

INITIAL REVIEW DRAFT

Regulatory Impact Review/ Regulatory Flexibility Analysis/MSA Analysis for a Proposed Groundfish Regulatory Amendment

Groundfish Fixed Gear Marking and Entanglement Risk Reduction Measures

March 2024

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Abstract: This document analyzes proposed management measures that would apply to all groundfish vessels utilizing pot/trap or bottom longline gear (hereinafter “fixed gear”) in the Pacific Coast groundfish fishery. The vessels subject to this action fish in the limited entry fixed gear (LEFG) and directed open access sectors, as well as trawl individual fishing quota (IFQ) fishery participants using fixed gear (i.e., gear switching). Alternatives under consideration include requirements for gear-specific markings for surface buoys and lines, and measures for entanglement risk reduction, such as reducing the number of vertical lines and the amount of surface line on the water. Additionally, an administrative revision of the biodegradable escape panel regulations and the development of a best practices guide for reducing entanglement risk in groundfish fixed gear are considered.

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List of Acronyms and Abbreviations

Acronym or Abbreviation	Meaning
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
E.O.	Executive Order
EEZ	Exclusive Economic Zone
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FMP	fishery management plan
FR	<i>Federal Register</i>
FRFA	Final Regulatory Flexibility Analysis
ft	foot or feet
IRFA	Initial Regulatory Flexibility Analysis
m	meter or meters
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MMPA	Marine Mammal Protection Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act

Acronym or Abbreviation	Meaning
NMFS	National Marine Fishery Service
NOAA	National Oceanic and Atmospheric Administration
OMB	Office of Management and Budget
PPA	Preliminary preferred alternative
PRA	Paperwork Reduction Act
RCA	Rockfish Conservation Area
RFA	Regulatory Flexibility Act
RFFA	reasonably foreseeable future action
RIR	Regulatory Impact Review
RPA	reasonable and prudent alternative
SAFE	Stock Assessment and Fishery Evaluation
SBA	Small Business Act
Secretary	Secretary of Commerce
U.S.	United States
USFWS	United States Fish and Wildlife Service
VMS	vessel monitoring system
WCGOP	West Coast Groundfish Observer Program

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1 Introduction

This document analyzes proposed management measures that would apply to all groundfish vessels utilizing pot/trap or bottom longline gear (hereinafter “fixed gear”) in the Pacific Coast FMP groundfish fishery. The vessels subject to this action are those fishing in the limited entry fixed gear (LEFG) and directed open access sectors, as well as trawl individual fishing quota (IFQ) fishery participants using fixed gear (i.e., gear switching). Alternatives under consideration include gear marking requirements and measures for reducing the risk of whale, sea turtle, and other species entanglement in groundfish fixed gear (hereinafter “protected species”¹).

The document is a draft Regulatory Impact Review/Regulatory Flexibility Act Analysis/Magnuson-Stevens Act Analysis (RIR/RFAA/MSA). An RIR/RFAA/MSA provides an assessment of the benefits and costs of the alternatives and the distribution of impacts (the RIR), identification of the small entities that may be affected by the alternatives (RFAA), and analysis of how the alternatives align with the National Standards (MSA). This RIR/RFAA/MSA addresses the statutory requirements of the Magnuson Stevens Fishery Conservation and Management Act, the National Environmental Policy Act, Presidential Executive Order 12866, and the Regulatory Flexibility Act.

The National Marine Fisheries Service (NMFS) has preliminarily determined that the proposed action falls within one of the National Oceanic and Atmospheric Administration (NOAA) Categorical Exclusion categories listed in Appendix E of the Companion Manual for NOAA Administrative Order 216-6A and that none of the alternatives have the potential to have a substantial effect individually or cumulatively on the human environment. This determination is subject to further review and public comment. If this determination is confirmed when a proposed rule is prepared, the proposed action will be categorically excluded from the need to prepare an Environmental Assessment.

1.1 Purpose and Need

The Council adopted the following statement of purpose and need in September 2023:

NMFS currently 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. The purpose of this action is to expand fixed gear marking requirements and risk reduction measures for entanglement or bycatch in the Pacific Coast groundfish fishery. This action is needed to increase NMFS’ ability to positively attribute protected species entanglements to specific fisheries and ultimately aid in understanding and reducing the risk of protected species entanglement in groundfish pot and longline gear. This action is also needed to improve the effectiveness of the currently required biodegradable escape mechanisms in pot gear.

¹ Generally refers to mammals, seabirds, or species listed as endangered or threatened under the Endangered Species Act. In this document, protected species refers to whales and sea turtles, with humpback whales and leatherback sea turtles being two species with documented entanglements with groundfish fixed gear.

1.2 History of this Action

Whale entanglement reports off the U.S. West Coast have increased since 2013 with humpback whales being the most common species entangled across all gear types and origins. From 2013-2021 of the 288 confirmed humpback whale entanglement reports on the U.S. west coast, only about 50 percent have been identified to the gear that was the source of the entanglement. ([Agenda Item F.3.a, NMFS Report 1, March 2023](#)) Pot and trap fisheries generally represent most of the documented fishery interactions with humpback whales along the U.S. west coast. While incidences of confirmed entanglements in sablefish pot gear on the Pacific Coast are rare, the fishery is known to interact with humpback whales. Sablefish pot gear has had five known entanglements from 1932-2022.² No other groundfish fixed gear types (pot or longline) have had recorded interactions over that time series, though preliminary estimates from 2023 indicate that one humpback whale was simultaneously entangled with gear belonging to both the Pacific halibut longline and sablefish pot fisheries (pers. comm. NMFS). This is expected to be published in the 2023 West Coast Whale Entanglement Summary Report available in spring 2024. Recent increases of entanglements in West Coast fisheries pose significant challenges for fisheries management because of the current difficulty to differentiate among gear types that could be the source of an entanglement. Better understanding of the origin (fishery and gear type) of entanglements could improve fishery managers' ability to design effective entanglement risk reduction measures.

In October 2020, NMFS finalized the Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion – Continuing Operation of the Pacific Coast Groundfish Fishery (PCGF) (Reinitiation 2020) – Humpback whale (*Megaptera novaeangliae*) (BiOp).³ The BiOp concluded that “[a]fter reviewing and analyzing the current status of the listed species, the environmental baseline within the action area, the effects of the proposed action, and cumulative effects, it is NMFS’ biological opinion that the proposed action is not likely to jeopardize the continued existence of either the Mexico DPS [distinct population segment] or the Central America DPS of humpback whale.”

However, the Terms and Conditions of the BiOp require NMFS Sustainable Fisheries Division (SFD) (in cooperation with the Pacific Fishery Management Council (PFMC or Council) and NMFS Protected Resources Division (PRD)) to investigate methods and feasibility associated with implementing additional pot gear marking regulations for the PCGF.

“The feasibility study shall consider whether additional gear marking 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. The feasibility study shall be completed by March 2023 and the findings given consideration by the PFMC for potential changes to the pot gear marking regulations by March 2024.”

² West Coast Large Whale Entanglement Reports can be found at <https://www.fisheries.noaa.gov/west-coast/marine-mammal-protection/west-coast-large-whale-entanglement-response-program>

³ [Endangered Species Act \(ESA\) Section 7\(a\)\(2\) Biological Opinion – Continuing Operation of the Pacific Coast Groundfish Fishery \(PCGF\) \(Reinitiation 2020\) – Humpback whale \(*Megaptera novaeangliae*\)](#)

In addition, a Conservation Recommendation related to gear modifications in the BiOp (see 2.10. (2)) states that to reduce the severity and frequency of Central America DPS and Mexico DPS humpback whale entanglements with groundfish pot gear, NMFS should encourage the development and testing of gear modifications in coordination with the PFMC as necessary.

In June 2021, consistent with (1) the BiOp, (2) recommendations of the PFMC Groundfish Endangered Species Workgroup (GESW)⁴ and (3) PFMC action in April 2021,⁵ the PFMC expressed support for NMFS-WCR to convene a workshop with fishing industry members to discuss and consider potential new management measures related to humpback whale entanglements, including gear marking changes and entanglement risk reduction. A workshop titled “Improving Gear Marking in the U.S. West Coast Sablefish Pot Fishery” was held in November 2022. During March 2023, the PFMC reviewed the results and recommendations of the workshop ([Agenda Item F.3.a, NMFS Report 1, March 2023](#)). NMFS Report 3 under that agenda item also included a recommendation to expand the scoping of gear marking for bottom longline (longline) gear that comports with a conservation recommendation from a final [Concurrence Letter](#) regarding the continued operation of the groundfish fishery and the effects of the fishery on Southern Resident killer whales. Based on the recommendations of those reports and advisory bodies, the Council scheduled an agenda item to scope the development of gear marking requirements for all groundfish fixed gear (pot and longline) and entanglement risk reduction measures at the June 2023 Council meeting.⁶

In June 2023, the PFMC reviewed scoping documents^{7,8} related to fixed gear marking and provided the following guidance:

- Develop gear marking requirements holistically for all groundfish fixed gear sectors (LEFG, directed OA, and IFQ gear switchers).
- Analyze a range of line marking requirements at 5, 20, and 50 fathoms (as the distance of vertical line beginning at the main surface buoy downward towards the groundline).
- Consider prohibiting marks required by other fisheries (e.g., Dungeness crab).
- Analyze different types of line marking methods such as unique colors of manufactured line, tape, paint, etc.
- If a unique manufactured line color scheme is required, consider a phased approach that could include temporary methods of gear marking (e.g., tape or paint) during the transition to manufactured line.
- Consider other surface gear marking concepts as described in NMFS Report 1.
- Look at changes to the position of escape panels (required component of pot/trap gear) to not be on the bottom as described in NMFS Report 1.
- Consider other entanglement risk reduction measures.

