National Marine Fisheries Service Report on Sablefish Pot Gear Marking - Feasibility Report Methods and Feasibility Associated with Implementing Additional Pot Gear Marking Regulations for the Pacific Coast Groundfish Fishery

The National Marine Fisheries Service (NMFS) West Coast Region Sustainable Fisheries Division (SFD) and Protected Resource Division (PRD) prepared this feasibility report to consider whether additional gear marking regulations would increase NMFS' ability to attribute humpback whale entanglements to specific fisheries and assist in identifying potential modifications to the pot gear regulations that could reduce incidental take of humpback whales. We are providing this feasibility report to the Pacific Fishery Management Council (Council) as required by Term and Condition 1 of the 2020 Biological Opinion (BiOp) on the Effects of the On-Going Operation of the Pacific Coast Groundfish Fishery on Humpback Whales[1].

As part of the investigation process, we evaluated potential methods including line marking and additional markings on buoys/surface gear. We have identified ideas that merit further consideration towards the goals of improving gear identification in entanglements and reducing the risk of entanglement. The BiOp requires that the Council consider the findings of this feasibility report for potential changes to the pot gear marking regulations by March 2024.

Investigation and Industry Engagement

On November 16, 2022, Oregon Sea Grant hosted a workshop on gear and line marking in the sablefish pot fishery on behalf of NMFS. The primary goal of the workshop was to engage with and solicit input from the commercial fishing industry on feasible and practical improvements to gear marking in the sablefish pot gear fishery off the U.S. West Coast to improve NMFS' ability to identify the source fishery of large whale entanglements. A secondary goal was to gather ideas and input on potential measures that could reduce whale entanglement risk in this fishery. We would like to thank everyone who participated in and helped plan the workshop. Through the workshop we successfully engaged with the industry and other management partners, providing us with valuable input as we developed this feasibility report.

This NMFS report builds on the workshop summary provided in Agenda Item F.3.a NMFS Report 1, March 2023. Oregon Sea Grant solicited comments on the workshop summary report from the workshop participants and interested parties from December 22, 2022 through January 20, 2023. NMFS also promoted the availability of the workshop report through its groundfish email listserv and with the Groundfish Advisory Subpanel. Specifically, Oregon Sea Grant requested feedback and comments on the contents of the workshop summary report, and/or any information that might help inform managers and the Council as they consider the feasibility

[1] NMFS. 2020. Endangered Species Act (ESA) Section 7(a)(2) Biological and Conference opinion on the Continuing operation of the Pacific Coast Groundfish Fishery (Reinitiation of consultation #NWR-2012-867) – Humpback whale (Megaptera novaeangeliae). Available at: https://s3.amazonaws.com/media.fisheries.noaa.gov/2020-10/Opinion-26OCT2020_Groundfish%20biop-humpbacksupplement_102320_GR.pdf?null

of potential gear marking, information resources, or risk reduction measures to address whale entanglement in the U.S. West Coast sablefish pot gear fishery.

Oregon Sea Grant received two comments on the workshop and workshop summary. One commenter (hook fishermen) suggested a way to reduce potential entanglement risk would be to prohibit pot gear from being left at sea while the vessel is at the dock (i.e., limits on soak time) (Agenda Item F.3.a, NMFS Report 2, March 2023). Another comment was from the Fishing Vessel Owner's Association (FVOA) (Agenda Item F.3.a, NMFS Report 1, March 2023). The FVOA board of trustees endorsed the following concepts:

1. Mark each surface gear buoy with a U.S. Coast Guard (USCG) number or state permit number.
2. Mark the top 50 fathoms of the buoy line, either with a particular line color or some other marker.
3. Give vessels the option of using a single buoy line to reduce the risk of whale entanglement in vertical lines.
4. Encourage Automated Identification System (AIS) use whenever possible.

NMFS appreciates these comments, and we discuss these concepts throughout this report.

Current Gear Marking Regulations

The full text of the applicable fixed gear marking regulations for limited entry (§ 660.219) and open access (§ 660.319) can be found in Appendix 3 of the workshop summary. Current regulations require gear be marked at the surface and at each terminal end with a pole, flag, light, radar reflector, and a buoy. Also, buoys must be marked with a number identifying the owner or operator.

