Pelagic Trawl Gear Definition Changes

Discussion Paper, January 22, 2024

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For definition of acronyms and abbreviations, see online list: https://www.npfmc.org/library/acronyms

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1 Introduction

In response to a series of potential closed area violations, NOAA Office of Law Enforcement (OLE) initiated investigative operations in 2023 and detected a large number of potential violations related to distinctions between pelagic and non pelagic trawl gear definitions,[1] initiating discussion on the pelagic trawl gear definition relative to the codend. In June 2023, the North Pacific Fishery Management Council (Council) reviewed an initial analysis of alternatives that could close areas in the Bering Sea to directed groundfish fishing, with a goal of promoting Bristol Bay red king crab (BBRKC) stock health.[2] (The Council is reviewing a second version of that initial analysis at the February 2024 meeting -- Agenda Item C2.) Section 4 of the June 2023 BBRKC analysis provided background and a brief analysis on the pelagic trawl gear definition and performance standard to determine whether Council objectives were being met. In response, the Council passed the following motion requesting:

> *[...] NMFS and OLE to work with Council staff and industry to identify revisions to the regulatory definition of pelagic trawl gear to:*
>
> - *clarify that the codend is not intended to be regulated*
> - *allow for gear innovation*
> - *resolve any inconsistencies in current regulations and/or outdated regulations.*

The Council stated a clear intention to separate its consideration of any need to revise the regulatory definition of pelagic trawl gear from consideration of alternatives for groundfish area closures. This discussion paper begins a new track that is not tied to potential actions addressing BBRKC stock health and groundfish fisheries' ability to operate in the BBRKC stock assessment area. This paper expands on the previous analysis of the pelagic trawl gear definition in Section 4 of the June 2023 BBRKC analysis, providing context for pelagic trawl gear components and policy recommendations to resolve inconsistencies from outdated regulations and allow for current and future gear innovation. This paper does not focus on the pelagic trawl performance standard; that topic continues to be addressed within the BBRKC area-closure analysis (see Section 8 of the Agenda Item C2 document linked above).

2 Background

2.1 General Background

Development of the current pelagic trawl gear definition began in 1990 with implementation of an emergency interim rule (55 FR 33715, August 17, 1990) designed to reduce halibut bycatch mortality and decrease season closures. The interim rule was brought on by the June, 1990 closure of directed Pacific cod and pollock bottom trawl fishing in the Bering Sea / Aleutian Islands Management Area (BSAI) over concerns of halibut bycatch. Bottom protection devices (discs, bobbins, and rollers) were excluded from pelagic trawls in 1990 to discourage bottom contact while fishing with the gear type and to distinguish pelagic trawls from bottom trawls. At the time, bottom contact was not allowed by pelagic trawl gear, but an updated definition was soon proposed omitting language on bottom contact by net or trawl doors because this requirement was unenforceable. In 1991, a final rule was implemented that removed bottom contact language from the definition and required larger spacing for forward mesh sizes and between parallel lines for pelagic trawl gear (56 FR 2700, January 24, 1991). The rationale implies pelagic trawl gear defined in this way had the advantage of reducing drag for the towing vessel while reducing bycatch of halibut and crab (NMFS 1990). The definition was later refined in 1993, further defining what does (or does not) constitute pelagic trawl gear and providing a performance standard intended to limit bottom

[1] See Section 4 of this document for more detail

[2] https://meetings.npfmc.org/CommentReview/DownloadFile?p=2faac872-c0a4-4a05-93a2-352be833fef1.pdf&fileName=C4%20BBRKC%20Analysis.pdf

contact for pelagic trawl gear, but not prohibiting bottom contact. The performance standard is a results based requirement rather than a prescriptive behavioral control. The 1993 definition is intended to meet the objective to "*reduce halibut and trawl bycatches by discouraging or preventing trawl operations on the seabed when halibut and crab PSC allowances have been reached* (58 FR 17196, April 1, 1993)."

Between the 1990 emergency interim rule and the current pelagic trawl gear definition (Table 3-1), several key changes occurred. These include increases in stretched mesh sizes (from 39.3-in (1-m) to 60-in (~1.5-m)), parallel line spacing (from 39.3-in (1-m) to 64-in (~1.6-m)), the aftward extension of such mesh sizes and parallel lines (from ≥ 10 meshes to ½ of the vessel's length), and the spacing between the knots where the webbing is tied to the fishing line around the circumference of the net (from 12-in (30.5-cm) to 20-in (50.8-cm). These changes are important not only in reducing drag resulting in larger net sizes and innovation over the years, but also in the context of seafloor contact, as the larger spacings required in the current definition are believed to result in minimal bycatch of halibut and crab (NMFS 1990).

Based an analysis of observer data between 2018 and 2022, the reduced bycatch component of the Council's original objective to "*reduce halibut and trawl bycatches by discouraging or preventing trawl operations on the sea bed when halibut and crab PSC allowances have been reached*" appear to have been met. However, it is unlikely that this reduced bycatch is entirely due to the definition of pelagic trawl gear and is likely also related to the implementation of various catch sharing programs since 1993 that have significantly modified the prosecution of the groundfish fisheries. As time progressed, the NPFMC recommended numerous management measures that built upon the pelagic trawl gear definition throughout regulations within 50 CFR part 679. It is used in differentiating the gear type from nonpelagic trawl gear, as well as bottom and mobile bottom contact gear. The pelagic trawl gear definition has become intertwined in regulations regarding record keeping and reporting, prohibitions related to vessel monitoring system (VMS) compliance, trawl gear performance standards, prohibited species bycatch management, gear test areas, categories for documenting standard ex-vessel prices, and area closures to bottom contact gear types for conservation purposes (Section 5). In recent years, the extent to which pelagic trawl gear contacts the seabed has been a growing concern among various fishery stakeholders. In considering changes to the pelagic trawl gear definition that may be intended to address the impact of contact with the seafloor, the Council should first consider the intended management objective of the definition, if it is being met, and if it will continue to be met after each specific alteration of the pelagic trawl gear definition.

2.2 Pelagic Trawl Gear Components and Configurations

Today, pelagic trawl gear is utilized by pollock fisheries in the BSAI and Gulf of Alaska (GOA), as well as trawl rockfish fisheries in the GOA. The BS pollock fishery is managed under the American Fisheries Act (AFA) management program and the trawl rockfish fisheries in the GOA are managed under the Central Gulf of Alaska Rockfish Program. Currently, an up-to-date catalog of current pelagic trawl gear specifications or variations for vessels fishing Alaskan waters does not exist. Some data could be provided from an ongoing collaborative research effort between Alaska Pacific University (APU) and the Alaskan catcher/processor fleet to catalog gear specifications, develop models estimating pelagic trawl - seabed interactions, and develop a field study design to measure seabed contact and clearance of pelagic trawl gear under real fishing conditions (Harris et al. 2024). In lieu of published results from this project, known gear descriptions from the 2012 Fishing Fleet Profiles report (NPFMC 2012) are useful to understand variations within pelagic trawl gear. Vessels utilizing pelagic trawls include American Fisheries Act (AFA) catcher vessels and catcher/processors in the BSAI targeting Alaskan pollock, as well as trawl catcher vessels targeting Alaskan pollock and some rockfish in the Western and Central GOA.

For context, select trawl gear components and associated descriptions are listed in Table 2-1 and labeled in Figure 2-1. These descriptions, derived from 50 CFR part 600, part 660, part 679, and staff interpretations based on discussions with industry participants, could be useful in beginning to develop a shared understanding and vocabulary for these common trawl components.

Table 2-1 Trawl gear components and descriptions organized from forward to aft (front to back) of a trawl.

Term	Generalized Description
Warp	A line (usually cable) passing through a vessel's block used in towing a trawl net.
Trawl Doors (Otter Doors)	Large hydrodynamic metal plates used to spread the net horizontally, pull the net downward, and keep the trawl mouth open. Positioned between the warp and the bridles.
Sweeps (sweep lines)	Generally used on bottom trawls; lengths of wire between the bridle and trawl doors used to sweep along the ocean bottom and herd fish into the net.
Bridle	A section of cable between trawl door and net; for pelagic trawl gear, cables attached from the door to the trawl wingtips / clump weights.
Clump Weights	Weights attached to trawl wingtips, usually clumps of heavy anchor chain.
Set Back Chain	A short length of chain connecting the bridle and clump weight to the bottom trawl wing, used to adjust and align the trawl "mouth".
Wing	The portions of the net extending forward laterally from the fishing circle.
Footrope	A chain, rope, or wire attached to the bottom front end of the trawl webbing forming the leading edge of the bottom panel of the trawl net, and attached to the fishing line. (50 CFR 679.2)
Trawl Fishing Line	A length of chain, rope, or wire rope in the bottom front end of a trawl net to which the webbing or lead ropes are attached. (50 CFR 679.2)
Headrope	A rope bordering the top front end of a trawl. (50 CFR 679.2)
Breastline	A rope or cable that connects the end of the headrope and the end of the trawl fishing line along the edge of the trawl web closest to the towing point. (50 CFR 660.11)
Vertical Net Opening	The headrope to footrope vertical distance rise, highest point of the net to the lowest point of the net while fishing; generally at the fishing circle.
Fishing Circle	The circumference of a trawl intersecting the center point on a fishing line, and that is perpendicular to the long axis of a trawl. (50 CFR 679.2)
Net Sounder Device	A sensor used to determine the depth from the water surface at which a fishing net is operating. (50 CFR 679.2)
Body	The main portion of the net, not including wings, codend, or intermediate.
Selvedge Line	A lateral line running horizontally along the net where mesh panel sections are stitched together.
Ribline	A heavy rope or line that runs down the sides, top, or underside of a trawl net from the mouth of the net to the terminal end of the codend to strengthen the net during fishing. (50 CFR 660.11)