⁴ <https://www.pcouncil.org/documents/2021/06/g-4-a-groundfish-endangered-species-act-workgroup-report.pdf/>

⁵ <https://www.pcouncil.org/documents/2021/04/f-2-motion-in-writing-april-2021-council-meeting.pdf/>

⁶ RPM 1 of the BiOp states that “The feasibility study shall be completed by March 2023 and the findings given consideration by the PFMC for potential changes to pot gear marking regulations by March 2024.”

⁷ <https://www.pcouncil.org/documents/2023/05/h-4-attachment-1-lefg-follow-on-actions-and-fixed-gear-marking-scoping-document.pdf/>

⁸ <https://www.pcouncil.org/documents/2023/05/h-4-a-nmfs-report-1-lefg-follow-on-actions-and-fixed-gear-marking-scoping.pdf/>

In September 2023, the PFMC adopted a purpose and need statement and range of alternatives for fixed gear marking and entanglement risk reduction. The Council is anticipated to select a preliminary preferred alternative at the March 2024 meeting and a final preferred alternative in June 2024.

1.3 Description of Management Area

The management area for this action is the Exclusive Economic Zone (EEZ)—defined as 3–200 nautical miles along the coasts of Washington, Oregon, and California—and communities that engage in fishing in waters off these states. The Pacific Coast Groundfish Fishery Management Plan (FMP) [Figure 3-1](#) depicts this management area and is incorporated by reference.

2 Description of Alternatives

This section describes the alternatives and defines terminology used therein. The Council and NMFS do not intend for any of the action alternatives described herein to revise state-issued regulations for state-managed species. Additionally, the Council and NMFS do not intend for any of the action alternatives described herein to apply to tribal fisheries in usual and accustomed fishing areas off Washington.

Definitions

This brief set of definitions is included to detail how Council and NMFS staff are defining certain terms used in the current Range of Alternatives.⁹ Refinement of the terminology used in the alternatives will occur based on public, advisory body, and Council input before the final analytical package is developed. These definitions are ancillary to and will be resolved in favor of existing regulatory definitions, if applicable. Diagrams of groundfish longline and pot gear configurations with components can be found in Figure 2-1 and Figure 2-2.

- Buoy: In the context of the Buoy Marking action alternatives, buoy means the main buoy, not trailer buoys. The main buoy is the buoy closest to the groundline on the surface gear, attached to the vertical line.
- Fixed gear: Bottom longline, trap, and/or pot gears used in Federal commercial groundfish fisheries. Does not include other OA fixed gears including set net and stationery (vertical) hook-and-line gears.
- Groundline: Leaded (lead line) or sinking line used in setting strings of traps/pots or bottom set longlines, often weighted at each end, and attached to a vertical line.
- Set: A set of gear, for both pot/trap and longline, consists of all of the gear attached to one section of ground line, including the surface gear (buoys, flags, trailer line), vertical float lines, ground line, and either hooks or pots/traps.
- Surface gear: The floats, flags, buoys, and line used at the water's surface to identify one end of a vertical line. Spans from the main buoy to the high flyer. (see Figure 2-3)
- Surface line: Surface line is associated with surface gear and is, generally, on the water's surface. It is commonly known as trailer buoy line.
- Trailer buoys: These buoys are part of surface gear, ancillary to the main buoy.
- Vertical line: Also known as float line or buoy line. The line that attaches a trap, net, or ground line to the main buoy.

⁹ Definitions for elements of fixed gear commonly used in, as well as general information about, west coast fisheries are available in the NMFS – [Fixed Gear Guide: California, Oregon, and Washington Commercial Fisheries](#)

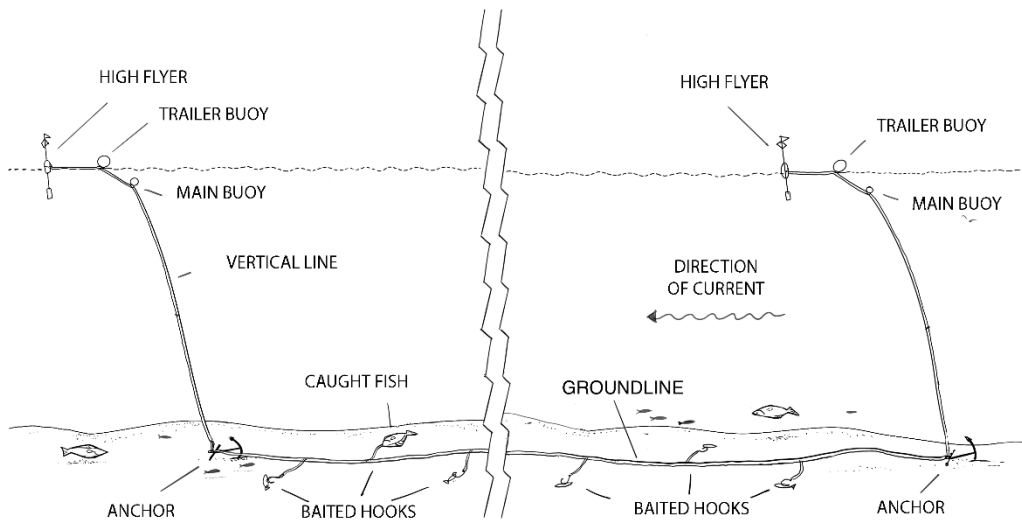


Figure 2-1. Diagram of groundfish longline gear. Credit: Tom Crestodina and Oregon Sea Grant.

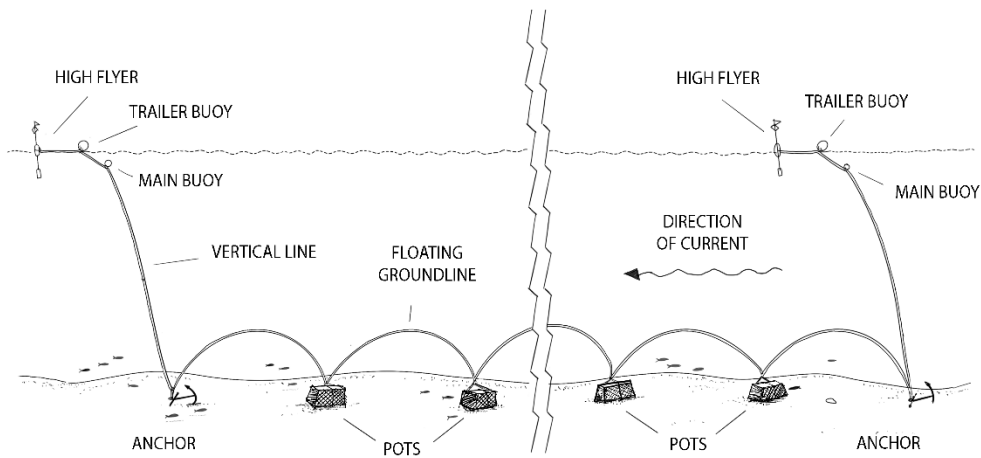


Figure 2-2. Diagram of groundfish pot gear. Credit: Tom Crestodina and Oregon Sea Grant.

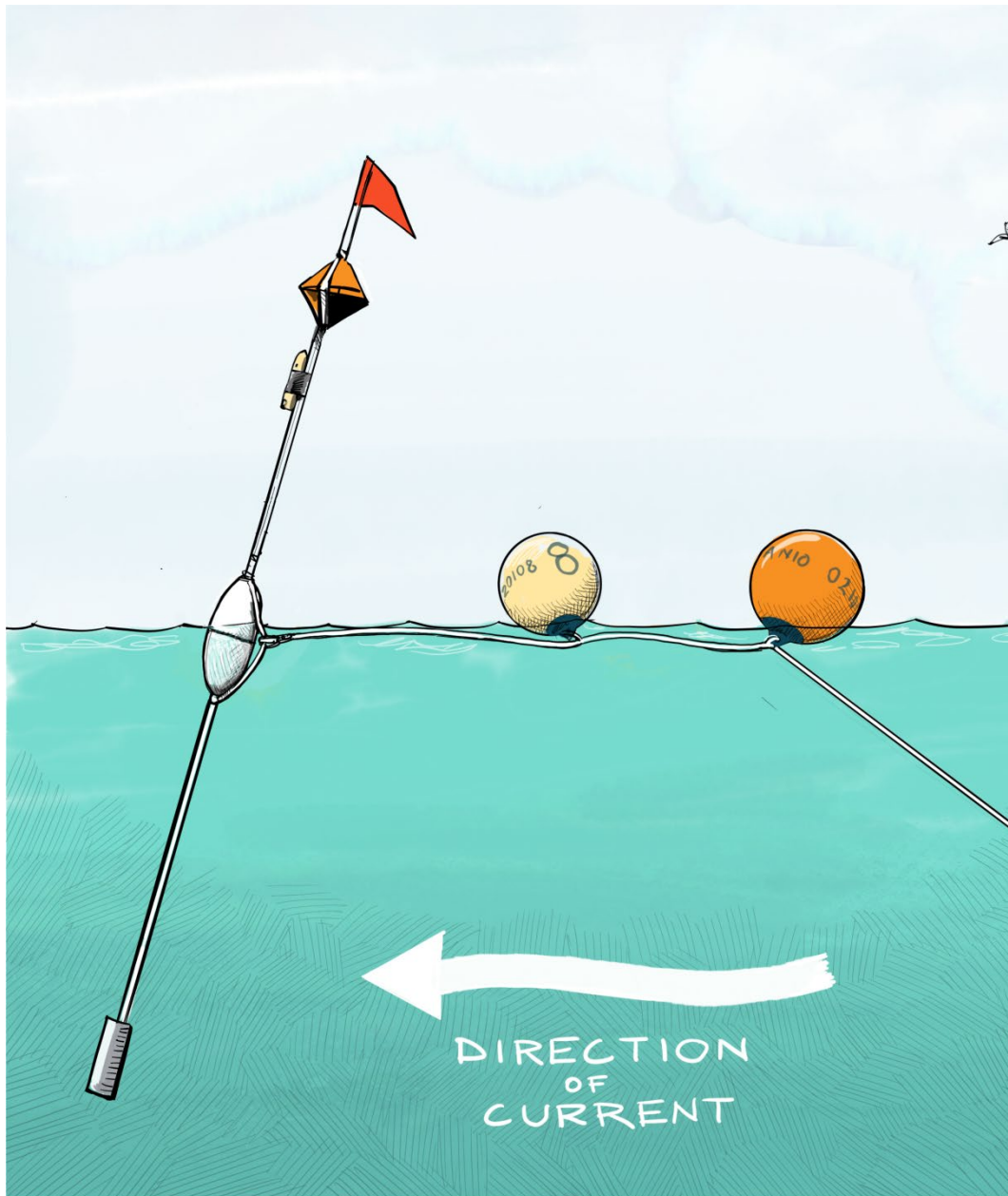


Figure 2-3. Drawing of surface gear, including high flyer (left), trailer buoy (middle), and main buoy (right). Credit: Tom Crestodina and Oregon Sea Grant.