Evaluation and Feasibility of Implementing Additional Gear Marking Regulations

This feasibility report assesses the practicality of several gear marking methods and evaluates the information to make an initial "go" or "no-go" recommendation. A key for NMFS in evaluating the feasibility of additional gear marking regulations is the ability of the idea/change to contribute to the positive attribution of an entanglement to a specific fishery. Achieving negative attribution, which means a conclusion that any entanglement is 'definitely not' associated with groundfish gear, could be a more difficult standard depending on the extent of gear that is available to examine from any given entanglement case. To enhance positive attribution, marks should consider current schemes and proposals for gear marking in the West Coast Dungeness crab fleet, which is the most common origin of entanglements that are identified. It is imperative that gear marking schemes be coordinated across West Coast fisheries to facilitate the capabilities of NMFS to clearly distinguish the origins of entanglements from the documentation of these events.

The most comparable standard for gear marking associated with identifying the origins of whale and other protected species entanglements comes from federal regulations under the Atlantic Large Whale Take Reduction Plan (Plan). Gear markings of East Coast fixed gear fisheries under this Plan have included line marking requirements since 1997, although these requirements have changed over time to improve the capability to detect and interpret markings from gear involved

in entanglement reports. Most recently, in 2021, line marking regulations were changed to increase the size and extent of line markings present near the surface of gear where they could be more easily detected, and enhanced capacity to discern the location where gear originated from. Current gear marking requirements under the Plan can be found at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/atlantic-large-whale-take-reduction-plan

Line Marking

Fishery-specific line marking offers a logical avenue for improving the ability to identify the origin of entanglements. There is good potential for detecting line marks from documentation imagery that has been available. Generally, the more a line is marked, the more likely it is that an entanglement could be attributed to a specific fishery. The top and upper portions of the line are most commonly documented as either directly involved in the entanglements or at least visible within the available documentation. Line marking success will likely depend on having numerous/prominent marks to increase the probability of detection. Marking the line at least every few fathoms, especially in the upper portion of the gear, would provide the highest likelihood to detect the presence/absence of line marking. The length of visible line in entanglements (majority of entanglements have 0-20 fathoms visible) suggests that marks at frequent intervals (*e.g.*, at least every 5-10 fathoms) would be necessary to have a good chance of detection in a reported entanglement. Having the line function as the mark would provide the optimal capability to positively identify the origin of the gear, as well as negative attribution.

The workshop summary identified fishery-specific line marking on surface gear and/or the upper portion of the buoy line as potentially feasible. We note FVOA's proposal of marking the top 50 fathoms of the buoy line with either a particular line color or some other marker could be a reasonable concept for evaluation. The workshop report identified line marking on the entire vertical line as not feasible yet. Because sablefish pots are fished in very deep waters (up to 1000 fathoms) some vessels may have over 10,000 fathoms of line on the vessel. We understand this volume of line could make marking the entire line logistically or cost prohibitive. A cost-benefit analysis for the amount of line marking could be explored further, but NMFS cautions that a formula for "X" amount of line marking leading to a "Y" successful identification rate is not realistic given the available data.

Additional markings on buoys/surface gear

Fishery-specific buoy markings have strong potential to help increase identifiability. Entanglements often involve surface gear and multiple polyform buoys. The current requirements to mark buoys with a number identifying the owner or operator could be improved to increase visibility and identifiability. Buoys should be marked high, often (i.e., from multiple perspectives), and preferably in a pattern that is readily distinguishable from other marks. Feasible regulatory concepts identified in the workshop summary include:

- Sablefish-specific large patch/shape/letter on polyform buoys
- Cattle ear tags for buoys (attached at molded eye)
- Prohibiting marks required by other fisheries (e.g., Dungeness crab)

The workshop participants were generally very positive about the use of AIS beacons. The group thought there was a potential for entanglement reports to include AIS identification information with their report, if the reporting party had access to AIS at the time of the report (e.g., another

commercial fishing vessel). Given the uncertainty with the legal status of their use, NMFS agrees with FVOA's approach to encouraging AIS whenever possible but does not view AIS as a regulatory solution at this time. Relatedly, radio frequency identification (RFID) or quick response (QR) tags were identified as potentially feasible by workshop participants. NMFS see this concept as having limited utility compared to other concepts since so few entanglements result in recovered gear in hand where RFID or QR tags could be read.

Information Resources Ideas

The workshop summary identified several information resources that could benefit the fleet and managers. Of those, NMFS sees a best practice guide for the fleet as the idea with the most potential benefit and we are open to exploring this idea further. NMFS views the comprehensive guide to gear setup for each individual vessel idea, and the registration of surface gear setup idea as likely less effective than buoy or gear marking changes. It could be difficult to eliminate the possibility that the gear came from another fixed gear fishery that used similar gear.

