

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE REPORT ON DEEP-SET BUOY GEAR AMENDMENT SCOPING

At the November 2015 meeting, the Council discussed authorization of deep-set buoy gear (DSBG), as it has shown in research trials to be a new method of fishing for swordfish off California with minimal bycatch of high-priority protected species (HPPS). DSBG is new to the west coast and has been tested in federal waters by the Pflieger Institute of Environmental Research (PIER) since 2010, first under a federal Letter of Acknowledgement (LOA) with coordination and oversight from NMFS. The gear is now currently authorized under three experimental fishery permits (EFPs), data from which the Council has yet to see or evaluate prior to this meeting. Despite promising preliminary results, California Department of Fish and Wildlife (CDFW) believes that scoping for authorization is somewhat premature at this time, and indicated such under the November 2015 agenda planning discussion. Issues and unknowns that CDFW has identified to date are itemized here, expecting this list to be incomplete.

Nonetheless, CDFW is supportive of moving forward with analysis and regulatory development to authorize use of the gear under the Highly Migratory Species Fishery Management Plan, recognizing it will not be possible to resolve all unknowns surrounding a new fishery that has yet to exist.

Results from the PIER study and first year of EFP activity offer a small and narrow set of catch and bycatch data that do not capture fluctuations in environmental conditions, and are not a representative picture of larger scale operations (temporal and spatial) and catch profiles. These aspects will likely vary when more than four vessels engage in the fishery and are not coordinated under an EFP. Additionally, members of the Council have raised concerns over the need to have a robust and long-term data set during the review of EFPs for other fisheries before authorizing the experiment in regulations. CDFW supports a consistent approach when determining if and when enough information is available to move from an EFP phase to regulations, and encourages analysis across all Council managed fisheries.

- CDFW has often emphasized the importance of EFP performance measures being applicable to a wide range of vessels and areas; DSBG has been tested in a very limited area (southern California Bight [SCB]) with a small number of vessels to date. No swordfish EFP activity has been conducted to date in the PLCA, which is an area known to be highest in both targeted catch and bycatch species. The PLCA was closed to drift gillnet fishery activity in order to reduce interactions with marine turtles. CDFW notes that turtles can be susceptible to hook and line gear, especially when fished near the surface. CDFW believes that full analysis and consideration of cumulative effects to the environment, as well as interactions with both habitat and non-target species is necessary with this new fishery. Any proposal to authorize the gear would benefit from full NEPA, and if necessary, ESA and MMPA analysis in order to develop appropriate specifications, constraints, incidental take authorizations and prohibitions.
- Research trials (non-EFP) involved two vessels initially; one scientific research vessel and one commercial fishing vessel. The current PIER EFP has four commercial fishing

vessels participating in fishing activity, the crews of which have all been trained and monitored by PIER. None of the other EFP holders have been trained by PIER, and only one of the two has fished (three days of effort), having no catch.

- As an example from the groundfish fishery, the EFP for yellowtail rockfish jig gear off California has completed two years of experimental gear tests with a total of 46 trips, starting in the 2013-14 season. The applicants are requesting another extension of an additional two years. While it is supported by the GAP and GMT, Council members felt that there was not yet enough data to authorize this gear in regulation, and that replication of this EFP for additional years and with additional vessels fishing in new locations, will provide the data needed to determine if it is a viable technique that successfully allows efficient take of target species while minimizing bycatch. While PIER had conducted independent research prior to the issuance of an EFP, their EFP has only completed one season of fishing (2015-16) and has completed only 41 reported trips. If looking to number of hooks deployed, the two gears are comparable. The yellowtail rockfish jig EFP trips were made with an average of 11 lines and three hooks per line (33 hooks per trip). Similarly, DSBG EFP trips are made with 10 sets of DSBG, each with 1-3 hooks (10-30 hooks per trip). Council members felt that data from approximately 1,518 jigs was insufficient to make an informed decision on this gear type. It would stand to reason that data from 410 - 1,230 hooks (27-81%) would then also be considered insufficient to move to authorize a new gear, and greater seasonal variability in pelagic species abundance and distribution and oceanic conditions makes replication an even greater need for HMS fisheries.
- Consistency of EFP evaluation criteria across all fisheries is desirable, as specified by the SSC and GMT in a recent review process for electronic monitoring (EM) ([June 2014 Agenda Item F.5.b SSC Report](#)). NMFS requested the inclusion of additional vessels to current EM EFPs with the goal of gathering additional data results from which might better inform regulation development ([November 2015 Agenda Item I.2.a NMFS Report](#)). Both the SSC and GMT made recommendations highlighting the importance of consistency in data collection and reporting procedures and collection of common data components (e.g., cost of equipment purchase, maintenance, and video review) for comparisons among EFPs, and between EFP and non-EFP participants. These recommendations for consistency hold true across fisheries and CDFW supports the application of these standards in EFP processes across fisheries where feasible.