Gear Marking Alternatives

The gear marking provisions are designed to improve NMFS' ability to identify the origins of gear involved in an entanglement. As discussed below in Section 3, these provisions would have no immediate direct impact on entanglement risks. In the long run, however, they may help efforts to protect large whales and other protected species by enabling the Council and NMFS to design management measures for a specific gear type and/or fishery involved in documented entanglements. Continued uncertainty about the origins of a large number of entanglements, and the lack of means to narrow down the possible origins based on what information can be gathered from entanglement reports, will likely perpetuate uncertainty about whether management is being

directed where and how it is most needed. This could lead to pressure for increasingly restrictive measures to be implemented at increasingly broad scales. Therefore, these provisions may also reduce adverse effects to the fixed gear fishery, in general, by providing the means to tailor gear-specific regulations aimed at those gears and fisheries contributing most to large whale entanglements, allowing managers to implement more targeted measures in the future.

The gear marking action alternatives are gear specific; that is, they would allow pot gear and long line gear in Council-managed fisheries to be distinguished from each other, and from other fisheries. The distinction between the gear types would be unique colors or combinations of colors for each gear type. By the time of final action (anticipated in June 2024), the Council should specify the gear-specific color(s) that will be used to mark each gear type.

Among the gear marking alternatives, there are distinctions and connections that affect the choices among the action alternatives. For example, the buoy marking and line marking actions are independent of each other and the Council could choose to select an action alternative for buoy marking and no action for line marking, vice versa, or action alternatives for both. Whereas, within the line marking action, there are several interdependent alternatives and if the Council chooses action alternatives for line marking then several interrelated action alternatives would need to be specified.

2.1 Buoy Marking

No Action: A buoy used to mark fixed gear must be marked with a number clearly identifying the owner or operator of the vessel that is in possession of, deploying, hauling, or carrying on board the fixed gear. The number may be either the vessel's number, the commercial fishing license number, or buoy brand number (if required by state law) or the vessel documentation number issued by the US Coast Guard (USCG), or, for an undocumented vessel, the vessel registration number issued by the state.

Alternative 1: Gear-specific Buoy Marking – Distinguish between gear types (i.e., pots, bottom longline) with gear-specific buoy marking.

- A. Require a **gear-~~sablefish~~¹⁰** specific large patch, shape, or letter on a **the polyform¹¹** buoy. Marked high, often (that is, from multiple perspectives), in a pattern distinguishable from other marks on the buoy.
- B. Cattle ear tags attached to the molded eye of the buoys.

¹⁰ Staff modified this option to make it consistent with the other gear-marking action alternatives, all of which are gear (rather than fishery or sector) specific. The change also appears consistent with material that informed the Council action – the [GAP Report](#) is explicit: "marking buoys according to gear type" and the [GMT Report](#) states their view that there is no management need for sector-specific marking. It also seems consistent with Council member comments in speaking to the motion adopted in Sept 2023 -- "I think the most critical information is the gear associated with entanglements" ([Sept 2023 Meeting Transcript -- page 60](#))

¹¹ Staff removed "polyform" from the original language as current regulations (50 CFR 660.219 and 50 CFR 660.319(a)(3)) are non-specific as to the type of buoy that must be marked with other required information.

Although existing regulations require marking buoys used to mark fixed gear with a number clearly identifying the owner or operator of the vessel, this number is not always visible in photos, videos, or firsthand observations of entanglements (it may be obscured, too far away, etc.). The intent of the buoy marking alternatives proposed in this action is to add a mark that may be easier to see/distinguish in entanglements, improving the ability to identify the originating gear type.

Under Alternative 1, the suboptions differ in how gear-specific marks would be applied to buoys. Suboption A would require a gear-specific mark applied directly to a buoy; in contrast, suboption B would require attachment of a cattle-ear tag to the molded eye of the buoy and the cattle-ear tag would be a gear-specific color or shape.

If suboption B is selected, Council staff is proposing that the gear-specific color or shape be constant into the future for simplicity. Currently, the color and shape of cattle tags used in state Dungeness crab fisheries changes each year to help with derelict gear cleanup programs. By remaining static, this will be simpler for industry and limit complexity with state fisheries setting colors annually for the crab fishery. If the Council would rather have the tags change colors or shapes annually, the Council should signal that preference at this meeting.

Fishery specific tag shapes are required for several fisheries- both on the West Coast and Alaska. Therefore, in considering what shape(s) groundfish buoy markings may be, the Council should consider finding a combination not currently used. As an example, California crab fisheries use a shield shape, Oregon is conical, and Washington coastal crab fisheries are square (Figure 2-4). Pot limits or seasonal designations can be assigned as a different color in each state. There are also requirements for California state trap/pot fisheries. Alaska fisheries use a variety of shapes for various fisheries, such as conical tags for crab fisheries.



Figure 2-4. Examples of buoy tag shapes/colors for Washington coastal Dungeness crab (A), Oregon Dungeness crab (B), and California Dungeness crab (C). Pictures provided by WDFW, ODFW, and CDFW.

2.2 Line Marking

No Action: Lines are not required to be marked in any sector, for any gear authorized for use in the groundfish fishery, including pot and bottom longline gear.

Alternative 1: Distinguish between gear type (i.e., pots, bottom longline) with gear-specific line marking.

- A. Portion of Line Marked – Specifies whether marking requirements apply to only the vertical line or to both the vertical and surface lines:
 1. vertical line only
 2. vertical line and surface line

- B. Distance of Marking – Require that the vertical lines be marked (constantly or intermittently, depending on Option chosen for “Method of Marking”) in a gear-specific color scheme for a specified length of the line, starting where it attaches to the main buoy closest to the ground line.
 1. marking occurs for at least the top 5 fm of vertical line
 2. marking occurs for at least the top 20 fm of vertical line
 3. marking occurs for at least the top 50 fm of vertical line

NOTE: The surface line (if chosen under “Portion of Line Marked”, A2) would be marked with a mark of at least 36 inches in the first two fathoms.

- C. Method of Marking: For the portion and distance that a vertical line must be marked, the line would be required to be marked in one of the following ways:
1. Manufactured in a gear-specific color scheme for the entirety of the “Distance of Marking” option.
 2. Temporary markings – Require lines to be marked, with a gear-specific color mark of at least 12 inches (using, for example, spray painted/dipped/spliced colored twine/tape), at specific intervals from the main buoy.
 - a. no more than 5 fm unmarked line between marks
 - b. no more than 10 fm unmarked line between marks
 - c. no more than 20 fm unmarked line between marks
 - d. no more than 50 fm unmarked line between marks
- D. Transition Period: Transition from temporary methods to manufactured line to have comprehensive gear marking by a date to be determined.
1. No transition; manufactured line required upon implementation. (Not compatible with C2)
 2. 5- year transition period.
 3. 10-year transition period.
 4. Temporary markings and manufactured line meet marking requirements indefinitely.

Description of Alternative

For Line Marking, the unique identifying color scheme would differentiate in the same manner as selected for buoy markings described in Section 2.1, that is, the color scheme would be gear specific. The first level choice is whether to require markings on only the vertical line (A1) or on both the vertical line and the surface line (A2).

Under Alternative 1, the vertical line would be marked regardless of the Portion of Line Marked Option selected. Subsequent Alternative 1 components specify requirements for how much of the vertical line (Distance of Marking, B) and, if temporary markings are allowed, the spacing of marks on the vertical line (Method of Marking, C2a-d). For additional clarity, the Distance of Marking (B) component was clarified by staff in the proposed option language to specify requirements for the length of vertical line that would be marked from the surface gear (starting at the main buoy) downwards towards the groundline. The Method of Marking (C) options specify requirements for the intervals at which the vertical line would be required to be marked. However, the Council motion does not specify the length of each mark; therefore, staff suggests the Council start with consideration of a minimum size mark of no less than 12 inches if temporary markings allowed. If using manufactured line, the entire distance selected (B) would apply. This is consistent with the [Washington State coastal Dungeness crab requirements](#) as well as some markings required as a part of the [Atlantic Large Whale Take Reduction Plan](#). If the Council wants to consider a different size mark, they should provide that recommendation at this meeting.

Additionally, the Council should consider the color or colors for each groundfish fixed gear type. The states are considering a two-color system for their Dungeness crab fisheries, with black representing Dungeness crab in each state's mark, and each of the states having a distinct second color (Washington=red, Oregon=yellow, California=purple [not final]).

The following examples illustrate how the line marking options could work operationally: under a combination of B1 and C2a: One gear-specific colored mark of at least 12 inches would be required within the first five fathoms of the vertical line below the main buoy; whereas, under B3 and C2a, ten gear-specific colored marks of at least 12 inches would be required and spaced every five fathoms within the first 50 fathoms of vertical line below the main buoy. In both of these scenarios the "marks" would be made with temporary methods (paint, spliced twine, tape, etc.).

