Trawl Gear Regulation Change Proposals Developed at Trawl Fishery Gear Workshop

The trawl gear regulation workshop was held August 29-30, 2012 in Portland, Oregon. The primary purpose of the workshop was to review the gear restrictions (including area of use) that apply under the Trawl Fishery Rationalization program and discuss the need for such restrictions in the context of that program. The workshop included scoping of various gear restriction alternatives that were recommended by the Trawl Rationalization Regulatory Evaluation Committee (TRREC) at the November 2011 meeting of the Pacific Council. The following recommendations are offered for Council consideration for regulation implementation; they basically condense and refine the TRREC recommendations as they relate to current trawl fishery gear restrictions. A listing of the recommended regulation alternatives contained in the report follows (they are numbered based on the issue that they are intended to address; the issues are explained in the text):

The alternatives within each issue are not mutually exclusive.

Issue 1: Use of Multiple Gears and Expended Area for Midwater Gear

Alternative 1a: Allow expanded use of multiple trawl gear types and midwater trawl on the same trip.

Option: Allow year-round use of mid-water gear within and outside the RCA north of 40° 10' north latitude.

Alternative 1b: Allow use of multiple gear types, midwater trawl and fixed gear types on the same trip.

Issue 2: Trawl Gear Modifications

Alternative 2a: Reduce minimum mesh size for bottom trawl ½ inch to 4 inches.

Alternative 2b: Eliminate the selective flatfish trawl requirement.

Issue 3: Gear movement across management lines

Alternative 3a: Allow individual fishing quota (IFQ) program vessels to move fixed gear across management lines.

Issue 1: Allow Multiple Trawl Gear Types to be Onboard Simultaneously and Used on the Same Trip (Derived from TRREC recommendations 2 and 3): There are two Alternatives under this recommendation: Alternative (1a) :Allows expanded use of multiple trawl gear types and midwater trawl on the same trip. Alternative (1b) : Allows expanded use of

trawl gear types, midwater trawl and fixed gear types on the same trip. These alternatives are explained below.

Alternative 1a: Allow expanded use of multiple trawl gear types and midwater trawl on the same trip.

This option would allow vessels greater flexibility or expanded opportunity to use the various trawl gear types on the same trip [large footrope trawl, small footrope trawl (including selective flatfish trawl), and midwater trawl]. Under this alternative, vessels would be allowed to possess onboard and use all bottom trawl gear types on the same trip, depending on area fished. On midwater trawl trips declared for the RCA, bottom trawl gear onboard possession would be prohibited. Catches made with different bottom trawl types on the same trip would not need to be separated in holding bins or during offload, but existing Federal sorting requirements will still apply. This is because net selectivity differences between the different bottom trawl gear types, with the same minimum mesh size restriction (4 ½ inch between the knots, BK), are believed to be negligible. However trips on which bottom trawl and midwater trawl was used on the same trip, catches by the two gear classes would need to be kept separate in the vessel hold and at time of offloading so separate landing receipts could be made for the respective gear classes. New declarations would be required for the following: possessing bottom trawl and midwater gear onboard on the same trip.

Current trawl regulations define the following trawl gear types: large footrope trawl, small footrope trawl, selective flatfish trawl, and midwater trawl. Selective flatfish trawl is a specific type of small footrope trawl. Restrictions on the use and simultaneous possession for each gear type varies whether fishing north or south of Cape Mendocino (40˚10′N. lat.) or shoreward, seaward or within the RCA. The specific gear restrictions can be found at Section 660.130 (c)(4). The onboard gear type restrictions are shown in Table 1.

Option: Allow year-round use of mid-water gear within and outside the RCA north of 40^{o} 10’ north latitude.

Bottom trawl gear specific fishing area restrictions would continue in effect but midwater trawl gear for any species would be allowed year round in the entire EEZ (currently only allowed during the primary whiting season and for chilipepper south seaward of the RCA); the proposal here would not affect preseason trip limits and whiting season opening dates.

A new declaration would be required for the following: possessing bottom trawl and midwater gear onboard on the same trip; and midwater fishing in the RCA outside the whiting season.