Entanglement Risk Reduction Ideas

The workshop capitalized on its assembled expertise to also discuss ideas for entanglement risk reduction. Some of these ideas were also identified as conservation recommendations in the 2020 biological opinion and in reports from the Council's Groundfish and Endangered Species Workgroup.

<u>Surface gear on just one end of groundline</u>
There was broad support from industry members at the workshop for having the option to use surface gear on one end of the groundline rather than the current requirement for surface gear on each end of the groundline (see §§ 660.219(a)(1) and 660.319(a)(1)). NMFS sees potential for this option to reduce entanglement risk by reducing the number of vertical lines in the water.

<u>Fewer buoys/less line in surface gear set-up</u>
The workshop summary indicated there may be tradeoffs between reducing the number of surface buoys in the surface gear and reducing slack in the vertical line. NMFS sees merit in exploring these tradeoffs and potentially including them in a best practices guide.

<u>Limits on soak time</u>
NMFS notes the regulations require limited entry fixed gear (50 CFR 660.230(b)(3)) and open access fixed gear (§ 660.330(b)(2)(i)) be attended at least once every 7 days. Pot fishermen at the workshop described the average soak time (time between when the vessel tends the gear) as being approximately 1.5 days and noted that pots gather fish more slowly than hooks. The workshop summary identified limits on soak time as "potentially feasible" but also highlighted the unclear benefits with respect to reducing entanglements and the potentially serious costs to industry.

<u>Pop-up or Ropeless Gear</u>
The workshop summary describes the potential benefits and costs of this technology. NMFS understands the development of this technology is further along for east coast fisheries such as

American lobster, but there is opportunity to incorporate lessons learned there in West Coast fisheries application. NMFS recognizes the collaborative effort and investment that would be required to make progress on this idea. We note funding from programs such as the Bycatch Reduction Engineering Program (BREP) could be sought to advance the technology for use on the West Coast. Should regulatory changes allow for surface gear on just one end of the groundline, there could be the potential to experiment with ropeless gear on the other end.

Weak Link or Reduced Breaking Strength

The workshop summary identified safety concerns from fishing industry participants about reduced breaking strength of line or weak links. Additionally, feedback from agency, non-governmental organizations, and academic participants highlighted the unproven efficacy of weak links/low breaking strength rope and the potential additional risks presented by the knots or splices in the line that are necessary to install weak links.

Recommendations

Based on the workshop and this feasibility report, line marking and additional markings on buoys/surface gear have great potential to improve the identifiability of sablefish pot gear.

In consideration of the feasibility of implementing improvements in gear marking, NMFS encourages consideration of the cost of maintaining the status quo, not only in the groundfish fishery, but across all West Coast fisheries and other potential sources of entanglements. Currently, NMFS identifies the origin of entanglements in about 50 percent of the entanglements reported, to at least some known category of gear/fishery. Without additional marking requirements, this situation is unlikely to improve, and the high level of uncertainty surrounding the origins of entanglements that continue to occur will remain. As such, it is a challenge to implement management measures that are aimed at reducing entanglements to be targeted in the most precise and effective manner possible, and it is difficult for any potential sources of entanglement to escape implication as some part of the issue under these circumstances. NMFS and members of the volunteer entanglement response network that put themselves in danger in order to document and attempt gear removal during entanglement response events need increased capabilities to identify the gear involved in entanglements, especially when significant amounts of the gear are documented and/or recovered.

While this feasibility report focused on pot gear, NMFS issued a letter of concurrence[2] for Southern Resident Killer Whales and the groundfish fishery in December 2022 that similarly recommends evaluating gear and/or line marking for longline gear. Therefore, **we recommend the Council schedule a scoping agenda item for groundfish fixed gear marking (pot and longline) by the March 2024 meeting**. **This agenda item could also include measures to reduce the risk of entanglement such as those brought forward during the workshop.**

[2] NMFS. 2022. Endangered Species Act Section 7(a)(2) Concurrence Letter for the Reinitiation of consultation on continued operation of the groundfish fishery under the Pacific Coast Groundfish Fishery Management Plan and the effects of the fishery on Southern Resident killer whales. Available at: https://media.fisheries.noaa.gov/2022-12/WCRO-2022-02582-LOC-GroundfishSRKW.pdf