In contrast, under B1 and C1, manufactured line in a gear-specific color would be required for the first five fathoms of vertical line from below the main buoy towards the groundline; and under B3 and C1, manufactured line in a gear-specific color would be required for the first 50 fathoms of vertical line below the main buoy towards the groundline.

While the Council provided options related to vertical line marking, the motion from September 2023 does not specify requirements for how surface line would be marked, which would come into play if the Council selected as a part of the preferred alternative A2. Therefore, staff suggests that the Council consider specifying, if the preferred alternative includes requirements for surface line to be marked, that a mark of no less than 36 inches would be required on the surface line within the first two fathoms of the main buoy in the appropriate gear-specific color. This suggestion is consistent with the [gear marking requirements within the Atlantic Large Whale Take Reduction Plan](#). An example of this from the Maine state fisheries can be seen on the left side of Figure 2-1 where there is a 36 inch mark on the surface line (and 12 inch marks on the vertical line) and a mock-up of proposed groundfish line marking configuration considered in this document with a 36 inch mark on the surface line (and 12 inch marks on the vertical line). The Council should confirm this or another marking scheme for the surface line at this meeting.

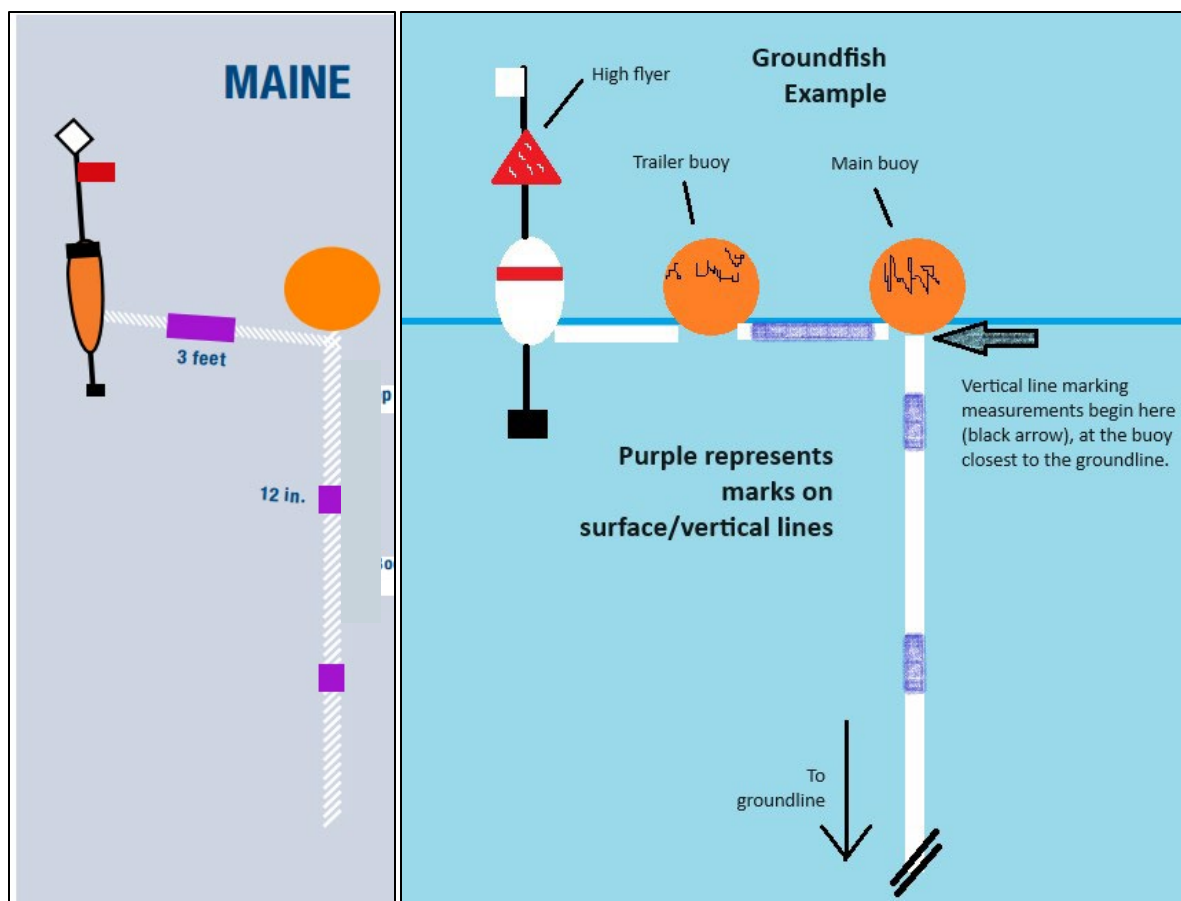


Figure 2-1. Left- Example of lobster gear marking for Maine state waters. Source: NOAA Fisheries; Atlantic Large Whale Take Reduction Plan. Right- Example of line marking configuration considered in this document. Source: NOAA Fisheries.

Additionally, the method of marking that would apply to vertical line would also apply to the surface line. In other words, either manufactured line (C1) would be required or temporary markings would be allowed during a transition period (C2). Again, with manufactured line, the entire length of the line required to be marked (B) would need to be in the gear-specific color. The suboptions for how often the temporary markings would need to occur would only need to be specified if temporary methods are allowed (C2a-d).

Under Transition Period (D), the Council included consideration of potential alternatives to transition over a specified time period from allowing the use of temporary marking methods to mandated use of manufactured line. For example, the transition time periods could be aligned with how often lines need replacing. The objective would be to have comprehensive gear marking with mandated use of manufactured lines by some future date if a transition were included. Options were not specified by the Council; therefore, staff includes potential options for fishery participant and Council consideration, including: no transition, where manufactured line would be required upon implementation (D1), a five- year and ten-year transition period after which use of colored manufactured line is required for marking (D2, D3), and allowing temporary markings (or manufactured line) indefinitely (D4). The year specific options are intended to cover a range of the typical replacement times of vertical lines. If anything but D1 (manufactured line required

upon implementation), then both C1 and C2 (with a frequency of marking suboption selection) would need to be included within the preferred alternative.

Entanglement Risk Reduction Alternatives

The entanglement risk reduction alternatives are independent of each other. In other words, the Council could select both, one, or none of the alternatives for entanglement risk reduction. The items are aimed at minimizing the amount of line in the water, decreasing the likelihood of entanglement by whales or other protected species.

2.3 Surface Gear Requirements

No Action: Fixed gear vessels are required to use surface gear (buoys and flag poles) attached at each terminal end of the groundline.

Alternative 1: Fixed gear vessels are only required to use surface gear (buoys and flags) attached on one terminal end of the groundline.

Alternative 1 would change existing surface gear requirements such that surface gear would be required at only one end of the groundline rather than both ends (use at both ends would be optional). Alternative 1 would reduce the number of vertical lines in the water- but the degree of reduction would depend on how many vessels changed from using surface gear at both ends to only one end. Based on comments from the GAP, the Alternative was designed to be optional as “this practice should be a choice for the vessel operator as those vessels that deploy lighter gear have a higher probability of parting their gear and having surface gear at both ends of the groundline can assist in retrieving hook and / or pot gear.” ([Agenda Item H.4.a, Supplemental GAP Report 1, June 2023](#))

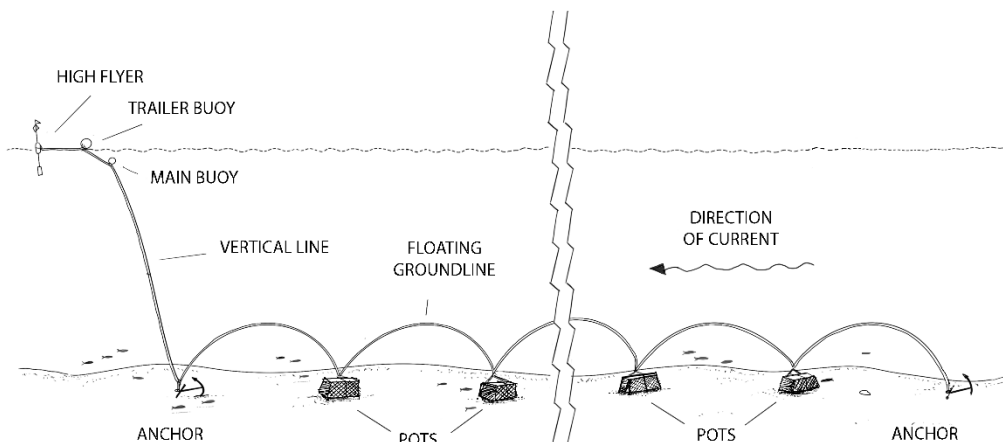


Figure 2-5. Diagram of groundfish pot gear with only one set of surface gear on one of the terminal ends as would be permitted under Alternative 1. Credit: Tom Crestodina and Oregon Sea Grant.

2.4 Surface Line Length Restrictions

No Action: No limitations on the length of surface line for fixed gears.

Alternative 1: Limit the amount of surface line permitted for fixed gears to a maximum length of:

Suboption a: no more than 5 fathoms

Suboption b: no more than 10 fathoms

The action alternatives related to surface line length restrictions are premised on the rationale that less line in the surface gear set up could reduce the risk of whale entanglements. It was reported to the Council that limitations on surface line are also being considered and adopted for implementation in state-managed Dungeness crab fisheries. The action alternatives adopted by the Council would limit the amount of surface line permitted for fixed gear operations to a maximum length of either no more than 5 fathoms or no more than 10 fathoms.

Administrative/Other Items

The escape panel requirements are an administrative clarification. The best practices guide, while not an official alternative, is described here for Council decision making.

2.5 Escape Panel Requirements

No Action: No changes to escape panel regulations.