Term	Generalized Description
Trawl Gear	A cone or funnel-shaped net that is towed through the water by one or more vessels. For purposes of this part, this definition includes, but is not limited to, beam trawls (trawl with a fixed net opening utilizing a wood or metal beam), otter trawls (trawl with a net opening controlled by devices commonly called otter doors), and pair trawls (trawl dragged between two vessels) and is further described as pelagic or nonpelagic trawl. (50 CFR 679.2)
Intermediate	The portion of the trawl net aft of the body and forward of the codend, generally tapered from the larger net into a smaller diameter portion joining to the codend.
Codend	The terminal, closed end of a trawl net. (50 CFR 600.10)
Chafing Gear	Webbing or other material that is attached to the trawl net to protect the net from wear and abrasions either when fishing or hauling on deck. (50 CFR 660.11)

As described in the 2012 fleet profiles, AFA catcher/processor pelagic trawl gear specifications are generally similar to those used by AFA catcher vessels, but larger. Both vessel types utilize trawl gear with large net openings and minimal drag due to large mesh sizes and relatively small twine size. Trawl gear size varies based on vessel size and horsepower, such that the larger and more powerful vessels tow larger trawls. Meshes in the front end of the trawl can be as large as 105-ft (32-m) to 210-ft (64-m) and typically have a vertical net opening (headrope to footrope vertical distance) rise of 60-ft (18.3-m) to 180-ft (54.8-m). Net mesh gets smaller towards the intermediate and codend, with codends typically having 4-in (10.2-cm) to 4.5-in (11.43-cm) stretched mesh. Otter boards (or doors) are made of steel and range in size from 16.4-ft^2 (5-m^2) to 45.9-ft^2 (14-m^2). Door spread in most fishing depths ranges from 328-ft (100-m) to 590-ft (180-m), and trawl warp/scope to depth ratio is typically 3 to 1. Clump weights, trawl doors, or the footrope may contact the seafloor for a period of time within a tow, the duration of which varying depending on how the net is fished. Long wire rope bridles attach the net to the doors, and there are no discs, rollers, or bobbins attached to the trawl footrope of a pelagic trawl. Footropes typically extend 590-ft (180-m) to 1,475-ft (450-m). Trawl codends are usually made with polyethylene netting attached to four longitudinal riblines. The riblines are typically chain, wire, or synthetic rope. Floats are attached along the length of the codend to counteract the weight of the steel components. Container lines around the circumference are attached along the length of the codend to restrict the expansion of the netting, preventing damage and allowing the codend to be hauled up a stern ramp (NPFMC 2012). Sacrificial chafe protection gear, typically polyethylene fiber, is sometimes attached to the codend to protect it from abrasion on the stern ramp or from abrasion while fishing.

Western and Central GOA trawlers consist of smaller catcher vessels as well as large catcher/processors. Smaller vessels generally use smaller sized pelagic trawls when fishing for pollock that take less horsepower to tow. GOA pelagic trawls typically have a vertical net opening of 120-ft (36.6-m) and a horizontal opening of 240-ft (73.2-m) (wing-end spread of 360-ft (109.7-m)) for vessels with an average 1,000 hp. Front meshes of large mid-water nets may be as large as 120-ft (36.6-m). Net mesh gets smaller towards the intermediate and codend, with the codend typically having 5-inch (12.7-cm) stretched mesh. Doors are made of steel and range in size from 9.8-ft^2 (3-m^2) up to 22.9-ft^2 (7-m^2). Door spread in most fishing depths and trawl warp/scope combinations is typically 328 ft (100-m) to 590 ft (180-m) (NPFMC 2012).

For both BSAI and GOA vessels, there are no discs or bobbins attached to the footropes on pelagic trawls. Trawls may be fitted with multiple sonar systems designed to monitor net performance remotely. These third wire - or wireless with more recent technology - systems improve fishing efficiency and help vessel operators avoid net damage. Figure 2-1 is a labeled figure showing a generalized pelagic trawl gear configuration with labeled components.

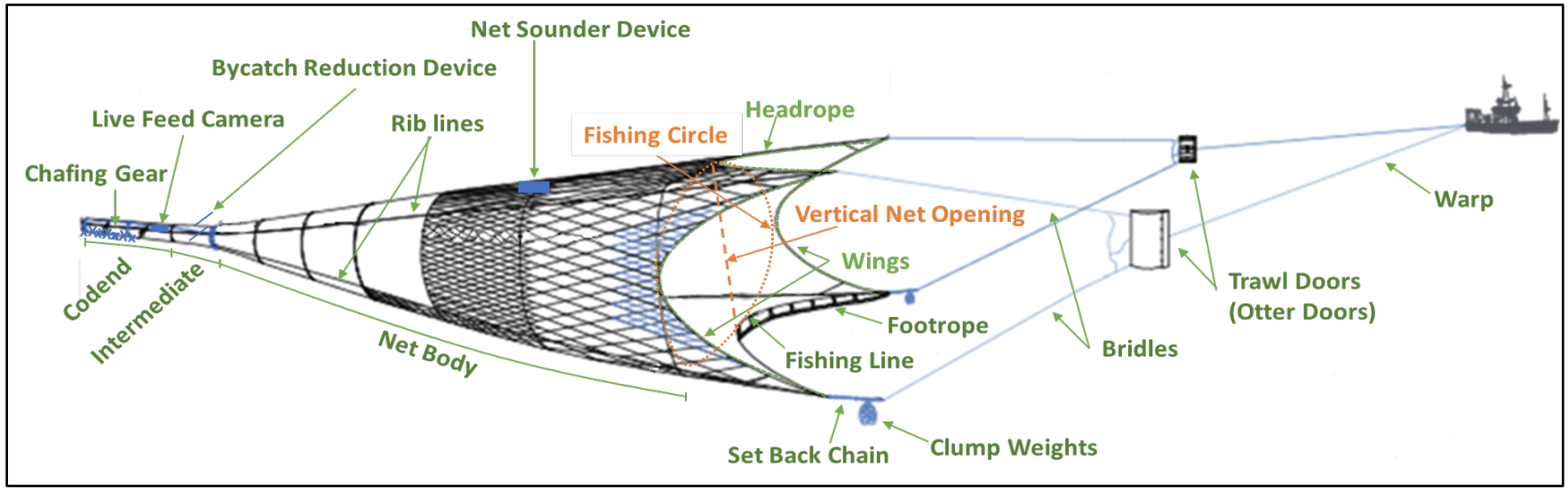

Figure 2-1 Generalized pelagic trawl gear and labeled components.[3]

[3] Image credit: Sarah LaBelle (NPFMC), as modified from Swan Net Gundry (accessed at https://sng.ie/fishing/pelagic/).

3 Description of the Issues

3.1 Codend

The current issue regarding inclusion of the codend as part of a pelagic trawl net largely has to do with the common use of floatation in codends attached to pelagic trawl nets. By definition, pelagic trawl gear does not include flotation other than floats capable of providing up to 200 lb (90.7 kg) of buoyancy to accommodate the use of a net-sounder device. The definition of pelagic trawl gear specified at § 679.2, when combined with the definition of codend found at 50 CFR 600.10, creates regulatory ambiguity about whether or not flotation is allowed to be used in codends attached to pelagic trawl nets. Flotation appears to be regularly used in pelagic trawl gear codends, with many employing small numbers of floats to provide 50-100 lbs of buoyancy which may be to support net sounders, catch sensors, cameras, and other such technologies as needed (NPFMC 2023). Other pelagic trawl codends have floats fitted the full length of both sides, spaced at intervals of 1-3 ft and providing 1,000 lbs of buoyancy or more to compensate for the weight of chain riblines and other metal components. Additionally, floats are commonly used in salmon excluder devices, which are required for the AFA pollock fleet to keep excluder openings and escape paths open while fishing (NPFMC 2023).

The definition of pelagic trawl gear at § 679.2, that has been unchanged since 1993, does not mention the codend and National Marine Fisheries Service Alaska Region (NMFS AKR) has determined the definition was not intended to include the codend (NPFMC 2023). At the time of implementing the definition of pelagic trawl gear that remains in place today, the definition of codend at 50 CFR 600.10 (meaning the terminal, closed end of a trawl net*)* did not exist. The definition of codend was later added to 50 CFR 600.10 in 1996 (61 FR 32538, June 24, 1996). This 1996 final rule consolidated nine CFR parts into one part that contains general provisions under the Magnuson Fishery Conservation and Management Act (Magnuson Act) as they apply to the operation of Regional Fishery Management Councils and the management of foreign and domestic fishing in the U.S. Exclusive Economic Zone (EEZ). The nine parts consolidated by this rule largely applied to foreign fishing and were not intended to modify Alaska fishery operations. In the final rule published June 24, 1996, NMFS added the current definition of a codend as defined at 50 CFR 600.10 (61 FR 32538, June 24, 1996). This was a change from the proposed regulations (61 FR 19390, May 1, 1996) and was added without specific explanation as to why the term needed to be defined and was not identified to be a substantive change that would impact fishing operations.