CDFW applauds the effort by the EFP participants and based on the initial results, has every reason to support authorization of this gear. However, Council input on fishery specifications is needed, and should be informed by EFP results and associated research which has been conducted to an extent that it can reasonably support management decision making. Below is a list of concerns and questions CDFW feels cannot be adequately addressed with the available information at this time.

- Clean gear “solution” – DSBG trials have shown low bycatch mortality of non-target (or non-marketable) species as well as minimal bycatch of HPPS. As a result, the gear has been called by many the “solution” to the bycatch situation in the current drift gillnet (DGN) fishery. This is based on an assumption that swordfish landed with DSBG would

fill market demands that exist today for fish taken with DGN and Hawaiian longline gears. However, NMFS ([2015 U.S. West Coast Swordfish Meeting](#)) and PIER research has repeatedly emphasized that DSBG is low volume by nature, and is intended to supplement existing gears, not replace gears such as DGN or longline that have inherently higher productivity. Moreover, in discussion with PIER and fish markets purchasing DSBG fish along with fish taken with other gears, DSBG fish will likely fill a new ‘niche’ higher-price market resulting from eco-marketing and labeling efforts. This new market will be in addition to, and not likely replace, existing markets for fish taken with other gears.

- PIER’s research trials and EFP effort have been small scale and based in the SCB exclusively; CDFW believes that additional effort in a wider geographical range and possibly with other configurations is necessary to determine if DSBG is capable of providing a consistent and profitable source for local caught swordfish while maintaining low bycatch rates, regardless of the location or time of year fishing occurs.
- Urgency – DSBG is currently authorized under three different EFPs, some of which cover multiple fishing vessels. Based on preliminary CDFW fish ticket data for the 2015-16 swordfish season, 14 percent of the swordfish landed in California by DSBG and DGN fleets came from DSBG – approximately 17,000 pounds was landed by DSBG and 105,000 pounds by DGN gear. Twenty vessels reported catches with DGN gear, and four with DSBG. However, PIER has indicated that participants in the EFP are not fishing DGN gear as often (or at all), instead focusing on DSBG fishing. Allowing for more data collection under the EFP authorizations to see if these trends in catch and participation continue for more than a single season would lead to better decision making and aid with the regulatory development needed for the new fishery. Rushing the process is likely to leave various essential fishing data gaps that should be addressed prior to authorizing new gear.
- “Linked-buoy gear” – The Council has become aware that NMFS issued a LOA to PIER last fall to test the efficiency of a new configuration of gear (linked deep-set buoy gear). Although the Council has yet to review this research plan and its goals, authorization of linked buoy gear would require a second FMP amendment in the near future assuming this gear proves promising, if ‘traditional’ DSBG is authorized now. Additionally, the introduction of multiple permit types for differing buoy gear configurations would greatly complicate matters and likely pose significant enforcement concerns. Will linked-buoy gear also be given authorization after minimal testing as well? Does authorizing DSBG at this point set a precedent for inadequate or minimal testing of new gear types/configurations in the future? Will linked buoy gear – with up to 50 hooks and five miles of line – demonstrate characteristics that are more like longlines than traditional vertically-oriented DSBG? These concerns may be of greater detriment than expedited authorization would prove beneficial.
- EFPs – While the Council approved three EFPs using DSBG in 2015, and NMFS has issued all three permits, only one of the three has successfully been fished. The PIER EFP with its additional 4-5 vessels will contribute significantly to the catch data currently