Alternative 1: Add clarification to escape panel regulations to prohibit panel placement at bottom of pot, with exception for slinky pots (which do not have a bottom).

Current regulations state that traps or pots must have biodegradable escape panels constructed with 21 or smaller untreated cotton twine in such a manner that an opening at least 8 inches (20.3 cm) in diameter results when the twine deteriorates. The biodegradable escape panel is intended to reduce bycatch by derelict gear if the pot is lost; however, there is no specificity in regulation about where that panel may be placed. While there is no indication that pots with escape panels on the bottom are being used, this lack of specificity could result in a biodegradable escape panel that consistently comes to rest on the seafloor and would be ineffective at reducing bycatch by derelict gear. Therefore, Alternative 1 would modify the regulations at [50 CFR 660.230\(b\)\(4\)](#) and [50 CFR 660.330\(b\)\(2\)\(iii\)](#) to specify where the panel must be placed to ensure that it does not rest on the seafloor.

In addition, regarding escape panel requirements when using collapsible pots (such as slinky pots) that do not have a typical “bottom” of the pot because they are cylindrical, an exception would need to be developed to the panel placement requirements. The Council could use [Alaska’s escape panel regulations](#), that include an exception for slinky pots, as a model for escape panel placement requirements.

Finally, note that this action will not revise the current regulations regarding escapement panel size, mesh size, or mesh materials; only the placement/position of the escape panel would be revised in regulation and an exemption for slinky pots added. For example, the revised regulations could state:

Biodegradable escape panel. A biodegradable escape panel is required in all fish pot/trap gear used to take and retain, possess or land groundfish.

General. Traps or pots must have biodegradable escape panels constructed with 21 or smaller untreated cotton twine and in such a manner that an opening at least 8 inches (20.3 cm) in width or diameter that is parallel to, and within 6 inches (15.24 cm) of, the bottom of the pot, results when the twine deteriorates.

Collapsible pots. A collapsible pot (e.g., slinky pot) is exempt from the biodegradable panel placement requirements described in paragraph (cross reference above paragraph). Instead, a collapsible pot must have either a biodegradable escape panel placed anywhere on the mesh of the collapsible pot, constructed with 21 or smaller untreated cotton twine and in such a manner that an opening at least 8 inches (20.3 cm) in width or diameter results when the twine deteriorates, or one door on the pot must measure at least 8 inches (20.3 cm) in diameter and be wrapped with 21 or smaller untreated cotton thread.

2.6 Best Practices Guide

The Council provided direction that development of a Best Practices Guide (BPG) by NMFS be considered. It is possible that a BPG could provide information about methods and techniques that would be difficult to regulate, but important to fishery participants, such as methods for temporary

marking (vinyl paint, plastic wrap), as well as line buoyancy set ups and anchoring strategies to reduce slack line in the water column or at the surface. A BPG could also provide information about times and areas of known higher whale abundance, such that fishery participants could avoid those areas. Finally, measures in the current suite of alternatives that are not adopted under final action could be included in a BPG, thereby ensuring that information about potentially useful methods and techniques that are not included as regulatory requirements, at this time, is readily available to fishery participants.

2.7 Preliminary Preferred Alternative

To be completed after March 2024.

2.8 Alternatives Considered but not Analyzed Further

In September, the Council removed two suboptions from the range of alternatives described above from further consideration:

1. From buoy marking, removed Alternative 2 which would have made buoy (and line) marking gear and sector specific.
2. From “Portion of Line Marked” in Line Marking, removed Alternative 1 which would have required all of the line (surface, vertical, groundline) to be marked.

The Council initially considered having buoy and line markings that were gear and sector specific but believed that the most critical information is the gear associated with the entanglements and the sector being less critical. ([September 2023 transcript](#)). They cited to the GAP report under the agenda item ([Agenda Item G.4.a, Supplemental GAP Report 1, September 2023](#)) which described how “marking buoys according to gear type, in addition to the already required vessel information, will align the fixed gear fishery with other fisheries working to reduce/attribute whale entanglements. The GAP understands that a gear-sector identification alternative is not needed to attribute entanglements given the already required vessel information.”

Regarding marking the entire line, the Council recognized that this would likely being excessive and extremely costly. Additionally, as will be discussed in Section 3.6.3, the majority of entanglements that were observed (~64% of the total) had the portion of the line that is entangled as the top or upper portion of the line (<5 fathoms) suggesting that marking the entire line might not provide enough benefit for identifying a sector or gear compared to the cost.

Two additional potential alternatives were noted in [scoping documents](#) considered by the Council and were not included in the range of alternatives:

1. Time and area closures; and
2. Pop-up gear

Spatial and temporal management could involve establishing time/area closures or areas to avoid for groundfish fixed gear fisheries based on historical and/or real-time data on protected species location and fishing effort, and the potential development of risk assessment and/or decision-support tools to reduce overlap of whales and fixed gear fisheries. The [June 2023 Groundfish Endangered Species Workgroup Report](#) noted several ongoing projects that could support development of tools to reduce overlap of whales and pot fisheries and encouraged the Council to support the development of these tools. However, real-time data on protected species distribution is not available at this time. In addition, as posited by the GAP in [September 2023](#), whale entanglements do not seem to follow predictable spatial or temporal patterns and spatial and/or temporal closures might not offer effective entanglement risk reduction. Therefore, time and area closures were not further considered at this time.

The use of ropeless on-demand (“pop-up”) gear to reduce entanglement risk was discussed comprehensively during the gear marking workshop. However, any potential benefits were dampened by concerns about increased gear loss rates and potential gear conflicts. Fishing participants were very opposed to implementing ropeless gear at this time. Fishing industry concerns were primarily focused on the maturity and reliability of the technology (especially in deep water), very high cost to implement, and whether the benefits in terms of reduced whale entanglement risk would justify the costs for use in a fishery with relatively low numbers of reported whale entanglements. These concerns were echoed by the [GAP in September 2023](#). The Council recognized that testing and evaluation of ropeless gear in West Coast fisheries is occurring, but a number of technological, regulatory, financial, and operational barriers must be addressed before this type of fishing gear can be considered operationally feasible on a broad scale. Therefore, the use of pop-up gear was not further considered in this action.

3 Regulatory Impact Review

The President of the United States signed E.O. 12866, “Regulatory Planning and Review,” on September 30, 1993. This order established guidelines for promulgating new regulations and reviewing existing regulations. The E.O. covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. The E.O. stresses that in deciding whether and how to regulate, agencies should assess all of the costs and benefits of available regulatory alternatives. Based on this analysis, they should choose those approaches that maximize net benefits to the Nation, unless a statute requires another regulatory approach.

NMFS satisfies the requirements of E.O. 12866 through the preparation of a Regulatory Impact Review (RIR). The RIR provides a review of the potential economic effects of a proposed regulatory action in order to gauge the net benefits to the Nation associated with the proposed action. The analysis also provides a review of the problem and policy objectives prompting the regulatory proposal and an evaluation of the available alternatives that could be used to solve the problem.

The RIR provides an assessment that can be used by the Office of Management and Budget to determine whether the proposed action could be considered a significant regulatory action under E.O. 12866. E.O. 12866 defines what qualifies as a “significant regulatory action” and requires agencies to provide analyses of the costs and benefits of such action and of potentially effective and reasonably feasible alternatives. An action may be considered significant if it is expected to:

- Have an annual effect on the economy of \$200 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President’s priorities, or the principles set forth in E.O. 12866.

3.1 Statement of the Problem

A statement of the problem is available above in Section 1.1 titled “Purpose and Need.”

3.2 Description of the management goals and objectives

A description of the management goals and objectives of this action are found in Section 1.1.

3.3 Methods Used for the Impact Analysis

All gear marking requirements and entanglement risk reduction measures considered in this action would only apply to vessels fishing in the groundfish fishery (directed OA, LEFG, or IFQ gear switchers) using trap/pot or longline gear in federal waters. For the purposes of analysis,

potentially affected vessels are defined based on data from the PacFIN database using the following criteria:

- At least one landing using Fish Pot or Longline gear type from 2019-2023
- Within the NMFS/NWFSC/Fisheries Observation Science (FOS) Groundfish Sectors: Catch Shares, Catch Shares Electronic Monitoring, LE Fixed Gear Daily Trip Limit (DTL), LE Sablefish, OA Fixed Gear, Exempted Fishing Permit (EFP), Nearshore¹²

Trips were defined based on vessel-day of landing.

No aspects of the proposed action are expected to change fixed gear soak times; therefore, no estimates of soak times are discussed.

3.4 Description of Fisheries and Other Affected Entities

All commercial groundfish fixed gear participants that use trap/pot and bottom longline gear for fisheries in the EEZ off Washington, Oregon, and California managed under the PCGF FMP may be affected by this action. Note that descriptions, discussion, and analyses of this action use “fixed gear” to refer to only bottom longline and trap/pot gear; however, the regulatory ([50 CFR § 660.11](#)) and FMP ([Section 2.2](#)) definition of fixed gear also includes set nets and anchored vertical hook and line gear, which are not included in the scope of this action. A detailed description of the fishery and affected entities is available in the [Stock Assessment and Fishery Evaluation document](#). This includes a description of the fishery ([Chapter 1](#)); description of management, and economic characteristics of harvesting vessels, processors, and communities ([Chapter 2](#)); and summary of historic landings and revenue ([Chapter 3](#)).

From 2019-2023, there were 606 distinct vessels that utilized pot or longline gear in the three commercial groundfish sectors (OA, LEFG, and IFQ gear switching) with an annual average of 303 (Table 3-1). These vessels are considered those that would be potentially affected by this action. The majority of affected vessels participate in the OA fishery. Fixed gear vessels mostly use longline gear, although that is likely a factor of the greater number of longline-endorsed permits compared to pot-endorsed permits in the LEFG fishery. Some vessels utilize both gear types- either within the same sector or across sectors.