Overall, the 1996 rule was only intended to make changes to fishing operations in the specific situations identified in the preamble to the proposed rule (61 FR 19390, May 1, 1996), and neither the proposed rule nor the final rule identified any substantive changes to fishing gear regulations. **Therefore, NMFS did not intend this change in the regulations to modify fishing operations but intended it as a clarification.** This is supported by an analysis by NMFS (1994) regarding codend mesh sizes, after the implementation of the current pelagic trawl definition, where it was stated, "*At the present time, groundfish regulations governing the North Pacific trawl fisheries do not require a minimum mesh size or a specified design for codends*." (NPFMC 2023).

Within the definition of authorized fishing gear at § 679.2, paragraph (18), trawl gear is defined within authorized fishing gear as a cone or funnel-shaped net that is towed through the water by one or more vessels. For purposes of this part, this definition includes, but is not limited to, beam trawls (trawl with a fixed net opening utilizing a wood or metal beam), otter trawls (trawl with a net opening controlled by devices commonly called otter doors), and pair trawls (trawl dragged between two vessels) and is further described as pelagic or nonpelagic trawl. The council could consider exempting the codend from this definition for the regulation to be consistent with NMFS' interpretation of the history of the existing gear definitions. See section 6 for NMFS's recommended regulatory changes clarifying that codend design is not limited by the current definitions for trawl gear.

3.2 Overlapping and Related Regulations

The regulatory definition of a pelagic trawl net varies across jurisdictional boundaries pertaining to state and federal waters off Alaska (5 AAC 39.105 10 C (ADF&G 2023)). Vessels regularly participate in Federal and state water trawl fisheries and therefore have to comply with different sets of regulatory restrictions depending on the area of operation. This added complexity can create confusion for fishermen and could contribute to non-compliance. The pelagic trawl gear definition is listed in Table 3-1for jurisdictions with potential for crossover vessel participation (Alaska pollock fishery in Alaska Federal and state waters, Pacific whiting fishery within the West coast federal waters).

Table 3-1 Pelagic trawl gear definitions by region

Regulatory Body	Pelagic Trawl Definition
Fisheries of the Exclusive Economic Zone off Alaska (50 CFR 679.2)	Pelagic trawl gear means a trawl that: (i) Has no discs, bobbins, or rollers; (ii) Has no chafe protection gear attached to the footrope or fishing line; (iii) Except for the small mesh allowed under paragraph (14)(ix) of this definition: (A) Has no mesh tied to the fishing line, headrope, and breast lines with less than 20 inches (50.8 cm) between knots and has no stretched mesh size of less than 60 inches (152.4 cm) aft from all points on the fishing line, headrope, and breast lines and extending passed the fishing circle for a distance equal to or greater than one half the vessel's LOA; or (B) Has no parallel lines spaced closer than 64 inches (162.6 cm) from all points on the fishing line, headrope, and breast lines and extending aft to a section of mesh, with no stretched mesh size of less than 60 inches (152.4 cm) extending aft for a distance equal to or greater than one-half the vessel's LOA; (iv) Has no stretched mesh size less than 15 inches (38.1 cm) aft of the mesh described in paragraph (14)(iii) of this definition for a distance equal to or greater than one-half the vessel's LOA; (v) Contains no configuration intended to reduce the stretched mesh sizes described in paragraphs (14)(iii) and (iv) of this definition; (vi) Has no flotation other than floats capable of providing up to 200 lb (90.7 kg) of buoyancy to accommodate the use of a net-sounder device; (vii) Has no more than one fishing line and one footrope for a total of no more than two weighted lines on the bottom of the trawl between the wing tip and the fishing circle; (viii) Has no metallic component except for connectors (e.g., hammerlocks or swivels) or a net-sounder device aft of the fishing circle and forward of any mesh greater than 5.5 inches (14.0 cm) stretched measure; (ix) May have small mesh within 32 ft (9.8 m) of the center of the headrope as needed for attaching instrumentation (e.g., net-sounder device); and (x) May have weights on the wing tips.
Alaska State Waters (5 AAC 39.105(10)(C))	A pelagic trawl is a trawl where the net, or the trawl doors or other trawl-spreading device, do not operate in contact with the seabed, and which does not have attached to it any protective device, such as chafing gear, rollers, or bobbins, that would make it suitable for fishing in contact with the seabed;
Fisheries off West Coast States (50 CFR 660.11)	Midwater (pelagic or off-bottom) trawl means a trawl in which the otter boards and footrope of the net remain above the seabed. It includes pair trawls if fished in midwater. A midwater trawl has no rollers or bobbins on any part of the net or its component wires, ropes, and chains. For additional midwater trawl gear requirements and restrictions, see § 660.130(b), subpart D. Subpart D (2) Midwater trawl gear must have unprotected footropes at the trawl mouth, and must not have rollers, bobbins, tires, wheels, rubber discs, or any similar device anywhere on any part of the net. The footrope of midwater gear may not be enlarged by encircling it with chains or by any other means. Ropes or lines running parallel to the footrope of midwater trawl gear must be bare and may not be suspended with chains or any other materials. Sweep lines, including the bottom leg of the bridle, must be bare. For at least 20 ft (6.15 m) immediately behind the footrope or headrope, bare ropes or mesh of 16-inch (40.6-cm) minimum mesh size must completely encircle the net.

3.3 Outdated Regulations

Paragraph (iii)(B) of the definition of pelagic trawl gear states that pelagic trawl gear has no parallel lines spaced closer than 64 inches (162.6 cm) from all points on the fishing line, headrope, and breast lines and extending aft to a section of mesh, with no stretched mesh size of less than 60 inches (152.4 cm) extending aft for a distance equal to or greater than one-half the vessel's LOA. Based on recent inspections and discussions with industry by OLE, this gear variation known as “rope trawls” has been phased out of the fishery. Thus, the regulation may be obsolete for the modern fleet and could be removed.

3.4 Pelagic Trawl Gear Innovation

As a general rule, the more prescriptive the regulatory gear definition is, the less innovation is possible. The current definition of pelagic trawl gear is prescriptive to the extent that it prohibits the use of various components in pelagic trawl gear to achieve specific management objectives. In discussions between industry participants and NMFS, the following subparagraphs of the pelagic trawl gear definition at § 679.2 were identified as potentially limiting gear innovation:

- (14)(i) *Has no discs, bobbins, or roller*s;
- (14)(vi) *Has no flotation other than floats capable of providing up to 200 lb (90.7 kg) of buoyancy to accommodate the use of a net-sounder device*; and
- (14)(viii) *Has no metallic component except for connectors (e.g., hammerlocks or swivels) or a net-sounder device aft of the fishing circle and forward of any mesh greater than 5.5 inches (14.0 cm) stretched measure*.

Paragraph (14)(i) could be limiting innovation in footrope designs.
Paragraph (14)(vi) could inhibit innovative use of flotation that could be used in potential features that may reduce bycatch, improve fishing efficiency, or keep pelagic trawl gear from contacting the seafloor.
Paragraph 14(viii) can be confusing to interpret and limits metal components (other than connectors)

3.4.1 Exempted Fishing Permits and Bycatch Innovations

Trawl gear innovations can be driven by many reasons, including a need to reduce bycatch. Exempted Fishing Permits (EFPs) issued in support of halibut and salmon excluder development within Alaskan trawl fisheries exemplify the need for regulatory flexibility in support of net innovations to reduce bycatch. To date, two halibut excluder devices have been tested under two EFPs within nonpelagic trawl gear, while six EFPs have been issued in support of developing effective salmon bycatch reduction devices within pelagic trawl nets beginning in 2003 and as recently as 2021. The most recent halibut excluder utilizes water kites to maintain shape and function, while salmon excluder designs utilize floats to maintain exit openings. All excluder devices were designed within the intermediate section of the trawl net or just ahead of the codend.

3.4.2 Allowing for Pelagic Trawl Gear Innovation

The Council motion in June 2023 called to identify revisions to the pelagic trawl gear definition to allow pelagic trawl gear innovation. Net innovations can be driven by a number of factors including the ability to catch more fish, improve hydrodynamics (less drag) or fishing efficiency, and to reduce bycatch. Increased mesh size and spacing used at the forward portion of pelagic trawl gear was initially implemented by industry for hydrodynamic benefits, yet according to historical joint venture data, has the added benefit of minimizing halibut and crab bycatch - likely because animals are able to escape the pelagic trawl through the large meshes upon passing over the foot rope (NMFS 1990). Forward mesh size has generally become larger over time, with improved hydrodynamics allowing for larger nets resulting in

larger catches. As of a 2001 estimate, individual forward meshes at the wing end were found to be as large as 42.6-ft (13-m) (Northern Economics, Inc. and EDAW, Inc. 2001). Forward meshes of the same gear type eleven years later were found to be as large as 210-ft (64-m), almost 5 times larger (NPFMC 2012). Since 2001, bycatch innovations to trawl nets have included design and testing of salmon excluder devices (Yochum et al. 2021). Net design can further vary depending on vessel horsepower, vessel length, and even fishing location. Thus, net design, shape, and length can vary depending on many factors - even within one fishery. Several sections of the pelagic trawl gear definition stand out, however, that could be amended to allow for innovation among the pelagic trawl fleet.

