

**PACIFIC FISHERY MANAGEMENT COUNCIL**  
**Swordfish Management and Monitoring Plan**  
**DRAFT**  
**September 2018**

## **1 Introduction**

The Pacific Fishery Management Council (Council) manages targeting of swordfish on the West Coast under its Fishery Management Plan for West Coast Fisheries for Highly Migratory Species (HMS FMP). A variety of gears are being used to catch swordfish on the West Coast (i.e., swordfish fishery), including large drift gillnet (DGN), harpoon, pelagic longline, and deep-set buoy gear (DSBG) (See Appendix A). Pelagic longline gear cannot be used within the U.S. Exclusive Economic Zone (EEZ) of the West Coast (three to 200 nautical miles) and shallow-set longline fishing (SSLL) to target swordfish cannot be conducted both east and west of 150 degrees W. longitude. However, there is a general interest in exploring use of pelagic longline gear on the West Coast. Bycatch<sup>1</sup> of non-target finfish species and incidental take of protected species while targeting swordfish remains an ongoing concern for the Council because protected species, including whales, dolphins, pinnipeds (e.g., seals, sea lions), sea turtles, and seabirds have special status under Federal statutes. Therefore, the Council is required to monitor these fisheries, and reduce or minimize bycatch of these animals to the extent practicable.

Under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA), various mitigation measures that substantially reduced bycatch of protected species were instituted; however, there has also been a coincidental decline in participation in these fisheries, resulting in a decline in landings as well. In addition, West Coast fishery participants are testing other gears (e.g. DSBG) to target swordfish with minimal bycatch. These topics motivated the Council to consider the swordfish fishery with a more holistic approach. Therefore, in 2015, the Council developed a draft Swordfish Management and Monitoring Plan (SMMP) to articulate the Council's vision and future actions for the West Coast swordfish fishery as a subplan under the Council's HMS FMP.

## **2 Purpose of the Plan**

This SMMP serves as a guide for the Council to manage the West Coast swordfish fishery based on four fishery management goals:

1. Reduce protected species bycatch to the extent practicable in the swordfish fishery through mitigation, gear innovation, and individual accountability.
2. Reduce unmarketable and prohibited finfish catch to the extent practicable in the swordfish fishery through mitigation, gear innovation, and individual accountability.
3. Support the economic viability of the swordfish fishery so that it can meet demand for a fresh, high quality, locally-caught product and reduce reliance on imported seafood.
4. Promote and support a wide range of harvest strategies for swordfish off the West Coast.

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<sup>1</sup> The Magnuson-Stevens Act includes a definition of bycatch as fish that are discarded (not sold or kept for personal use). The Act defines "fish" broadly to cover all forms of marine life except marine mammals and seabirds. The term "take" is used in protected species statutes to refer to interactions which may or may not be lethal. For simplicity, the term bycatch will be used in this SMMP more broadly than the MSA to refer to the capture and release of all forms of marine life, including marine mammals and seabirds.

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These goals will be achieved through a variety of mitigation and management measures outlined in this SMMP (See Section 3).

The Council intends to minimize non-target finfish and protected species (including sea turtles, marine mammals, and seabirds) bycatch in the West Coast swordfish fishery as a whole to be consistent with National Standard 9 and Section 303 of the Magnuson-Stevens Act to “(a) minimize bycatch and (b) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.”

The Council will continue to minimize bycatch and bycatch mortality of finfish and protected species to the extent practicable while ensuring that the West Coast swordfish fishery remains economically viable. Economic viability encompasses support for a swordfish fishery conducted by vessels with West Coast homeports and increased availability of locally-caught swordfish in the market.

In addition, the Council intends to better integrate fishery management under the HMS FMP with enhanced protection of ESA-listed species and other protected species (e.g. non-ESA-listed seabirds and marine mammals) while promoting and supporting a wide range of harvest strategies that include new or modified gear, and area management considerations.

In 2014, the Council began to consider the best method to develop this SMMP. Initially it was intended as a roadmap for transiting DGN fishery participants to the use of other gear types. But the Plan was broadened to reflect the Council’s intent to look at all feasible gear types for targeting swordfish in light of a bycatch reduction goal, including DGN. In June 2014, the Council agreed on a list of policy objectives intended to guide management of the West Coast swordfish fishery with the dual goals of reducing bycatch while maintaining or enhancing its economic viability ([See Agenda Item E2](#) and [Council Decision Summary](#)).