¹² The nearshore FOS sector does include vessels fishing only in state waters which would not be subject to this action. Therefore, the estimate for open access may be an overestimation of the number of vessels, lines, etc. that would be impacted.

Table 3-1. Range of Vessels by Fishery Sector and Gear Type (2019-2023)

Fishery Sector	Total	Longline	Pot	Both a/
OA	181-250	115-152	72-122	17-32
LEFG	96-129	85-119	14-18	≤6
IFQ	8-16	0-3	3-9	≤4

a/ Included in the “both” category are vessels that utilized both longline and pot gear either in the same sector OR in another sector and therefore vessels may be counted in multiple rows in this column.

There is crossover in terms of vessels participating in both the LEFG and OA sectors or IFQ and LEFG sectors due to gear constraints in one sector compared to another (Table 3-2). Vessels fishing under a LEFG endorsed permit must harvest their LEFG quota/limits with the gear endorsed on their permit (pot, longline, or both) unless fishing with non-bottom contact gears within the non-trawl rockfish conservation area. Vessels may choose to cross over into the OA fishery and fish under the lower OA trip limits with the other gear for which they are not endorsed, or if they have access to a trawl endorsed permit and quota, fish in the IFQ sector with fixed gear (gear switching). Both the OA and IFQ sectors allow for harvest of groundfish with any legal groundfish non-trawl gear type. The Council is considering making the gear endorsements on LEFG endorsed permits more flexible or removing them in their entirety as part of the LEFG follow on actions (tentatively scheduled for PPA in September 2024). For the following analysis, IFQ gear switching vessels are included in the LEFG category given the similarity in size/fishing behavior.

Table 3-2. Number of vessels that crossover between sectors, 2019-2023

Sector Crossover	LEFG/OA	IFQ/LEFG
Number of Vessels	19-26	4-10
	Avg: 23	Avg: 6

For those vessels fishing both longline and pot gear in a given year (regardless of sector), those vessels account for approximately 10 percent of the total vessels annually fishing fixed gear. These vessels would be subject to having multiple types of gear markings under the following action alternatives.

3.5 Description of the Alternatives

A description of the Alternatives is available in Section 2.

3.6 An Economic Analysis of the Expected Effects of Each Selected Alternative Relative to the No Action Alternative

3.6.1 Analysis of Expected Effects: No Action

Under No Action, the federal groundfish fishery would continue to operate as described in the federal groundfish regulations and FMP. Specifically, fixed gear vessels would not be required to mark their gear outside of those requirements described in Section 2 and would be required to utilize surface gear on both terminal ends of each set of gear. While there are no immediate economic impacts to the fleet under No Action, in the future, if a whale were to be entangled, all vessels in the fixed gear fleet may have mitigation measures imposed to lower the risk of whale entanglement. This could be an adverse impact to groundfish fixed gear vessels, although the impact is not quantifiable.

Under No Action, fixed gear vessels would still need to maintain and/or replace gear from normal wear and tear or loss. The life of manufactured vertical lines in use today is generally six to ten years (pers. comm. Georgan Lapham, Harrison Ibach), which may vary due to operational differences by vessels and typically replacement only occurs when they go bad.

No action would fail to improve the ability to attribute observed entanglements of large whales or other species to specific gear types and/or fisheries, which could reduce the potential effectiveness of future management measures intended to reduce entanglements. Over the long term, this could fail to reduce entanglements, negatively impacting protected species. This impact is not quantifiable. Negative impacts on the non-consumptive use could lead to negative attitudes toward fisheries, potentially affecting markets for seafood from fixed gear groundfish fisheries or other undesirable effects.

3.6.2 Analysis of Expected Effects: Buoy Marking

From 2013-2020, buoys were documented in about two thirds of entanglement reports but existing markings on only about one third were legible and could be used to identify the gear (Agenda Item F.3.a, NMFS Report 1, March 2023). Therefore, if the Council were to select Buoy Marking Alternative 1 as a PPA, the markings, either option, should be highly visible.

There are two options for the Council to consider to assist in identifying groundfish gear types. One would have a patch/shape/letter on the buoy and the other would be a cattle ear tag in a specific color or shape. The first option to add a patch/shape/letter to the main buoy would likely have negligible added costs compared to No Action, which already requires maintenance of buoy markings. For cattle ear tags, option b, a web search of nine options showed that the tags can range from \$0.23 to \$1.77 per tag (averaging \$1.08). Overall, this is likely to be a minimal expense even for operations that use multiple sets per trip- noting some replacements would be likely to occur over the season. Use of cattle-ear tags in state Dungeness crab fisheries have demonstrated their utility in making positive identifications of gear involved in entanglements (Agenda Item F.3.a, NMFS Report 1, March 2023). Participants in the gear marking workshop suggested that these tags might be more useful than other letter markings on polyform buoys themselves because they may be easier to distinguish than markings directly on the main buoy.

While those who participate only in groundfish will have to deal with procuring tags for the groundfish fishery (that are currently proposed to be a static color and/or shape), those who cross-participate in the state Dungeness crab fisheries will need to track and purchase multiple tag colors annually.

Of the fixed gear vessels that may be affected by this action, an average of 34.6 percent crossover into state-managed Dungeness crab fisheries annually (Table 3-3).¹³ Between 61 and 74 percent of the vessels that crossover participate in the OA fixed gear fishery. For those vessels that crossover into the crab fishery, in addition to participating in multiple groundfish gear types, the operational costs of the various gear markings could be significant depending on the ultimate selection by the Council and the states. As an example, for the 5-16 vessels that utilized both pot and longline gear in the groundfish fishery and also participate in Dungeness crab, that would be three distinct sets of markings required. Vessels can also choose to participate in multiple state crab fisheries or other state fisheries in California, requiring licenses and tags for each, therefore increasing the potential number of markings to track and procure.

Table 3-3. Number of vessels by whether they participated in only groundfish fixed gear or groundfish fixed gear and crab in a given year (crab season).

Year	Groundfish Only	Groundfish/Crab
2019 (2018-2019 crab season)	275	86
2020 (2019-2020 crab season)	220	72
2021 (2020-2021 crab season)	210	52
2022 (2021-2022 crab season)	207	88
2023 (2022-2023 crab season)	215	90

The options under the action alternative would have no direct impact on the probability of protected species becoming entangled in commercial fishing gear, nor would they affect the severity of an entanglement should one occur. However, potential changes in gear marking requirements could have an indirect effect on protected species entanglement risk because the potential improvements to positive attributions when entanglements occur will provide managers the ability to target management measures more effectively, which should reduce the risk of entanglements, thereby benefiting whales, turtles, or other species at risk of entanglement.

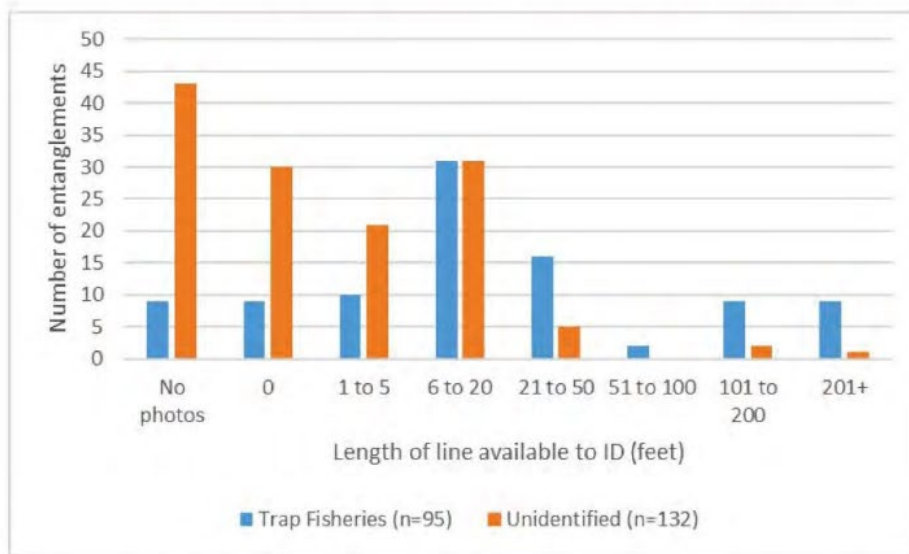
3.6.3 Analysis of Expected Effects: Line Marking

The Council should consider how much line is typically entangled around whales and the part of the line that is typically entangled when selecting their preferred alternative in addition to the cost implications to industry. NMFS PRD produced several key figures related to line entanglement statistics in their report to the Gear Marking Workshop that are reproduced here. Figure 3-1 below

¹³ While Dungeness crab fishery seasons are supposed to span across years (i.e., the 2023-2024 season starts in late fall/winter of 2023 and ends in late summer of 2024), each state’s fishery may start at a different date in the first year or may not begin until the second year of the season period. Therefore, for comparison with the groundfish fishing year (calendar year), the groundfish landing year is compared with the second year of the crab season (i.e., the 2023 fishing year for groundfish is compared to the 2022-2023 crab season).

shows that when entanglements were observed, it was typically less than 20 ft (or 3.33 fathoms) that were available to identify the source of the entanglement. Additionally, 64 percent of all entanglements were thought to be from the top or upper portion of the line (Figure 3-2). The “top” portion was defined (based on available evidence such as photos, videos, any recovered gear, etc.) as the main buoy and any other part of the surface buoy and gear and the “upper” portion of the line was defined as within five fm of the main buoy (pers. comm. Dan Lawson, NMFS PRD). For the portion that was “unknown”, that was typically when only the line was observed and there was a need to know more about its relative location to the surface or bottom gear to be oriented.

Estimated Line Available to ID



Estimates of the amount of line available to ID line marks from confirmed whale entanglements that were: (A) attributed to a pot/trap fishery vs (B) not identified to a source from 2013-2020.