Flotation

The current pelagic trawl gear definition at § 679.2 allows no flotation other than floats capable of providing up to 200 lb (90.7 kg) of buoyancy to accommodate the use of a net-sounder device, and as currently interpreted alongside 50 CFR 600.10, applies to the entire net, including the codend. If the codend is addressed explicitly within the definition of trawl gear at paragraph (18) of the definition of authorized fishing gear, as described above (Section 3.1), then paragraph (vi) of the definition of pelagic trawl gear could be amended to specifically allow for flotation within excluder devices. Salmon excluder devices vary in design, and floats can be useful, or even necessary, to improve effectiveness of salmon excluders. Inshore cooperatives, CDQ groups, AFA catcher processor entities and entities representing the AFA mothership sector participate in salmon bycatch incentive plan agreements (IPA) within the BS pollock fishery (§ 679.21(f)(12)), with requirements of utilizing salmon excluder devices, with recognition of contingencies, from January 20 to March 31, and from September 1 until the end of the B season (§ 679.21(f)(12)(iii)(E)(*11*)). The current pelagic trawl definition does not specify exemptions for any bycatch reduction devices containing floats, which would benefit bycatch innovations now and into the future. In the forward section of trawls, floats in the headline have historically been used to prevent headrope and footrope fowling during deployment (Amos 1980), but can also used in bottom trawls to maintain the net opening when towed at lower speeds. Net innovations involving floats in the forward net components would not thwart the ability of pelagic trawls to allow for escapement of crabs and halibut (C. Rose, personal communication, Fishnext Research llc., Founder and Principal Scientist, January 9, 2024). However, inclusion of floats within pelagic trawl headropes would increase uncertainty in differentiating the gear type from nonpelagic trawls.

Metallic components

The Council could also consider clarifying paragraph (14)(viii) of the definition of pelagic trawl gear or discussing the necessity to restrict metal components within pelagic trawl gear for today's fleet to meet management objectives. Paragraph(14)(viii))prohibits the use of metallic components, except for connectors (e.g., hammerlocks or swivels) or a net-sounder device aft of the fishing circle and forward of any mesh greater than 5.5 inches (14.0-cm) stretched measure. This paragraph can be confusing to interpret, and may be outdated due to updated management structures put into place since 1993. This clause was included in the regulations soon after the pelagic trawl definition was implemented in 1990 to discourage a loophole: A small subset of fishermen would weigh down trawl bellies (bottom front panels of the net) with various metal components to fish more effectively on bottom, resulting in higher bycatch of benthic dwelling species including halibut and crab (C. Rose, personal communication, Fishnext Research llc., Founder and Principal Scientist, December 18, 2023). When phased out by the current definition implemented in 1993, bycatch rates of bottom dwelling species dropped in turn. Chains can be utilized to stiffen the net for ease of deployment, and to strengthen codend mesh to protect the crew's safety during haul back. For chains used on a codend, if a chain were to break during haul back and dumping of the catch on deck, there would be little stretching beforehand, as opposed to a dangerous whiplash effect that could occur with polyester, nylon, or other synthetic material. The current language allows the use of metallic connectors anywhere on a pelagic trawl net. Metallic components are also generally allowed on the codend, because codends used with pelagic trawl nets typically have mesh 5.5

inches or smaller. However, paragraph (14)(viii) could be mistakenly interpreted alongside other sections of the definition pertaining to metal or weights, including paragraph (vii) which prohibits the use of more than one fishing line and one footrope for a total of no more than two weighted lines on the bottom of the trawl between the wing tip and the fishing circle;and paragraph (x) which specifically authorizes the use of weights on the wing tips" to mean that the only metallic components allowed within pelagic trawl gear are the two weighted lines, clump weights, and metal connectors aft of the fishing circle and forward of any mesh greater than 5.5-in. **If the codend is addressed explicitly as previously described above (Section 3.1), then clarification to paragraph (14)(viii) of the definition of pelagic trawl gear could be a useful change to clarify and affirmatively allow for metallic components (connectors) to be used as part of routine net repairs in parts of the net with larger mesh.** This could eliminate any confusion about use of connectors. Additionally, the Council could consider if the use of metallic components needs to be prohibited in any portion of the trawl net.

Seafloor impacts

An additional factor that could be a driver for trawl gear innovation is to minimize impacts of contact with the seafloor. The Council and NMFS have long been concerned with the potential impacts of trawl gear on benthic habitats. This is demonstrated by the various area restrictions that have been implemented to protect sensitive habitats from the impacts of nonpelagic trawl gear and the performance standards that have been implemented with the intention of limiting, but not eliminating contact with the seafloor by pelagic trawl gear (see Section 5.5 § 679.22 Closures for more information). Additionally, because the common understanding of the term "pelagic" can create a misunderstanding about the regulatory limitations on its use, the Council could consider changing the term "pelagic trawl" to "semi-pelagic trawl" or some other term of its choosing, if bottom contact continues to be permissible for the gear type, as this would more accurately depict permissible uses of the gear type.

The Council monitors the impacts of fishing gear on benthic essential fish habitat (EFH) as a component of the EFH 5-year Reviews, most recently for the 2023 EFH 5-year Review (Harrington et al. In prep). The EFH regulations base the evaluation of the adverse effects of fishing regulated under FMPs on EFH on a 'more than minimal and not temporary' standard (50 CFR 600.815(a)(2)). The effects of fishing on habitat depend on the intensity of fishing, the distribution of fishing with different gears across habitats, and the sensitivity and recovery rates of specific habitat features. During the 2023 EFH 5-year Review, the fishing effects evaluation modeled habitat disturbance from bottom contact by fishing gear from federally managed fisheries (Zaleski et al. In prep) using a model developed by Alaska Pacific University (APU) in collaboration with NMFS (Smeltz et al. 2019). Gear parameters were included in the model to incorporate the nominal width and bottom contact adjustments for different gear types, including pelagic trawl gear (Appendix 2, Zaleski et al. In prep). Model results representing the estimated disturbance of species core EFH areas were provided to stock authors to compare with life history parameters. If significant correlations were found, stock authors could elevate the species for mitigation measures, however no stock authors concluded that fishing effects on their species were more than minimal and not temporary during this 5-year Review cycle. Outside of the scope of the EFH 5-year Reviews, the fishing effects model results or intermediate data products were also used in recent Council analyses for red king crab (NPFMC 2022a, NPFMC 2022b), snow crab (NPFMC 2022c), and as an ecosystem indicator in Ecosystem Status Reports (e.g. Siddon 2023). The model uses a contact adjustment of 20 to 60% seafloor contact for Bering Sea pelagic trawl catcher vessels, 70 to 90% for BS pelagic trawl catcher/processors in the A season (January to April), and 80 to 100% for BS pelagic trawl CPs in the B season (June to October) (Appendix 2, Zaleski et al. In prep).

While bottom contact does occur with pelagic trawl gear, to date and to staff knowledge, little research has focused specifically on pelagic trawl gear (as defined in § 679.2) impacts on unobserved mortality of benthic species, footrope innovations, or seabed impacts. However, current ongoing research at APU could provide useful data in the coming years (see section 2.2). Two relevant research projects have 1)

analyzed methods to quantify seafloor-footrope contact for pelagic trawls, and 2) analyzed modified footropes by utilizing more buoyant material and bobbins to reduce pelagic trawl seabed impacts, but not under real fishing conditions (King et al. 2022; Zagorski 2016). The requirement that pelagic trawl gear have "*no discs, bobbins, or rollers*" is a distinguishing feature between pelagic and nonpelagic trawls, and was implemented as a deterrent to operating fishing nets along the seabed. If negative impacts such as unobserved mortality of crab is occurring from bottom contact of pelagic trawls, we can infer general lessons from research associated with nonpelagic gear.

Research with bottom trawls has shown that modifying footropes to remain off-bottom reduces habitat disturbances and unobserved mortality of benthic species (Smeltzet al. 2019; Hammond et al. 2013). Specifically, injuries and mortality rates have been found to be highest for crab encountering the bottom trawl footrope wings and center (Rose et al. 2013). Thus, seabed contact by pelagic trawl footropes may be cause for concern. Allowing for innovations to keep the footrope above the seafloor could reduce unobserved mortality and negate seabed interactions. Of note, in 1990, the Secretary of Commerce implemented an earlier pelagic trawl definition with one exception - prohibiting the use of rollers, discs, or bobbins in the gear type - based on the premise that fishermen would not use these devices with large-meshed pelagic trawls anyways, because such devices tangle with the trawl when it is hauled back on the vessel (NMFS, 1990). Technology and materials have advanced since then, and the Council should consider modifying the definition to allow for gear innovation to minimize bottom contact due to concerns with impact on the seafloor and unobserved mortality of commercially important species, such as crab. However, the presence or absence of discs, bobbins, or rollers is one of the defining differentiations between pelagic and nonpelagic gear for fisheries law enforcement, and trade offs for downstream regulations, vessel compliance, and enforcement methods would need to be analyzed. Moreover, research is needed to better understand impacts of pelagic trawl gear on benthic habitats and species - specifically unobserved mortality of crab - under real fishing conditions.