Table 1. Summary of allowable (yes) and non-allowable (no) onboard gear type combinations for limited entry groundfish trawl vessels

	Groundfish Trawl/Other Gear Combinations		Groundfish Trawl Combinations	Bottom Trawl Combinations	
	Groundfish Trawl[a/]		Bottom Trawl[c/]	Small Footrope[d/]	Small Footrope (Other than Selective Flatfish)
	Combined With				
Area/Season	Groundfish Fixed Gear	Non-Groundfish Trawl[b/]	Midwater Trawl	Large Footrope Trawl	Selective Flatfish Trawl
S. 40˚ 10'	No	No	No	No	Yes
N. 40˚ 10' (shoreward)	No	No	No	Yes	No (SFF Only)[e/]
N. 40˚ 10' (seaward)	No	No	No	Yes	Yes

a/ Groundfish trawl includes all of the gears listed in this table except non-groundfish trawl and groundfish fixed gear.
b/ Shrimp, California halibut, sea cucumber, etc.
c/ Bottom trawl includes small footrope trawl (which includes selective flatfish trawl) and large footrope trawl.
d/ Small footrope includes selective flatfish trawl.
e/ Vessels may not fish shore-ward and sea-ward of the RCA on the same trip with small footrope trawl on the same trip.

The above restrictions were important when vessels targeting non-whiting species were managed based on landings and fleet-wide impacts were modeled. Under trawl rationalization, individuals are accountable for their total catch of groundfish and the catches observed on every trip and on every vessel. Thus, such specific onboard gear type prohibitions, generally, no longer appear to be needed.

The use of individual trawl gear type by area allowed under current regulations is summarized in the following:

- Large footrope trawl may be used coastwide, but only seaward of the RCA.
- Small footrope trawl (including selective flatfish trawl) may be used coastwide seaward of the RCA and shoreward of the RCA south of 40º10' N. lat.
- Only selective flatfish trawl may be used shoreward of the RCA north of 40º10'.
- Midwater trawl is only allowed seaward of the RCA south of south of 40º10' N. lat. and throughout the EEZ north of 40º10' N. lat during the primary whiting season.

With the exception of midwater trawl, no change is recommended to the above area-specific gear type use restrictions. Under the proposed change, mid-water trawl could be used to target groundfish throughout the Exclusive Economic Zone (EEZ) year round including within the

RCAs, except for whiting which would be subject to whiting seasons. Cumulative limits for whiting would continue to restrict whiting catch prior to the start of the whiting season. Midwater trips planned for the EEZ would not allow for onboard possession of bottom trawl gear on the same trip; midwater trips planned shoreward or seaward of the RCA could have bottom trawl gear onboard and be used as described above, so long as catch is separated by gear type.

Fishing with midwater gear is currently allowed in groundfish EFH conservation areas subject to other restrictions on the use of such gear. The recommendation is to continue the allowance for possession and use of midwater gear in the RCAs and within groundfish EFH conservation areas. For now, fishing within the RCA would continue to be restricted to mid-water (pelagic) trawl gear to avoid bottom dwelling species and bottom trawl gear would be restricted to waters shoreward of and seaward of the RCA. Restrictions might be reduced in the future based on individual vessel accountability.

The proposed changes could have negative impacts on law enforcement efforts, including the declaration program. In addition, the proposed changes could have negative impacts on observer, shoreside sampling programs, and states data management programs. It is important to note that fishery samplers both shoreside and at-sea are biologists and not are not present to enforce fishery regulations although their reports might be used after the fact to alert enforcement personnel of possible regulation violators. The impacts on fishery management programs will need to be addressed in the environmental analysis if the Council decides to move forward with this recommendation.

Alternative 1b: Allow use of multiple gear types, midwater trawl and fixed gear types on the same trip.

This alternative is the same as Alternative 1a, but, in addition, allows for the onboard possession of fixed gear types (pot and/or longline) on the same trip as trawl gear is possessed. This alternative would allow vessel owners to use trawl gear, as described under Alternative 1a, and fixed gear on the same trip. A new declaration category would likely be required for vessels using trawl and fixed gear on the same trip. For enforcement purposes, the more restrictive RCA boundaries would be required on such trips. It would also likely be required that catches be separated in the hold by gear type (bottom trawl, midwater trawl and each fixed gear type) and weighed separately at time of offloading. This is due to important gear selectivity differences and potential impacts to stock assessment models.