Figure 3-1. Estimates of the amount of line available to identify gear type involved in observed whale entanglements. Source: “The Need for Improved Gear Marking” Presentation by Dan Lawson, NMFS PRD, Gear Marking Workshop

What Part of Gear/Line Do We See?

Area of line	Pot/trap fishery (n= 95)	Unidentified (n=132)	Total (n=227)
Top	64 (67%)	14 (11%)	78 (34%)
Upper	53 (56%)	16 (12%)	69 (30%)
Middle	27 (28%)	15 (11%)	42 (19%)
Bottom	12 (13%)	0 (0%)	12 (5%)
No photos	10 (11%)	44 (33%)	54 (24%)
Unknown	2 (2%)	24 (18%)	26 (11%)
No line	7 (7%)	26 (20%)	33 (15%)

Segment of line available to ID line marks from confirmed whale entanglements that were:
(A) attributed to a pot/trap fishery vs (B) not identified to a source from 2013-2020.

Figure 3-2. Segment of line available to identify line marks from confirmed whale entanglements that were attributed to pot/trap or not identified to source, 2013-2020. Source: “The Need for Improved Gear Marking” Presentation by Dan Lawson, NMFS PRD, Gear Marking Workshop

The combination of options selected by the Council will determine the cost to industry to implement. Line markings would be gear specific (pot or longline) with a color to be determined by the Council. While some quantitative information can be provided (price of line), the impacts will mainly be described qualitatively and relative to one another.

Hard laid rope, typically used for pot fishery, costs anywhere between \$250-300 for a 200 fm coil (pers. comm Harrison Ibach). The greater the distance required to be marked (Line Marking Alternative B1-B3, the fewer sets of line markings you will get out of the coil. Table 3-4 below shows a matrix of the various options for line marking and surface gear based on a 200 fm coil of manufactured line. As an example, if you were only marking 5 fm of the vertical line (A1 and B1) for each terminal end, an investment of \$300 for a 200 fm coil would yield a maximum of 20 sets worth of line marking. Assuming a typical pot vessel uses seven sets with two vertical lines each, that would be 14 lines to mark in total or less than a full 200 fm coil of new line. On the other hand, if you were to mark the vertical for at least 50 fm (B3) with marking on the surface line (A2), a vessel would only be able to get three full lengths of vertical line plus the surface line mark of 36 inches. This would result in covering only one set of gear with two vertical lines (or up to three sets if only using one vertical line under the proposed action alternative for surface gear requirements).

Table 3-4. Number of line markings that could be made with a 200 fm coil of manufactured line.

Surface Gear Requirements	Line Marking Alternative 1 Component			
	Portion of Line Marked (A)	Distance of Marking (B, fm of line)		
		5	20	50
Vertical gear at each terminal end	A1: Vertical Line Only	20	5	2
	A2: Vertical Line & Surface Line (0.5 fm/line)	18	4	1
Vertical gear at one terminal end	A1: Vertical Line Only	40	10	4
	A2: Vertical Line & Surface Line (0.5 fm/line)	36	9	3

For temporary markings, while the methods (tape, paint, etc.) that could be approved are yet to be determined, the cost will be dependent on the amount of distance to be marked, the frequency of those markings, and the maintenance of markings. The more marks, the higher the costs. With temporary markings there would likely be a higher operational cost compared to manufactured line as those markings would have to be done prior to fishing and maintained at a likely more frequent interval than manufactured line. However, temporary markings may be able to be implemented more quickly as the materials may be more readily available compared to manufactured line that will have to be stocked at retailers in the designated color(s).

In terms of the transition period, if the Council were to allow for vessels to use temporary methods for a select number of years and move to manufactured lines, there might be some benefits to industry to allow the procurement of the manufactured line at the time that suits their operations compared to D1 where manufactured line would be required at the time of implementation. The benefits of five years (D2) compared to ten years (D3) is not quantifiable. Allowing manufactured or temporary methods (D4) that meet the marking requirements indefinitely would provide the most flexibility to industry, but may be more difficult for enforcement to track allowance of two methods into the future.

As discussed with buoy markings above, the impact to those that fish both gear types or those that fish in the Dungeness crab fishery will be greater overall as it will require multiple types of line marking. As describe in Section 2.2, each Dungeness crab fishery is proposing a distinct two-color marking scheme for each state and therefore vessels may end up needing to purchase multiple color lines (or marking supplies) if they were to fish both pot/longline in groundfish and in all three states' crab fisheries (or state fisheries). This may be few if any individuals, but the overall impact to these participants cumulatively may be substantial- depending on the options selected by the Council for groundfish.

By requiring different markings for pot gear and longline gear, this action would prevent the use of both gear types on one set (for example, slinky pots as well as hooks on a longline). If vessels wished to do so in the future, they would not be able to, and would instead need to set different lines for each gear with the appropriate marks required for each. Without having this specification, which is a change from current regulations that permit the use of multiple gear types on the same line, it would not meet the intent of the alternative- which is to identify the gear type associated with an entanglement if one were to occur. Although there is no data indicating the use of slinky

pot and longline gear on the same set has occurred, any information on the frequency of this type of fishing from industry would be useful in understanding potential impacts.

As with buoy marking, the action alternative would have neither direct impact on the probability of whales or other protected species from becoming entangled in commercial fishing gear nor would they affect the severity of an entanglement should one occur. However, potential changes in gear marking requirements could have an indirect effect on protected species entanglement risks because the potential improvements to positive attributions when entanglements occur will provide managers the ability to target management measures more effectively, which should reduce the risk of entanglements, thereby, benefiting whales or other protected species. The Council should consider the ability for entanglements to be identified with certain alternative configurations, such as Alternative C2d, which would have a single 12-inch temporary mark for 50 fm of the line.

There are no impacts to vessel safety with this action alternative.

3.6.4 Analysis of Expected Effects: Surface Gear Requirements

Under Alternative 1, fixed gear vessels would be permitted to use surface gear at only one terminal end of each set of gear, as opposed to using it at both terminal ends. Pot vessels are expected to be more likely to utilize this flexibility compared to longline vessels (pers. comm. Harrison Ibach, Bob Eder). This is because bottom longlines are thought to move more than pot gear once set since they are lighter, and therefore may be more likely to snag on the seafloor and potentially break. If a surface marker buoy had been used on only one terminal end, that would leave a section of gear on the bottom without any surface gear, more difficult to find and retrieve. Longline fishermen may therefore have a greater concern about the risk (and expense) of losing gear and may be less likely than pot gear fishermen to change from using surface gear at both terminal ends to only one end.

Assuming that pot gear vessels would be the ones to convert to using only one vertical line, Table 3-5 below shows the estimated percent reduction in the number of vertical lines in the water throughout a given year (2019-2023) assuming that 25, 50, and 75 percent of pot trips would only use a single set of surface gear. LE pot trips were assumed to have seven sets per trip and OA pot trips were assumed to have two sets per trip. Longline trips, both OA and LE, were assumed to have two sets per trip. Depending on the actual number of sets laid per trip by LE and OA vessels, the percent reduction would vary.

Table 3-5. Estimated percent reduction in the number of vertical lines in the water under 25, 50, and 75 percent utilization of Alternative 1 under 2019-2023 conditions.

Year	25% trips convert to single line	50% trips convert to single line	75% trips convert to single line
2019	9.6	19.1	28.7
2020	9.8	19.7	29.5
2021	9.6	19.2	28.9
2022	10.8	21.6	32.4
2023	11.3	22.6	33.9

Alternative 1 may also economically benefit fishery participants over the long term by reducing the costs to maintain and replace fixed gear vertical lines.

One of the potential issues with Alternative 1 that could result in costs to industry is gear loss due to gear conflicts. Specifically, the inability for trawl vessels to ascertain where a fixed gear set is at with a single surface gear set up compared to No Action. Under No Action, trawl vessels would be able to see the start and end of a set and could avoid fishing through that area between the two terminal ends. However, under Alternative 1, trawl vessels would not be able to determine the direction in which a fixed gear set was laid out. Those vessels may trawl through where the set was laid- resulting in potential costs to both the trawl and fixed gear vessel through entanglement of the two different gear types. While fishermen could choose to share locations with other vessels fishing in the area, decreasing the risk of the gear conflict, it is unclear to the degree with which conflicts or information-sharing might happen. Therefore, the potential economic impacts of gear loss from gear conflicts is poorly understood and cannot be quantified. There are no expected impacts to vessel safety under this alternative.

Alternative 1 could reduce the amount of vertical line in the water column because changing the surface gear requirements could decrease the number of lines in the water annually and, therefore, potentially reduce the risk of entanglements with protected resources. Moreover, public welfare benefits are likely to increase as entanglement risk is reduced. The management refinements likely to occur in the future under the action alternatives also provide potential net benefits to fishery participants whose gear is not implicated in entanglements because new regulatory measures would be targeted at the source of entanglements.

The Council's Enforcement Consultants recommended removing this alternative from further consideration due to challenges it could create in enforcing closed areas ([Agenda Item G.4.a Supplemental EC Report 1 September 2023](#)). With surface gear on both terminal ends of each set as currently required, enforcement agents at sea can detect the start and end location and confirm whether the gear is in an area closed to fishing. However, with surface gear on only one end, the direction and extent of the ground gear would not be easily detected on the water- increasing the difficulty for enforcement to detect any instances of fishing in closed areas. If enforcement becomes more challenging, it could diminish the conservation and fishery management benefits that closed areas provide. Changes to enforceability are speculative, and therefore any change in the efficacy of closed areas cannot be quantified. For the fisheries subject to this action, the majority of enforcement of closed areas in federal waters is done with vessel monitoring system data, which employs proximity alerts unrelated to buoy lines. For these reasons, it seems likely that requiring a buoy line on only one terminal end of a set would have a negligible impact on the efficacy of closed areas.