available for DSBG, but it will likely not provide data on spatial and temporal variation to the degree needed to make informed decisions on the parameters of a DSBG fishery. The Mintz EFP intended to fish the gear in more northerly waters that have yet to be tested, but to date, no fishing has occurred under this EFP. Additional EFPs would be paramount to informing this process, but also reinforce the Council's practice of thoroughly evaluating new gears before authorization.

- Permitting - Under what authorizing body would permits be issued? How many should be authorized? What will be the qualifying criteria be for permitting? Currently, there is no information on what size DSBG fleet would be optimal. The HMSMT indicated in their November report ([G.2.a Supplemental HMSMT Report](#)) that they would suggest analyzing several aspects of DSBG to gain a thorough understanding of what catch would look like under different fleet sizes. However, they indicated that they felt there was not enough data to accurately conduct such analyses, and results from the current EFPs would be beneficial to this process. Will DSBG permits be connected in any way to existing California DGN permits? Will there be transfer and/or trade-in provisions?
- Observer coverage – Will DSBG require observers? If so, how will these observers be funded? A possible approach would be a fee requirement for permits that would allow for offset of observer coverage costs, i.e., if NMFS sells 100 permits for \$1,000 each, \$100,000 would be collected to cover costs for observers that can be assigned at random as currently done in the DGN fishery.
- “Actively tended” - California has a prohibition on “mousetrap gear” (see section below on “mousetrap gear”). After discussions with PIER and law enforcement, it was determined that DSBG differed from mousetrap gear in multiple ways, but namely that it was “actively tended”. This phrase is used by both PIER and NMFS in the EFP. The Council would need to determine a definition for “actively tended” that can be included in regulation, as well as consider if this definition will be applicable to other gear types in the future that are actively tended (such as linked buoy gear)? Can DSBG be “actively tended” if a vessel is concurrently participating in other fisheries or using other gears? Should a vessel be allowed to be fishing with harpoon gear and working with a spotter pilot for swordfish while actively tending DSBG? Can a vessel concurrently tend DSBG and pull trap gear? Should vessels be required to remain within a certain distance from all deployed buoys?
- Enforcement - Likewise, “actively tended” must be defined in regulation, and the definition must be enforceable if the gear fished is to perform in the fishery in the same manner as in the experiment
- Definition of “deep set” - PIER operates its gear below the thermocline. However, the depth of the thermocline varies over time. PIER has indicated that the gear does not fish as cleanly near the surface, yet data associated with depth appears to be minimal. A definition of “deep set” will be needed to ensure that a real fishery will perform in a manner just like the experiment, if minimizing bycatch is the ultimate goal. If the gear is fished near or at the surface, and/or in a manner similar to shallow-set longline gear

(which is conceivable if linked buoy gear was fished at the surface rather than at depth), bycatch rates could differ considerably from the EFP results.

- Parameters defining target species – what species should be allowed to be taken and retained with DSBG? All HMS species? Should take of non-HMS species be prohibited?
- Additional gear requirements - A GPS transmitter may be an important requirement to ensure active tending and to eliminate the risk of gear lost at sea. Initial trials have lost no gear to date, but under different environmental conditions and fisherman experience, radar reflectors may not be sufficient to ensure retention of all gear. Additionally, if commingling of fisheries is allowed and gear is not actively tended, the risk of gear loss is likely to increase.
- Spatial and temporal extent of authorization - What is the geographical and spatial authorization area for DSBG? How far from shore should the gear be authorized? Should there be temporal closures to avoid poor weather conditions to limit the amount of potential lost gear? Can gear be fished at night? Should there be a maximum soak time specified? PIER results suggest a much higher rate of bycatch when fished shallow overnight. These questions cannot be assessed accurately by data collected in the limited area and time window available at this time.
- Interactions in untested areas - What do we know about bycatch (such as marlin) in more nearshore areas? Are there whale entanglement concerns?
- State waters – CDFW requests that DSBG authorization not extend into state waters. The potential for gear conflict, navigational hazards, high bycatch, and likelihood of impacts to established fisheries in state waters is too great. Additionally, there is very low likelihood of harvesting swordfish in state waters, which is the desired target species.