Elements of this Plan have appeared in Highly Migratory Species Management Team (HMSMT) Reports for the March and June 2015 Council meetings which also included alternatives and analyses for proposed actions for bycatch reduction in the DGN fishery. The Council reviewed the Plan in September 2015 and again in June and September 2018. Finalization of this Plan will not only facilitate implementation of the actions described below in Section 3, but will also provide an administrative record on the Council’s vision going forward for a sustainable swordfish fishery off of the West Coast. It’s intended that actions in this plan may be updated or revised by the Council in the future, as needed, to meet the fishery management goals of this SMMP.

### **3 Actions to Be Taken Under This Plan**

#### **A. Reduce bycatch in the DGN fishery through hard caps and performance standards**

1. Consider hard caps to limit takes of loggerhead and leatherback sea turtles in the DGN fishery. For example, if a hard cap is reached or exceeded during a fishing season, or during a specified period, a specific time-area closures could go into effect.
2. Continue to review bycatch estimates against performance standards for specified marine mammals, sea turtles, and finfish. The Council may periodically review the efficacy of bycatch estimation methods used to judge performance, and the species for which performance standards are set. Based on trends of bycatch compared to specified performance standards, the Council may recommend additional management measures, as appropriate.
3. Work with NMFS to increase fishery monitoring with the goal of monitoring all vessels by means of either human observers or electronic monitoring technology. Initially, the Council desires a 30% coverage rate across all vessels. For vessels that are unobservable by humans, electronic monitoring (EM) should be used to meet the coverage rate goal.

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4. In the absence of 100% monitoring, use the best available statistical methods to estimate rare event bycatch.
5. Explore the use of dynamic ocean modeling tools, such as EcoCast, as part of an individual accountability-based management strategy.<sup>2</sup>

### **B. Develop deep-set buoy gear**

1. Evaluate the results of fishing under EFPs, including deep-set linked buoy gear, recommended by the Council and issued by NMFS.
2. Complete HMS FMP amendment and regulatory processes to authorize a DSBG fishery.
3. As part of fishery authorization, consider a Federal limited entry program for DSBG including qualification criteria, taking into account current participation in the West Coast swordfish fishery.

### **C. Limit fishing effort in the DGN fishery**

1. Explore ways to leverage Federal DGN fishery limited entry permits to reduce bycatch, noting that implementation of the Federal permit may result in some natural attrition of permit holders. For example, as of June 2018, only two-thirds of state limited entry permit holders had applied for the Federal limited entry permit.
2. Determine the appropriate number of Federal limited entry permits based on the fishery management goals within this SMMP. Explore mechanisms to retire excess permits, including compensating holders for retiring permits. For example, a minimum landings requirement during some recent time-period could be required to retain a permit.
3. Explore use of the Federal limited entry permit to encourage DGN fishery participants to utilize other gear types. For example, the Federal limited entry permit regulations could be amended to include permit endorsements for other gear types such as pelagic longline and/or DSBG (if managed through limited entry) or to encourage swapping a DGN permit for a limited entry permit for another fishery/gear type.

### **D. Allow DGN vessels to access the PLCA**

1. The Pacific Leatherback Conservation Area (PLCA) was implemented in 2001 to mitigate takes of endangered Pacific leatherback sea turtles. It covers an area of the EEZ from Monterey Bay in California to the central Oregon coast and is closed to DGN fishing each year from August 15 to November 15. Based on exempted fishing permit (EFP) performance within the PLCA, consider allowing access to the PLCA with individual vessel and/or fishery accountability for bycatch using limits such as hard caps on leatherback sea turtles.
2. Explore the use of dynamic ocean modeling tools, such as EcoCast, as part of an individual accountability based management regime that would allow DGN vessels to fish in specified areas within the boundaries of the current PLCA.

### **E. Develop longline fisheries**

1. Revisit the 2009 proposed action to authorize a SSSL fishery outside the West Coast EEZ in light of current conditions including West Coast landings by Hawaii-permitted SSSL vessels.
2. Revisit the current FMP prohibition on the use of pelagic longline gear inside the West Coast EEZ.

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<sup>2</sup> EcoCast is a fisheries sustainability tool that helps fishers and managers evaluate how to spatially allocate fishing effort to maintain target fish catch while minimizing bycatch of protected or threatened species.

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3. Consider qualification criteria for a Federal limited entry SSL permit in the context of Federal permitting for other swordfish gear types.
4. Explore the feasibility of, through exempted fishing permits, new pelagic longline gear designs or management strategies.

### **4 Road Map for Implementing Actions under this Plan**

Actions related to this Plan that are included in Council's "Year-at-a-Glance" planning document (Agenda Item C.11, Supplemental Attachment 3, June 2018) are listed below. The Council may decide to supplement this section of the Plan by identifying additional actions over a longer time frame.