3.6.5 Analysis of Expected Effects: Surface Line Length

Under Alternative 1, fixed gear vessels would be allowed a maximum length of surface line of 5 fm (option a) or 10 fm (option b). There would likely be negligible costs to industry under either option. Alternative 1 may also economically benefit fishery participants over the long term by reducing the costs to maintain and replace fixed gear surface line.

Alternative 1 would likely be beneficial to whales, with 5 fm being more beneficial than 10 fm, as there would be less line to potentially be entangled in. There would be similar potential benefits to other protected species as well. As discussed under Section 3.6.3, it is generally the top or upper part of the line that is entangled. Therefore, by limiting the amount of line on the surface, it would be anticipated that there would be less risk for entanglement.

There would be no impact to vessel safety with this alternative.

3.6.6 Analysis of Expected Effects: Escape Panel

Under Alternative 1, the regulations for the biodegradable escape panel would be modified to require that escape panels not be placed on the bottom of traditional pots. This is a purely administrative action to specify placement of the escape panel in the West Coast regulations and provide clarity for slinky pots- which do not have a standard “bottom” to the pot. This would also align West Coast regulations with Alaska regulations. There are no expected costs to industry under this alternative.

There would be no impact to vessel safety with this alternative.

3.6.7 Analysis of Expected Effects: Best Practices Guide

A BPG would have no expected impacts to industry, as it would be voluntary to implement the best practices described in the document. However, the concept of a BPG was broadly supported by fishery participants both in terms of documenting and disseminating information about best practices for fishing with fixed gear and for reducing the risk of protected species entanglements. Overall, there could be future benefits to industry if the practices described limited entanglements and thereby the necessity of any future mitigation measures.

The use of any of the best practices in a BPG would likely indirectly benefit whales and other protected species as the voluntary measures could reduce the potential risk for entanglements. While not quantifiable, it is anticipated to be neutral or positive.

There are no vessel safety issues with this alternative.

3.7 Summation of the Alternatives with Respect to Net Benefit to the Nation

The action alternatives described below are not mutually exclusive.

- Under No Action, there would be no new required gear marking or entanglement risk reduction measures for groundfish fixed gear. Vessels could implement voluntary entanglement risk reduction measures (such as limiting surface line length). While there would be no additional compliance costs to industry under No Action, there could be future costs associated with more severe management measures to limit the risk of entanglements due to inability to identify a responsible fishery/sector. Whales and other protected species would see potentially neutral or negative impacts if no risk reductions measures are implemented. Communities would potentially see impacts due to the entanglements of whales (intrinsic cost) or long term to fishing communities dependent on fixed gear fisheries.
- Under the Gear Marking Alternatives (Buoy Marking and Line Marking), there would be a potential one-time cost to industry implementing additional buoy and line marking schemes. There would also be maintenance costs, which may not be substantially greater than the No Action alternative over the long term. However, there would be long term benefits in better understanding the origin of entanglements, facilitating the development of management measures specifically for sectors where there are entanglements.
- Under Alternative 1, Surface Gear Restrictions, there would be no cost to industry but positive benefits to whales and other protected species by limiting the amount of vertical lines that could be entangled. This would lead to overall positive net benefits to the nation by increasing the non-consumptive and/or intrinsic values from healthy whale (or other protected species) populations.
- Under Alternative 1, Surface Line Limitation, there would be negligible capital costs to industry compared to No Action but positive benefits to whales and other protected species by limiting the amount of surface line that could become entangled. This would lead to overall positive net benefits to the nation by increasing the non-consumptive and/or intrinsic values from healthy whale (or other protected species) populations.
- The changes to the escape panel regulations are an administrative action and would have no impact.
- The implementation of a BPG would overall be beneficial in promoting fishing practices that limit entanglements yet do not require regulatory action for implementation (resulting in administrative costs).

3.8 Determination of Significant Impact

As noted above, under E.O. 12866, a regulation is a “significant regulatory action” if it is likely to: (1) have an annual effect on the economy of \$200 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another

agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise legal or policy issues for which centralized review would meaningfully further the President's priorities or the principles set forth in this Executive order, as specifically authorized in a timely manner by the Administrator of OIRA in each case. A determination will be made after the selection of the final preferred alternative.

4 Magnuson-Stevens Act and FMP Considerations

4.1 Magnuson-Stevens Act National Standards

Below are the 10 National Standards as contained in the MSA, and a brief discussion of how each alternative is consistent with the National Standards, where applicable. In recommending a preferred alternative, the Council must consider how to balance the national standards.

National Standard 1 — Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The biennial groundfish harvest specifications and management measures undertaken and described in analytical documents for the current biennium establish harvest levels consistent with National Standard 1 and the harvest management framework described in Chapter 4 of the Groundfish FMP. This action, which is focused on development of measures to improve the ability to positively attribute the origin of whale entanglements (i.e., gear marking) and measures to reduce the risk of protected species entanglements, does not revise the harvest management framework nor groundfish harvest limits. None of the alternatives considered in this action would influence the ability of the Council and NMFS to prevent overfishing. The alternatives considered in this action could promote achieving optimum yield by reducing the need for take reduction measures in the future.

National Standard 2 — Conservation and management measures shall be based upon the best scientific information available.

The best scientific information available was used to develop the gear marking and entanglement risk reduction measures. For example, a workshop was held in November 2022 that included participation by scientific experts, fishery managers, and fishery participants. The results of the workshop were used to inform this action. This action was also informed by the work of the Council's Groundfish Endangered Species Workgroup that is comprised of scientists and managers with expertise related to interactions of fisheries with protected species.

With regards to information and analyses about the economic impacts, fish ticket and observer data were used to estimate impacts of the proposed action on the socioeconomic environment.

National Standard 3 — To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The Council develops and designates management units for groundfish, which include stocks, stock complexes, or geographic subdivisions thereof. The proposed action does not change any management units for groundfish. The alternatives considered would not result in stocks being managed differently throughout their range, nor would they fail to manage stocks as a unit.

National Standard 4 — Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be; (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation, and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

This action is focused on development of measures that would be applied to federally managed Pacific coast fixed gear fisheries. If and when implemented, these measures will be applied holistically to Pacific Council-managed non-tribal groundfish fixed gear fisheries. The action would not discriminate between residents of different states. The proposed actions do not allocate nor assign fishing privileges nor change any current allocations or fishing privilege assignments. This action entailed coordination among federal and state fishery managers to ensure federal gear marking and entanglement risk reduction measures will be coordinated with similar actions taken by the states related to state-managed fisheries.

National Standard 5 — Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources, except that no such measure shall have economic allocation as its sole purpose.

The action does not revise the harvest management framework nor groundfish harvest limits, which considered efficiency in the utilization of fishery resources for the current groundfish management biennium.

National Standard 6 — Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

In developing these management measures, the Council was cognizant of the need to balance the potential benefits of improved information about fishery interactions with whales and protected species and the costs borne by fixed gear fishery participants to comply with new gear marking requirements. In striking that balance, the Council considered advice and input from fishery participants, managers, and scientists about the efficacy and practicability of the action alternatives compared to no action. In addition, the entanglement risk reduction measures originated from information developed at the November 2022 workshop and account for the need to support variations among fisheries. Relative to contingencies, the development of a Best Practices Guide will provide a vehicle that is broadly supported by fishery participants for documenting and disseminating information about best practices for fishing with fixed gear and for reducing the risk of entanglements.

National Standard 7 — Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The implementation of the new gear marking and entanglement risk reduction measures would create new administrative costs, including costs associated with implementing the measures and ongoing enforcement costs for monitoring compliance with the measures. The gear marking measures will also impose new costs on the fishing industry. In developing these measures, the

Council endeavored to balance the potential benefits from the action and the costs borne by fixed-gear fishery participants to comply with new gear marking requirements, by managers to implement the new measures, and by enforcement to monitor compliance.

Entanglement risk reduction measures that allow use of surface gear on only one end of the groundline and that limit the length of line used in surface gear could reduce costs to the fishing industry because less gear would be used (and replaced over time) and less gear would need to be marked. Moreover, as noted under National Standard 4, this action entailed coordination among federal and state fishery managers to ensure federal gear marking and entanglement risk reduction measures will be coordinated with similar actions taken by the states related to state-managed fisheries thereby avoiding unnecessary duplication.

National Standard 8 — Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of National Standard 2, in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

In developing these measures, the Council endeavored to balance the potential benefits from the action and the costs borne by fixed-gear fishery participants to comply with new gear marking requirements with a goal of providing for sustained participation for coastal fishing communities. Improved attribution of entanglements to specific gear types could allow any future fishery restrictions necessary to reduce entanglement risk to be more limited in the gear, area, and or fishery sector to which they apply. This would better support the sustained participation of fishing communities compared to status quo.

National Standard 9 — Conservation and management measures shall, to the extent practicable, (A) minimize bycatch, and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

There are no expected impacts outside of No Action as described in analytical documents for the current groundfish management biennium. In addition, the intent of the proposed action is to improve the ability to positively attribute the origin of whale entanglements (i.e., gear marking) and measures to reduce the risk of whale entanglements in Pacific coast fixed-gear groundfish fisheries.

National Standard 10 — Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

There is no expected impact to the safety of human life at sea outside of that described in the 2023-2024 Harvest Specifications Environmental Analysis.

5 Other Applicable Laws

5.1 Executive Order 13175 Consultation and Coordination with Indian Tribal Governments

Executive Order 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

The Secretary of Commerce recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At Section 302(b)(5), the MSA reserves a seat on the Council for a representative of an Indian tribe with Federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The proposed actions and other alternatives were developed through the Council process and would not regulate tribal fisheries. Based on the enclosed analysis, the proposed action is not likely to affect the tribal fishery operations. Through the tribal representative on the Council and tribal comments submitted to NMFS and the Council (if and when submitted), the Tribes have a role in developing the proposed action and analyzing effects of the alternatives; therefore, at this time, this action is consistent with EO 13175.

6 Preparers and Persons Consulted

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