4 Enforcement Concerns

OLE conducted an operation in 2023 to inspect trawl gear used by vessels that reported pelagic trawl gear fishing activity and subsequently detected a large number of potential violations. Inspectors noted nonpelagic features in the codends, primarily large numbers of floats. Because the presence of a single nonpelagic feature in the codend indicated a violation (i.e., fishing in an area closed to nonpelagic trawl gear), OLE did not need to have the vessel unfurl its trawl net further, thus minimizing the disruption to the vessel and OLE time and resources. When OLE operations commenced in 2023, OLE and the USCG were in agreement that the codend was a regulated portion of a pelagic trawl based on the plain text of the regulations at § 679.2 and 50 CFR § 600.10. NMFS AKR came to a different conclusion. AKR concluded that NMFS did not intend that the codend be included as part of the pelagic trawl gear definition in part § 679.2 and presented this information to the Council at its June 2023 meeting as part of the C4 Agenda item. At that meeting, the Council affirmed that the Council's intent that the codend design is not intended to be limited by the current definition of pelagic trawl gear and nonpelagic trawl gear, and highlighted other elements for examination.

Any definition that is subject to differing interpretation presents a significant issue for enforcement. This is particularly true in the case of the definition of pelagic trawl gear, as over 50% of the Exclusive Economic Zone (EEZ) managed by the NPFMC is closed to the use of nonpelagic trawl gear. OLE's perspective is that the current regulatory definitions of pelagic trawl gear and nonpelagic trawl gear are enforceable because the features of the trawl net are observable upon inspection.

NPFMC Enforcement Committee Precepts advocate for gear restrictions that can be enforced by at-sea boardings, dockside inspections, observer reports, aerial patrols and electronic monitoring technologies that are actionable in real time to maintain a fair fishery and stop unlawful conduct as it occurs. At-sea inspections are the optimal means of detecting the use of nonpelagic trawl in waters closed to the gear type in real time. For vessels not required to maintain a logbook or an EM system, at-sea inspections are the most viable means of detecting violations when an observer is not aboard. EM provides a secondary means to document violations but, due to the current limits of the technology and the number of boats participating in the program, should serve as a backup to a robust at-sea inspection regime.

A number of closures in the Alaska EEZ prohibit fishing with trawl gear other than directed fishing for pollock with pelagic trawl. Enforcement of these prohibitions not only requires an inspection to determine which gear type is being used, but also an assessment of the catch retained aboard the vessel to determine what species the vessel is directed fishing for. Determining what species a vessel is directed fishing for involves calculating the maximum retainable amount of a species based on the total weight of those species retained that are open to directed fishing. A vessel may be directed fishing for several species simultaneously, and may be simultaneously engaged in lawful and illegal fishing depending on the status of fishery for each retained species. Though enforceable, the need to address multiple elements to determine if a violation of a closed area has occurred greatly complicates enforcement for patrolling assets.

In the process of considering potential changes to the definition of pelagic and nonpelagic trawl gear, OLE recommends the Council carefully consider the Enforcement Precepts jointly developed by OLE, U.S. Coast Guard, and the State of Alaska through the NPFMC Enforcement Committee (NPFMC 2015). Additionally, Section 4.4 of the Enforcement Precepts describes the advantages and disadvantages of closed areas as a management tool and includes the following recommendations to improve enforceability of closed areas.

To apply these enforcement recommendations to the current area closures, changes to existing regulations would be necessary to implement enforcement recommendations to limit exceptions, grandfathering, and prohibit possession of fishing gear in areas where its use is prohibited. In contrast to the Enforcement precepts, several area closures in the NPFMC region couple a trawl gear prohibition with a directed fishing standard (i.e. directed fishing of BSAI pollock with NPT - § 679.24(b)(4)), or an exemption (i.e. exempt directed fishing of pollock with PTR - § 679.22(b)(3)). If Council revises the pelagic trawl gear definition, this likewise impacts the nonpelagic trawl definition, which simply “means a trawl other than a pelagic trawl.”

Table 4-1 Pelagic trawl gear restrictions and means of detections available to OLE

Feature	Common Use	Sea	Air	EM
Discs, bobbins, or rollers	Protection from bottom contact; Bycatch reduction; Aggregation of bottom fish *(sweeps)*	X	X**	X
Chafe protection gear attached to the footrope or fishing line	Protection from bottom contact	X	X**	X
Mesh tied to the fishing line, headrope, and breast lines with less than 20" between knots **Requires measurements*	Bycatch reduction; Hydrodynamics	X		
Stretched mesh sizes **Requires measurements with gauge*	Bycatch reduction; Hydrodynamics	X		
Parallel lines spaced closer than 64" from all points on the fishing line, headrope, and breast lines **Requires measurements*	Aggregation of bottom fish *(includes tickler chains)*, sink trawl to depth	X		
Configuration intended to reduce required stretched mesh sizes	Non-compliance with mesh size requirements	X	X***	X***
Flotation other than floats capable of providing up to 200 lb of buoyancy to accommodate the use of a net-sounder device;	Maintain net shape/opening at slow speeds	X	X	X
Weighted lines on the bottom of the trawl between the wing tip and fishing circle	Aggregation of bottom fish *(includes tickler chains)*; Maintain net shape/opening; Sink trawl to depth	X	X**	X
Metallic components aft of fishing circle and forward of 5.5" mesh **Requires measurements*	Maintain net shape/opening at slow speeds; Sink trawl to depth	X		

**Observable by aircraft primarily when setting/hauling gear.
***Observable only if such configurations have been previously documented, otherwise would require measurement

5 Use throughout the Regulations

When considering a change to the definition of pelagic trawl gear, there may be implications because of downstream regulations that must be considered. Numerous regulations within part 679 have built upon the pelagic and nonpelagic trawl definitions as a foundation for subsequent management measures. These regulations pertain to various topics including directed fishing allowances, area and gear closures, bycatch and prohibited species catch (PSC) limits, and recordkeeping and reporting requirements. The following section summarizes references to pelagic or nonpelagic trawl gear definitions throughout part 679.

5.1 § 679.2 Definitions

Several components of the definition of authorized fishing gear use the terms pelagic trawl gear and nonpelagic trawl gear. These include:

Authorized fishing gear (see also § 679.24 for gear limitations and table 15 to this part for gear codes) means trawl gear, fixed gear, longline gear, pot gear, and nontrawl gear as follows:

- ***Bottom contact gear*** means nonpelagic trawl, dredge, dinglebar, pot, or hook-and-line gear.
- ***Mobile bottom contact gear*** means nonpelagic trawl, dredge, or dinglebar gear.
- ***Nonpelagic trawl*** means a trawl other than a pelagic trawl.
- ***Pelagic trawl gear*** means a trawl that:

  (i) Has no discs, bobbins, or rollers;

  (ii) Has no chafe protection gear attached to the footrope or fishing line;

  (iii) Except for the small mesh allowed under paragraph (14)(ix) of this definition:

  (A) Has no mesh tied to the fishing line, headrope, and breast lines with less than 20 inches (50.8 cm) between knots and has no stretched mesh size of less than 60 inches (152.4 cm) aft from all points on the fishing line, headrope, and breast lines and extending passed the fishing circle for a distance equal to or greater than one half the vessel's LOA; or

  (B) Has no parallel lines spaced closer than 64 inches (162.6 cm) from all points on the fishing line, headrope, and breast lines and extending aft to a section of mesh, with no stretched mesh size of less than 60 inches (152.4 cm) extending aft for a distance equal to or greater than one-half the vessel's LOA;

  (iv) Has no stretched mesh size less than 15 inches (38.1 cm) aft of the mesh described in paragraph (14)(iii) of this definition for a distance equal to or greater than one-half the vessel's LOA;

  (v) Contains no configuration intended to reduce the stretched mesh sizes described in paragraphs (14)(iii) and (iv) of this definition;

  (vi) Has no flotation other than floats capable of providing up to 200 lb (90.7 kg) of buoyancy to accommodate the use of a net-sounder device;

  (vii) Has no more than one fishing line and one footrope for a total of no more than two weighted lines on the bottom of the trawl between the wing tip and the fishing circle;

  (viii) Has no metallic component except for connectors (e.g., hammerlocks or swivels) or a net-sounder device aft of the fishing circle and forward of any mesh greater than 5.5 inches (14.0 cm) stretched measure;

(ix) May have small mesh within 32 ft (9.8 m) of the center of the headrope as needed for attaching instrumentation (e.g., net-sounder device); and

(x) May have weights on the wing tips.

- ***Trawl gear*** means a cone or funnel-shaped net that is towed through the water by one or more vessels. For purposes of this part, this definition includes, but is not limited to, beam trawls (trawl with a fixed net opening utilizing a wood or metal beam), otter trawls (trawl with a net opening controlled by devices commonly called otter doors), and pair trawls (trawl dragged between two vessels) and is further described as pelagic or nonpelagic trawl.