#### **September 2018**

1. Review updates to this Swordfish Monitoring and Management Plan
2. Consider proposed changes to the DGN performance metrics methodology

#### **November 2018**

1. Scoping of FMP amendment authorizing a SSL fishery outside the EEZ
2. Review new proposed performance metrics based on new methodology (tentative)

#### **March 2019**

1. Adopt a range of alternatives for FMP amendment authorizing a SSL fishery outside the EEZ
2. Final action on authorizing a DSBG fishery

#### **June 2019**

1. Adopt a preliminary preferred alternative for FMP amendment authorizing a SSL fishery outside the EEZ
2. DGN performance metrics annual report
3. Ongoing EFP update
4. Initial EFP proposal review and recommendation

#### **September 2019**

1. Adopt a final preferred alternative for FMP amendment authorizing a SSL fishery outside the EEZ
2. EFP proposal final recommendation

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**APPENDIX A**

There are three commercial gear types currently used on the West Coast, in the U.S. Exclusive Economic Zone (EEZ) to harvest swordfish: drift gillnet, harpoon, deep-set buoy gear and linked deep-set buoy gear. Pelagic longline gear cannot be used within the EEZ of the West Coast (three to 200 nautical miles) and shallow-set longline fishing (SSLL, setting gear in less than 100 meters) to target swordfish cannot be conducted east and west of 150 degrees W. longitude to target swordfish. However, there is a general interest in exploring use of pelagic longline gear on the West Coast. Vessels permitted with a Hawaii longline limited access permit land on the West Coast with some vessels consistently operating from the West Coast; therefore, these swordfish landings are reported as pelagic longline. These gear types and their relevance to the West Coast swordfish fishery are summarized below. Current landings and revenue are summarized in Table 1.

Based on work by Gjertsen, et al. these four gear types can be grouped as follows: pelagic longline and DGN are capable of larger catch volume but result in relatively higher bycatch versus deep-set buoy gear and harpoon with low catch volume and little or no bycatch. Thus, the mix of gear types used in the swordfish fishery will reflect a tradeoff between the total amount of swordfish that could be landed on the West Coast, product quality, and bycatch impacts.

**Table 1. Total number of vessels that made swordfish landings, metric tons of swordfish landed, inflation adjusted ex-vessel revenue (\$1,000s), and inflation adjusted average price per pound, 2013-2017. (Source: PacFIN, 6/20/18)**

Fishery	Total Number of Vessels	Total landings (mt)	Total Inflation Adjusted Ex-Vessel Revenue (\$1,000s)	Average Inflation Adjusted Price Per Pound*
Pelagic Longline**	23	2,173	\$11,362	\$2.37
DGN	28	693	\$4,332	\$2.84
DSBG†	7	93	\$962	\$4.69
Harpoon	32	67	\$795	\$5.40

\*Computed as total inflation-adjusted ex-vessel revenue divided by total landings in pounds.

\*\*Hawaii permitted vessels.

†DSBG landings 2015-2017.

**Large Mesh Drift Gillnet**

- The DGN fishery began in the late 1970s and expanded in the 1980s, initially targeting thresher sharks but switching the principal target to swordfish after the mid-1980s.
- Landings and participation peaked in the mid-1980s and have been steadily declining since that time.
- Fishing occurs mainly in the fall and winter; the fishery is closed February 1-April 30. Little if any fishing occurs May 1-August 14 when fishing is prohibited within 75 nm from the mainland shore.
- Landings averaged 139 mt for calendar years 2013-2017 (Table 1) while participation averaged 19 vessels per year.
- Takes of leatherback sea turtles and large whales are of particular concern in this fishery. Other marine mammal species are caught in this fishery.
- Take/bycatch mitigation measures have been implemented for this fishery under the HMS FMP, the ESA, and the MMPA. These include gear modifications (pingers and net extenders) and time-area closures. The PLCA is the largest time-area closure, covering waters from Monterey north, August 15 to November 15 each year.

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- Based on Council and NMFS action, Federal DGN limited entry permit was implemented in 2018. This permit, in addition to the California LE DGN permit, is required to fish with DGN in Federal waters and land in California. All current California LE DGN permit holders are eligible to apply for, and receive, a Federal LE DGN permit. State permit-holders have until March 31, 2019, to obtain their Federal permits, and three months after that to appeal if they miss the deadline. If any permit holder does not obtain their Federal permit by this deadline, they will lose their opportunity to do so, subject to any decisions resulting from an appeal process. The state LE DGN permit alone will not authorize harvest and landing of swordfish with DGN.

