessel need not be owned by the permit holder. The permit holder may change the vessel designation on the permit periodically (e.g., annually, or 3 times per year, etc.). The vessel owner must also hold an HMS permit. Individual entities may hold multiple permits, multiple permits may designate the same vessel, but only one permit (10 pieces of gear) may be fished from any one vessel at a time. The permit holder would not be required to be onboard the vessel when DSBG is in use.

2.3.2 Permit Renewal

The HMS LE DSBG permit would be valid for one fishing year and expire if not renewed.

2.3.3 Permit Transfer

HMS LE DSBG permits would not be transferable when the fishery is initially authorized. The Council may take action at some point after the fishery is authorized and the fishery has reached a stable state and the Council determines that transfer would benefit management. The Council may consider allowing permit transfers, and any related conditions, through the biennial management process.

2.3.4 Number of Permits to be Issued (Fishing Capacity)

A fixed number of permits would be issued. The following options for the number of permits issued will be considered:

1. Up to 10 permits
2. Up to 50 permits
3. Up to 150 permits
4. Up to 250 permits

2.3.5 Qualifications to Obtain a Permit

The following options for determining how permits would be initially allocated will be considered:

1. No qualifications
2. Only HMS permittees
3. Only persons with demonstrated swordfish fishery participation to be allocated based on criteria defined by the Council