Directed fishing for flatfish in the Bering Sea subarea and Central GOA Regulatory Area:

- ***With respect to the harvest of flatfish in the Bering Sea subarea,*** for purposes of nonpelagic trawl restrictions under § 679.22(a) and modified nonpelagic trawl gear requirements under §§ 679.7(c)(5) and 679.24(f), fishing with nonpelagic trawl gear during any fishing trip that results in a retained aggregate amount of yellowfin sole, rock sole, Greenland turbot, arrowtooth flounder, flathead sole, Alaska plaice, and other flatfish that is greater than the retained amount of any other fishery category defined under § 679.21(b)(1)(ii) or of sablefish.
- ***With respect to the harvest of flatfish in the Central GOA Regulatory Area,*** for purposes of modified nonpelagic trawl gear requirements under §§ 679.7(b)(9) and 679.24(f), fishing with nonpelagic trawl gear during any fishing trip that results in a retained aggregate amount of shallow-water flatfish, deep-water flatfish, rex sole, arrowtooth flounder, and flathead sole that is greater than the retained amount of any other trawl fishery category as defined at § 679.21(d)(3)(iii).
- ***Federally permitted vessel*** means a vessel that is named on either a Federal fisheries permit issued pursuant to § 679.4(b) or on a Federal crab vessel permit issued pursuant to § 680.4(k) of this chapter. Federally permitted vessels must conform to regulatory requirements for purposes of fishing restrictions in habitat conservation areas, habitat conservation zones, habitat protection areas, and the Modified Gear Trawl Zone; for purposes of anchoring prohibitions in habitat protection areas; for purposes of requirements for the BS and GOA nonpelagic trawl fishery pursuant to § 679.7(b)(9), § 679.7(c)(5), and § 679.24(f); and for purposes of VMS requirements.
- **Marmot Bay Tanner Crab Protection Area** means a habitat protection area of the Gulf of Alaska specified in Figure 5 to this part that is closed to directed fishing for groundfish with trawl gear, except directed fishing for pollock by vessels using pelagic trawl gear.
- **Modified Gear Trawl Zone** means an area of the Bering Sea subarea specified at Table 51 to this part that is closed to directed fishing for groundfish with nonpelagic trawl gear, except by vessels using modified nonpelagic trawl gear meeting the standards at § 679.24(f).

5.2 § 679.5 Recordkeeping and Reporting

Recordkeeping and reporting regulations require the specific type of trawl gear be reported. § 679.5(c)(4)(v)(H) specifies the *trawl gear catcher vessel daily fishing logbook and catcher/processor daily cumulative production logbook* must use separate logsheets for each gear type and indicate whether pelagic trawl or nonpelagic trawl gear was used to harvest the fish.

5.3 § 679.7 Prohibitions

Prohibitions that use the definition of pelagic trawl or nonpelagic trawl include the trawl gear performance standard, imposing VMS requirements, and imposing nonpelagic gear modification requirements for vessels directed fishing for flatfish in the GOA or BSAI:

§ ***679.7(a)(14)*** **Trawl gear performance standard:**

- ***BSAI.*** Use a vessel to participate in a directed fishery for pollock using trawl gear and have on board the vessel, at any particular time, 20 or more crabs of any species that have a carapace width of more than 1.5 inches (38 mm) at the widest dimension.
- ***GOA.*** Use a vessel to participate in a directed fishery for pollock using trawl gear when directed fishing for pollock with nonpelagic trawl gear is closed and have on board the vessel, at any particular time, 20 or more crabs of any species that have a carapace width of more than 1.5 inches (38 mm) at the widest dimension.

§ ***679.7(a)(22)*** ***VMS for nonpelagic trawl and dredge gear vessels in the GOA.*** Operate a federally permitted vessel in the GOA with nonpelagic trawl or dredge gear onboard without an operable VMS and without complying with the requirements at § 679.28(f).

§ ***679.7(b)(9)*** Conduct directed fishing for flatfish, as defined in § 679.2, with a vessel required to be federally permitted in the Central GOA Regulatory Area, as defined in Figure 3 to this part, without meeting the requirements for modified nonpelagic trawl gear specified at § 679.24(f) and illustrated in Figures 25, 26, and 27 to this part.

§ ***679.7(c)(5)*** Conduct directed fishing for flatfish as defined in § 679.2 with a vessel required to be federally permitted in any reporting area of the Bering Sea subarea as described in Figure 1 to this part without meeting the requirements for modified nonpelagic trawl gear specified in § 679.24(f).

5.4 § 679.21 Prohibited Species Bycatch Management

Various regulations pertaining to PSC closures in both the BSAI and GOA reference pelagic or nonpelagic trawl gear:

Halibut in the BSAI and GOA

The BSAI trawl limited access sector halibut PSC limit (745 mt) is apportioned to various trawl fishery categories as specified at § 679.21(b)(1)(ii)(B). These fishery categories are based on the amount of catch or retained species rather than which trawl gear type is used. Subsequent regulations at § 679.21(b)(4)(i)(A) provide an exception to the fishery closure for the Amendment 80 limited access fishery and the BSAI trawl limited access sector to continue directed fishing for pollock with nonpelagic trawl gear.

In the GOA, vessels harvest a variety of species using pelagic and nonpelagic trawl gear. Regulations at § 679.21(d)(6) specifies that if, during the fishing year, the Regional Administrator determines that U.S. fishing vessels participating in either of the trawl fishery categories listed in § 679.21(d)(3)(iii) (A) or (B) will catch the halibut bycatch allowance, or apportionments thereof, specified for that fishery category under § 679.21(d)(1), NMFS will publish notification in the Federal Register closing the entire GOA or the applicable regulatory area or district to directed fishing with trawl gear for each species and/or species group that comprises that fishing category; provided, however, that when the halibut bycatch allowance, or seasonal apportionment thereof, specified for the shallow-water species fishery is reached, fishing for pollock by vessels using pelagic trawl gear may continue, consistent with other provisions of this part.

There is a limited exception to this PSC closure as described at § 679.21(d)(6)(iv) that would allow nonpelagic trawl gear fisheries to continue fishing under specified conditions. When the vessels to which

a halibut PSC limit applies have caught an amount of halibut equal to that PSC, the Regional Administrator may, by notification in the Federal Register, allow some or all of those vessels to continue to fish for groundfish using nonpelagic trawl gear under specified conditions, subject to the other provisions of part 679.

Red King Crab in the BSAI

Regulations at § 679.22 establish the Red King Crab Savings Area (RKCSA) and prohibits directed fishing for groundfish by vessels using trawl gear other than pelagic trawl gear all times, except as provided at § 679.21(e)(3)(ii)(B), in that part of the Bering Sea subarea defined as RKCSA in Figure 11 to part 679.

Regulations at § 679.21(e) specify crab and herring PSC limits for vessels directed fishing for groundfish using trawl gear. Regulations at § 679.21(e)(3)(ii) allow a vessel using nonpelagic trawl gear to operate in the Red King Crab Savings Subarea (RKCSS) if ADF&G had established a guideline harvest level the previous year for the Bristol Bay red king crab fishery and establishes a process for annually specifying an amount of Red king crab bycatch allowed within the RKCSS.

Regulations at § 679.21(e)(7) establish an exception to trawl PSC closures that only closes vessels directed fishing for pollock with nonpelagic trawl gear and allows vessels directed fishing for pollock with pelagic trawl gear to continue to operate.

Similarly, regulations at § 679.21(e)(7)(ii) allow the Regional Administrator to close the RKCSS to directed fishing for groundfish with nonpelagic trawl gear for the remainder of the year if the red king crab PSC limit is reached. This allows vessels using pelagic trawl gear to continue directed fishing for groundfish in the RKCSS.

Pacific Herring

Regulations at § 679.21(e)(7)(vi) establish a process for NMFS to close a portion of the Bering Sea subarea to directed fishing for groundfish with trawl gear if a herring bycatch allowance will be met. Two exceptions are provided in regulations at § 679.21(e)(7)(vi)(B), and one of those allows for vessels using pelagic trawl gear to continue operating in the Herring Savings Areas for the pollock/Atka mackerel/“other species" fishery category if the specified bycatch allowance is met. In this situation, directed fishing for pollock by trawl vessels using nonpelagic trawl gear would be closed.

5.5 § 679.22 Closures

Regulations at § 679.22(a) and (b) require specific types of trawl gear in the Bering Sea, Aleutian Islands and Gulf of Alaska:

Red King Crab Savings Area (RKCSA). Directed fishing for groundfish by vessels using trawl gear other than pelagic trawl gear is prohibited at all times, except as provided at § 679.21(e)(3)(ii)(B), in that part of the Bering Sea subarea defined as RKCSA in Figure 11 to this part.

Alaska Seamount Habitat Protection Areas. No federally permitted vessel may fish with bottom contact gear in the Alaska Seamount Habitat Protection Areas, as described in Table 22 to this part.

Aleutian Islands Coral Habitat Protection Areas. No federally permitted vessel may fish with bottom contact gear in the Aleutian Islands Coral Habitat Protection Areas, as described in Table 23 to this part.

Aleutian Islands Habitat Conservation Area. Except within those areas identified as opened to nonpelagic trawl gear fishing in Table 24 to this part, no federally permitted vessel may fish with nonpelagic trawl gear in the Aleutian Islands Habitat Conservation Area, as described in Table 24 to this part.

Bowers Ridge Habitat Conservation Zone. No federally permitted vessel may fish with mobile bottom contact gear in the Bowers Ridge Habitat Conservation Zone, as described in Table 25 to this part.

Bering Sea Habitat Conservation Area. No federally permitted vessel may fish with nonpelagic trawl gear in the Bering Sea Habitat Conservation Area specified at Table 42 and Figure 16 to this part.