### **Harpoon**

- Harpoon gear is used to catch swordfish while they are basking on the surface during the day and generally requires calm sea conditions to be effective.
- Most fishing occurs in the summer months, when environmental conditions are favorable.
- Because it is a highly selective gear, harpoon is effectively free of non-target catch. However, swordfish do occasionally break free and their fate is unknown.
- This is a low volume fishery with a higher ex-vessel price per pound for swordfish compared to DGN and SSSL (Table 1). Because of the operating costs and low volume, this fishery is not usually the sole source of income for participants. In the five years 2013-2017, landings averaged 13 mt annually (Table 1). Participation averaged 15 vessels annually, 2013-2017, with a total of 32 unique vessels making landings during this period (Table 1).

### **Standard Deep-Set Buoy Gear (DSBG) and Linked Deep-Set Buoy Gear (LBG)**

- The Pflieger Institute of Environmental Research (PIER) began design and testing of DSBG off the West Coast in 2011. In 2015, based on the Council recommendation, NMFS issued exempted fishing permits to PIER to allow cooperative fishers to test the commercial viability of the gear under PIER's supervision.
- Between 2015 and 2017, seven vessels landed a total of 93 mt of swordfish under these EFPs (Table 1).
- Standard DSBG is deployed during daytime using a vertical line suspended from a buoy with hooks set deep. Weight on the terminal end of the vertical line ensures a rapid sink rate to the desired depth. A strike indicator and active tending allows catch to be retrieved quickly, reducing bycatch mortality. The configuration is limited to no more than 10 pieces of gear to allow active tending. These characteristics are intended to minimize bycatch and bycatch mortality, especially of protected species.
- This gear is expected to complement/supplement harpoon gear, because of its similarity in terms of vessel requirements, catch volume, and high product price.
- PIER also developed and in 2016 trialed LBG. LBG has the same characteristics as the standard configuration in terms of setting deep during the daytime to avoid bycatch and strike detection to allow quick retrieval. With the LBG configuration, up to three hooks are deployed along a horizontal line set at depth between two vertical lines suspended from floats in the same fashion as the standard configuration. Up to 10 of these pieces are then linked by horizontal lines that allow each piece to be independently retrieved.
- LBG is intended to produce larger catch volume from larger vessels and thus could complement or supplement DGN.
- Between June 2016 and March 2018, the Council reviewed more than 50 EFP applications to test these gear types and made recommendations to NMFS on issuance. NMFS began issuing EFPs based on Council recommendations in the summer of 2018.

### **Pelagic Longline**

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- Shallow-set longline (SSLL) gear is distinguished by the deepest point of the main line set at depths shallower than 100 m.
- Sea turtle takes (specifically loggerhead and leatherback sea turtles) have been a focus of concern with this gear type but the use of large circle hooks and mackerel type bait has been shown to substantially reduce takes, serious injuries, and mortality.
- Seabird interactions are also a concern with all types of longline gear. Seabird mitigation measures for pelagic longline gear are required in Federal regulations (see 660 CFR 712(c)).
- SSLL vessels were operated seasonally and intermittently from West Coast ports until 2004.
- SSLL is currently prohibited under the HMS FMP and ESA regulations.<sup>3</sup>
  - Pelagic longline is prohibited in the West Coast EEZ (50 CFR 660.712(a)(1))
  - SSLL is prohibited west of 150°W longitude and north of the equator (50 CFR 660.712(a)(2)).
  - SSLL is prohibited east of 150°W longitude and north of the equator under ESA regulations (50 CFR 223.206(d)(9))
- In partially disapproving the SSLL provisions in the HMS FMP, NMFS encouraged the Council to consider an FMP amendment to require circle hooks/mackerel type bait and a limited entry program in order to authorize a SSLL fishery addressing ESA concerns.
- The Council last considered authorizing an SSLL fishery in 2009 but decided not to move forward because of bycatch concerns.
- Hawaii-permitted SSLL vessels that fish outside the EEZ are allowed to make landings on the West Coast.
- In the five years 2013-2017, a total of 23 Hawaii permitted vessels annually averaged 435 mt of swordfish landings to the West Coast effectively making it the largest swordfish fishery on the West Coast by volume and revenue (Table 1).
- Hawaii-permitted SSLL landings on the West Coast mostly occur between November and March when swordfish are more abundant in waters closer to the West Coast than to Hawaii.

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<sup>3</sup> Hawaii-permitted SSLL vessels are not subject to these prohibitions except for fishing inside the West Coast EEZ.