Mouse trap gear

In the 1960s and 70s, “mouse trapping” or “jugging” was a popular practice among recreational fisherman in California. They were often used to target white seabass (WSB) in nearshore waters, although some anglers targeted other species such as albacore and mako shark. Gear consisted of a one-gallon plastic jug or small buoy attached to a length of fishing line (usually 10-15 feet) with a baited hook or artificial lure. These units were not attached to the vessel or angler, and were therefore easily lost, even if the vessel remained nearby to attend the gear. Rough seas or the hooking of larger fish that could submerge the float increased chances of gear loss. This could result in the loss of hooked fish and would eliminate the ability to release small or juvenile sharks.

Mousetrap gear was not authorized for commercial use off California due to the potential of gear being lost, and continuing to fish after being lost. However, prior to Mexico beginning its own commercial WSB fishery, U.S. recreational anglers would often use this gear to fish for WSB around the Coronado Islands, returning to the U.S. to sell their catch. While the gear has always been illegal, wording of regulations requiring that “it must be closely attended” were vague and made enforcement difficult, both commercially and recreationally.

In 1998, subsection (f) was added to Title 14 §28.65 Fin fish – Gear Restrictions, General, explicitly prohibiting the use of “mousetrap” gear for recreational fishing. This regulation change was enacted to address concerns over gear loss, gear crowding and entanglement in nearshore (state) waters, and resulting navigational hazards.

While DSBG is similar to the prohibited mousetrap gear in its physical construction, there are notable differences. Table 1 compares aspects of gear configuration and fishing behavior for mousetrap, DSBG and linked buoy gears.

Table 1. Comparison of gear configuration and fishing behaviors for mousetrap, deep-set buoy, and linked buoy gears.

	Mousetrap Gear (Jugging)	Deep-set Buoy Gear (DSBG)	H-Gear * (Linked DSBG)
Float	Bleach bottle, milk jug, buoy, or other similar, inexpensive float	In-line and subsurface floats, non-compressible buoys	In-line and subsurface floats, non-compressible buoys
Line	Assorted monofilament; occasionally leaders	2.2mm monofilament mainline; 1.8mm mono gangions	3.2mm monofilament mainline
Hooks	One J hook	Two to three 18/0 circle hooks on 8m gangions per buoy; 20-30 hooks total	Three to four 18/0 circle hooks per section; 30-50 hooks total
Weight	None, or a few ounces based on conditions to keep bait down	4 kg per buoy	4 kg per buoy
Fishing Depth	Generally 10-15 feet	250-350 m	250-350 m
Identification	None	Labeled floats, high flying locator flag, strobe/radar reflector	Labeled floats, high flying locator flag, strobe/radar reflector
Retrieval	Manual - if gear not lost	Electric or hydraulic reel	Electric or hydraulic reel
Number	One to two dozen rigs	10 rigs	One continuous rig
Hook Spacing	Variable	Approx. 240-480 m	100-250 m per section
Range	Variable, but usually close together	1.5-3 nm	3-5 nm

	Mousetrap Gear (Jugging)	Deep-set Buoy Gear (DSBG)	H-Gear * (Linked DSBG)
Soak Time	Variable	Until strike detected	Until strike detected or until optimum time is identified
Monitoring	Vessel remained in area, often fishing hook and line	Strike detection floats, tending vessel within visual range entire time of gear deployment	Strike detection floats, serviceable links, tending vessel within visual range entire time of gear deployment

** H-gear (linked DSBG) is currently experimental and gear configuration and fishing technique may change*