Northern Bering Sea Research Area. No federally permitted vessel may fish with nonpelagic trawl gear in the Northern Bering Sea Research Area specified at Table 43 and Figure 17 to this part.

Nunivak Island, Etolin Strait, and Kuskokwim Bay Habitat Conservation Area. No federally permitted vessel may fish with nonpelagic trawl gear in the Nunivak Island, Etolin Strait, and Kuskokwim Bay Habitat Conservation Area specified at Table 44 and Figure 21 to this part.

St. Lawrence Island Habitat Conservation Area. No federally permitted vessel may fish with nonpelagic trawl gear in the St. Lawrence Island Habitat Conservation Area specified at Table 45 to this part.

St. Matthew Island Habitat Conservation Area. No federally permitted vessel may fish with nonpelagic trawl gear in the St. Matthew Island Habitat Conservation Area specified at Table 46 to this part.

Modified Gear Trawl Zone. No vessel required to be federally permitted may fish with nonpelagic trawl gear in the Modified Gear Trawl Zone specified at Table 51 to this part, except for federally permitted vessels that are directed fishing for groundfish using modified nonpelagic trawl gear that meets the standards at § 679.24(f).

Kodiak Island, trawls other than pelagic trawls —

- ***Type I closures.*** No person may trawl in waters of the EEZ within the vicinity of Kodiak Island, as shown in Figure 5 to this part as Type I areas, from a vessel having any trawl other than a pelagic trawl either attached or on board.

- ***Type II closures.*** From February 15 to June 15, no person may trawl in waters of the EEZ within the vicinity of Kodiak Island, as shown in Figure 5 to this part as Type II areas, from a vessel having any trawl other than a pelagic trawl either attached or on board.

Marmot Bay Tanner Crab Protection Area. No federally permitted vessel may fish with trawl gear in the Marmot Bay Tanner Crab Protection Area, as described in Figure 5 to this part, except federally permitted vessels directed fishing for pollock using pelagic trawl gear.

Cook Inlet. No person may use a nonpelagic trawl in waters of the EEZ of Cook Inlet north of a line from Cape Douglas (58°51.10′ N. lat.) to Point Adam (59°15.27′ N. lat.).

Gulf of Alaska Coral Habitat Protection Areas. No federally permitted vessel may fish with bottom contact gear in the Gulf of Alaska Coral Habitat Protection Areas, as described in Table 26 to this part.

Gulf of Alaska Slope Habitat Conservation Areas. No federally permitted vessel may fish with nonpelagic trawl gear in the Gulf of Alaska Slope Habitat Conservation Areas, as described in Table 27 to this part.

Several regulations involving area closures (Alaska Seamount Habitat Protection Areas, Aleutian Islands Coral Habitat Protection Areas, Bower's Ridge Habitat Conservation Zone, Gulf of Alaska Coral Habitat Protection Areas) rely upon the mobile bottom contact gear and bottom contact gear definitions, which are in turn based upon the pelagic and nonpelagic gear definitions.

5.6 § 679.24 Gear Limitations

Trawl footrope. No person trawling in any GOA area limited to pelagic trawling under § 679.22 may allow the footrope of that trawl to be in contact with the seabed for more than 10 percent of the period of any tow.

BSAI pollock nonpelagic trawl prohibition. No person may use nonpelagic trawl gear to engage in directed fishing for pollock in the BSAI.

Modified nonpelagic trawl gear. Nonpelagic trawl gear modified as shown in Figure 26 to this part must be used by any vessel required to be federally permitted and that is used to directed fish for flatfish, as defined in § 679.2, in any reporting area of the BS or in the Central GOA Regulatory Area or directed fish for groundfish with nonpelagic trawl gear in the Modified Trawl Gear Zone specified in Table 51 to this part. Nonpelagic trawl gear used by these vessels must meet standards related to elevated section minimum clearance, elevating device spacing, and clearance measurements and line cross sections.

Regulations at § 679.24(d) specify a gear test areas**.** For purposes of allowing pelagic and nonpelagic trawl fishermen to test trawl fishing gear, NMFS may establish, after consulting with the Council, locations for the testing of trawl fishing gear in areas that would otherwise be closed to trawling.

5.7 § 679.28 Equipment and Operational Requirements

Vessel Monitoring System (VMS) requirements are specified at § 679.28(f) and require that a vessel's VMS system must be transmitting if you operate a vessel required to be Federally permitted with nonpelagic trawl or dredge gear onboard in reporting areas located in the GOA or operate a federally permitted vessel with nonpelagic trawl or dredge gear onboard in adjacent State waters;

5.8 § 679.55 Observer Fees

Regulations at § 679.55(d) specify the determination and use of standard ex-vessel prices for the purpose of calculating observer fees. Gear categories for groundfish standard ex-vessel prices are: Pelagic trawl gear, nonpelagic trawl gear, and non-trawl gear.

6 Summary and Recommendations

NMFS believes the codend was never meant to be included within the restrictive definition of pelagic trawl gear, but in lieu of a regulatory change at the national level, portions of the definition within part 679 could be amended to achieve desired results. A basic revision of the trawl gear definition at § 679.2 could increase regulatory compliance by the fleet and exempt the codend from trawl specifications, and revisions within the pelagic trawl gear definition at § 679.2 could allow for pelagic trawl gear innovations. Impacts to downstream regulations, as well as the intended management objectives of the pelagic trawl gear definition, should be considered and weighed when revising or clarifying the current pelagic trawl gear definition.

While differences occur among vessels, pelagic trawl gear variations, and the management of pollock fisheries utilizing pelagic trawl gear within BSAI and GOA vessels and fisheries, NMFS recommends against adopting pelagic trawl gear definitions specific to the GOA or BSAI - consistency in definitions between both areas minimizes any confusion and facilitates enforcement. Recommended changes are as follows:

Recommendations to address the codend and outdated pieces of the definition:

1. Remove paragraph (14)(iii)(B) of the definition of pelagic trawl gear contained within the definition of Authorized fishing gear at § 679.2 that prohibits parallel lines spaced closer than 64 inches (162.6 cm) from all points on the fishing line, headrope, and breast lines and extending aft to a section of mesh, with no stretched mesh size of less than 60 inches (152.4 cm) extending aft for a distance equal to or greater than one-half the vessel's LOA.

This paragraph addresses gear configuration that would be applicable to rope trawls. Based on discussions between analysts, NOAA OLE, and industry participants, rope trawls are obsolete in North Pacific trawl fisheries. The fleet no longer uses specific trawl gear ("rope trawls") where paragraph (14)(iii)(B) would apply. Therefore NMFS recommends removing paragraph (14)(iii)(B) from the definition of pelagic trawl gear as it is obsolete.

2. NMFS recommends revising the definition of Trawl gear to explicitly exclude the definitions of pelagic and nonpelagic trawl gear in § 679.2 from limiting the codend design and could read as follows (new language is shown in **bold and underlined**):

Trawl gear means a cone or funnel-shaped net that is towed through the water by one or more vessels. For purposes of this part, this definition includes, but is not limited to, beam trawls (trawl with a fixed net opening utilizing a wood or metal beam), otter trawls (trawl with a net opening controlled by devices commonly called otter doors), and pair trawls (trawl dragged between two vessels) and is further described as pelagic or nonpelagic trawl. **Definitions of trawl gear within part 679 do not apply to the codend.**

The current definition of ***Trawl gear*** at § 679.2(18) includes a general description of the form and function of a trawl net and adds further specifics for what the term means with regard to regulations contained in part 679. This recommended change would not conflict with existing limitations contained in the pelagic trawl gear definition (or nonpelagic trawl gear definition) applying to the trawl net and would be consistent with NMFS interpretation of the regulatory history of the existing gear definitions. As such, this would be a non-substantive clarification of existing regulations and not a substantive change to fishery management policy or implementing regulations. This revision could further aid in clarifying the use of metallic components and chafe protection gear on the codend.

3. NMFS recommends removing or revising paragraph § 679.2(14)(vi) of the definition of pelagic trawl gear to clearly allow the use of flotation in a codend and excluder devices.

Paragraph (14)(vi) of the definition of pelagic trawl gear prohibits the use of flotation other than floats capable of providing up to 200 lb (90.7 kg) of buoyancy to accommodate the use of a net-sounder device. If the definition of trawl gear is revised to explicitly exclude the codend from the limitations specified in the pelagic trawl gear definition, additional revisions would be needed to specifically allow the use of flotation in salmon excluder devices previously authorized by the Council and implemented in regulations at § 679.21(f)(11) and (13).

If this paragraph were removed or revised, this would clearly allow for flotation to be used in the codend and at any other part of the net including bycatch reduction devices such as certain halibut and salmon excluders. However, depending on the scope of a potential revision or if this paragraph were removed, it would also allow floats within forward components of pelagic trawl nets (ie, headrope). In the case of removing this paragraph, the presence or absence of floats would no longer be a distinguishing characteristic for enforcement in identifying the difference between pelagic and nonpelagic trawl gear.

Recommendations to allow for trawl gear innovation:

4. NMFS recommends the Council clarify its objectives in pursuing regulatory changes that support trawl gear innovation.

Clearly articulating the goals and objectives for potential trawl gear innovations would allow better identification of specific regulatory provisions that may be limiting gear innovation that could achieve the Council's goals. Once specific provisions are identified, an in-depth analysis of the potential impacts of the proposed changes could be completed. The Council and NMFS would need to consider the downstream impacts to the management objectives of the various regulatory provisions that use the current definition of pelagic trawl gear and have been built upon the previous actions. This could be a subsequent action from rulemaking to address NMFS's above recommendations that directly address the problems identified in the current regulations.

As explained in Section 3, analysts have identified the following broad objectives that could be drivers for gear innovation:

- Improving fishing efficiency (e.g. directed fishing selectivity, towing and fuel efficiency);
- minimizing bycatch (e.g. halibut and salmon excluders; species selectivity);
- limiting fishing impacts in specific areas (e.g. habitat protection areas, and gear closure areas).

7 Preparers and Persons Consulted

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8 References

(ADF&G) Alaska Department of Fish & Game. 2023. Commercial Groundfish Statewide Fishing Regulations 2023–2024. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau. 185 pp. https://www.adfg.alaska.gov/static/regulations/fishregulations/pdfs/commercial/cf_groundfish_regs_2023_2024.pdf

(AFSC) Alaska Fisheries Science Center. 2023. 2024 Observer Sampling Manual. Fisheries Monitoring and Analysis Division, North Pacific Groundfish Observer Program. AFSC, 7600 Sand Point Way N.E., Seattle, WA. https://media.fisheries.noaa.gov/2023-12/Observer-Sampling-Manual-2024.pdf

Amos, D. 1980. Single Vessel Midwater Trawling: A Basic Guide to the Theory, Selection and Operation of Single Vessel Midwater Trawls. University of Rhode Island Marine Advisory Service, Narragansett, RI. Marine Bulletin 43. 34 pages. https://repository.library.noaa.gov/view/noaa/43262/noaa_43262_DS1.pdf

Rose, C. Founder and Principal Scientist, Fishnext Research, LLC, Seattle, WA. December 18, 2023. Personal communication with Caleb Taylor, NOAA NMFS, regarding pelagic trawl net definition history in Alaska

Rose, C. Founder and Principal Scientist, Fishnext Research, LLC, Seattle, WA. January 9, 2024. Personal communication with Caleb Taylor, NOAA NMFS, regarding pelagic trawl net definition history in Alaska

Hammond, C. F., Conquest, L. L., and Rose, C. S. 2013. Using reflex action mortality predictors (RAMP) to evaluate if trawl gear modifications reduce the unobserved mortality of Tanner crab (Chionoecetes bairdi) and snow crab (C. opilio). *ICES Journal of Marine Science* 70(7): 1308-1318. DOI: https://doi.org/10.1093/icesjms/fst085

Harrington, G. A., J. L. Pirtle, M. Zaleski, C. Felkley, S. Rheinsmith, and J. Thorson. In prep. Essential Fish Habitat 2023 5-year Review Summary Report. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-f/AKR-31, 135 p.

Harris, B., Smeltz, S., Murphy, R., Sethi, S., & Yahnke, K. in prep. Assessment of pollock trawl-seabed interactions to inform fishery management. Fisheries, Aquatic Science, & Technology (FAST) Laboratory. Alaska Pacific University, Anchorage, AK

King, B., Restrepo, F., Yochum, N., Rose, C., Hollowed, A., Harris, B.P. 2022. Master's Thesis (unpublished portions): Quantifying gear-seafloor contact state along the footrope of a midwater trawl. Fisheries, Aquatic Science, & Technology (FAST) Laboratory. Alaska Pacific University, Anchorage, AK

Northern Economics, Inc. and EDAW, Inc. 2001. Sector and Regional Profiles of the North Pacific Groundfish Fisheries-2001. https://www.npfmc.org/wp-content/PDFdocuments/resources/SectorProfiles/Introduction%20and%20Overview.pdf

(NMFS) National Marine Fisheries Service. 1990. Environmental Assessment/Regulatory Impact Review/Final Regulatory Flexibility Analysis of a Regulatory Amendment Applicable to the Groundfish Fisheries off Alaska: Performance-based Pelagic Trawl Definition and Other Regulatory Amendments. United States, National Marine Fisheries Service, Alaska Regional Office.

NMFS. 1994. Environmental Assessment and Regulatory Impact Review/Final Regulatory Flexibility Analysis for a Proposed Regulatory Amendment to Improve Total Catch Weight Estimates in the Groundfish Fisheries Off Alaska. United States, National Marine Fisheries Service, Alaska Regional Office. https://meetings.npfmc.org/CommentReview/DownloadFile?p=443f017f-397d-40ee-ba016e716e5f9c65.pdf&fileName=D4_GF_Regulatory_Am.pdf

NMFS. 2017. Essential fish habitat 5-year review: Summary report, 2010 through 2015. United

States, National Marine Fisheries Service, Alaska Regional Office. NOAA technical memorandum NMFS F/AKR; 15. DOI: http://doi.org/10.7289/V5/TM-F/AKR-15

NMFS. 2022. American Fisheries Act Program Cost Recovery Report. https://www.fisheries.noaa.gov/s3/2023-02/afa-pollock-cost-recovery-fee-report-2022-akro.pdf

(NPFMC) North Pacific Marine Fishery Management Council. 2012. Fishing Fleet Profiles: Management, Gear, Vessels, Fisheries, Economics. https://www.npfmc.org/wp-content/PDFdocuments/resources/FleetProfiles412.pdf

NPFMC. 2015. Enforcement Considerations for NOAA Fisheries and North Pacific Fishery Management Council. https://www.npfmc.org/wp-content/PDFdocuments/membership/Enforcement/Enforcement_Precepts_1215.pdf

NPFMC. 2022a. Bristol Bay Red King Crab Information: Discussion Paper (April 2022). https://meetings.npfmc.org/CommentReview/DownloadFile?p=7608c5c6-d20a-4b3e-a23a-7fb0754d3f71.pdf&fileName=D1%20BBRKC%20Information%20Paper.pdf

NPFMC. 2022b. Considering a closure to the Red King Crab Savings Area for all gear types. Emergency Rule Request Analysis. https://meetings.npfmc.org/CommentReview/DownloadFile?p=80d47407-c90a-44ca-997a-fcc8c0b7d5cc.pdf&fileName=C1%20Red%20King%20Crab%20Savings%20Area%20Analysis.pdf

NPFMC. 2022c. Draft Environmental Assessment for Proposed Amendment to the Fishery Management Plan for the Bering Sea and Aleutian Islands King and Tanner Crabs: Rebuilding Plan for Eastern Bering Sea Snow Crab Initial Review Analysis. https://meetings.npfmc.org/CommentReview/DownloadFile?p=df63088a-0290-4743-973e-aa9f7ac8b7da.pdf&fileName=Snow%20Crab%20Rebuilding%20Analysis%20.pdf

NPFMC. 2023 (June). Draft Environmental Assessment/Regulatory Impact Review for Proposed Amendment to the Fishery Management Plan for Groundfish of the Bering Sea / Aleutian Islands Management Area: Groundfish Area Closures within the Bristol Bay Red King Crab Stock Assessment Area. https://meetings.npfmc.org/CommentReview/DownloadFile?p=2faac872-c0a4-4a05-93a2-352be833fef1.pdf&fileName=C4%20BBRKC%20Analysis.pdf

Rose, C. S., Hammond, C. F., Stoner, A. W., Munk, J. E., and Gauvin, J. R. 2013. Quantification and reduction of unobserved mortality rates for snow, southern Tanner, and red king crabs (*Chionoecetes opilio*, *C. bairdi*, and *Paralithodes camtschaticus*) after encounters with trawls on the seafloor. https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/2013/rose.pdf

Siddon, E. 2023. Ecosystem Status Report 2023: Eastern Bering Sea, Stock Assessment and Fishery Evaluation Report, North Pacific Fishery Management Council, 1007 West 3rd Ave., Suite 400, Anchorage, Alaska 99501. https://apps-afsc.fisheries.noaa.gov/Plan_Team/2023/EBSecosys.pdf

Smeltz, T. S., Harris, B. P., Olson, J. V., and Sethi, S. A. 2019. A seascape-scale habitat model to support management of fishing impacts on benthic ecosystems. Canadian Journal of Fisheries and Aquatic Sciences, 76(10), 1836-1844. DOI: https://doi.org/10.1139/cjfas-2018-0243

Yochum, N., Stone, M., Breddermann, K., Berejikian, B. A., Gauvin, J. R., and Irvine, D. J. 2021. Evaluating the role of bycatch reduction device design and fish behavior on Pacific salmon (*Oncorhynchus spp.*) escapement rates from a pelagic trawl. Fisheries Research, 236, 105830. https://doi.org/10.1016/j.fishres.2020.105830

Zagorski, S. 2016. Assessment of the benthic impacts of raised groundgear for the eastern Bering Sea pollock fishery. Master's thesis, Alaska Pacific University, Anchorage, AK. 99 pages. https://www.alaskapacific.edu/wp-content/uploads/2019/01/zagorski.pdf

Zaleski, M., T. S. Smeltz, S. Rheinsmith, J. L. Pirtle, and G. A. Harrington. In prep. 2022 Evaluation of the Fishing Effects on Essential Fish Habitat. U.S. Dep. Commer., NOAA Tech. Memo. NMFSF/AKR-29, 205 p.