The rationale for the modified trawl gear type possession and use provisions under this alternative are explained under Alternative 1a. Onboard possession of fixed gear types is currently prohibited on trips in which groundfish trawl gear is onboard the vessel (Table 1). Under the IFQ program gear switching provision (§ 660.140(k)), it is now possible for trawl vessels to fish for IFQ allocations using groundfish fixed gear types (pot and/or longline) on the same trip. This alternative would allow vessel owners greater flexibility in harvesting their IFQ allocations, which would likely lead to more efficient use of vessels and gear. It might also likely lead to larger landings which could benefit fish processors by making more efficient use of offloading and processing facilities and human resources. For example, a vessel would be able to use small footrope trawl (including selective flatfish trawl) to catch their shallow water flatfish, deep water groundfish (DTS, slope rockfish), and sablefish using fixed gear on the same

trip. The current gear possession and use restrictions were important when vessels were managed based on cumulative trip limits and fleet-wide impacts were modeled. Under trawl rationalization, individuals are accountable for their total groundfish catch and that catch is observed on every trip and on every vessel. Thus, there might be limited need for prohibitions on carrying multiple gear types may.

The proposal here might add more complexity to law enforcement. In addition, the proposed changes could have negative impacts on observers, shoreside sampling, and data management programs, than the previous alternative. The observer program could be affected by reduced work space due to extra gear onboard and observer safety with fixed gear sliding around during rough weather. These complexities would be reduced somewhat by requiring that the more conservative RCA limits would apply. These impacts will be addressed if the Council decides to move forward with this recommendation.

Issue 2: Trawl Gear Modifications. There are two alternative under this issue. The TRREC report recommended a broader range of regulation changes than are presented here (TRREC recommendation #6). The alternatives recommended during the workshop relate to (1) minimum mesh size restriction for bottom trawl nets, and (2) the required use of selective flatfish trawl when fishing shoreward of the RCA north of 40º10' N. lat.

Alternative 2a: Reduce minimum mesh size for bottom trawl ½ inch to 4 inches. The recommendation here is to reduce the minimum mesh size provision for bottom trawl nets from 4 ½ inches to 4 inches. Minimum mesh size means the smallest distance allowed between the inside of one knot to the inside of the opposing knot, regardless of twine size (Between Knots, BK; § 660.11 Fishing gear (7)). The recommendation is not to remove all minimum mesh size provisions, as recommended by the TRREC, but rather to lower it for bottom trawl nets by ½ inch. The current mesh size restriction (4 ½ BK) was based on a study by Pikitch et. al. (1990 [1]) who examined gross revenue per trawl hour in the West Coast trawl fishery targeting rockfish and flatfish using various codend mesh sizes . They determined that the small size mesh tested (3 inch BK) increased time spent sorting the catch while the larger mesh size (5 inch) resulted in increased loss of marketable fish.

The reason for the change is to accommodate the inconsistency, reported in the workshop, of available netting in meeting the minimum mesh size requirement of 4 ½ inches in all net sections. As part of this recommendation fishermen should be urged to continue to order or make bottom trawl nets with webbing spacing nominally specified as 4 ½ inches. If the fishermen continue to order the larger mesh-size net there will be less concern with violation of minimum mesh size regulations. However, if fishermen start ordering the smaller mesh size, then the problem with minimum mesh size violations will resurface. Use of the smaller mesh size could also result in increased catch of non-marketable size fish that individuals would be held accountable for in their total catch of groundfish. The impact to law enforcement and other

[1] Pikitch, E., Bergh, M., Erickson, D., and J. Wallace. (1990). Final report on the results of the 1988 West Coast groundfish mesh size study. Fish. Res. Inst., WH-10., Univ. Wash. 98195. Saltonstall-Kennedy Grant #NA88-ABH-00017.
https://digital.lib.washington.edu/researchworks/bitstream/handle/1773/4141/9019.pdf?sequence=1

fishery management efforts would likely be neutral. These will be addressed if the Council decides to move forward with this proposal.

Alternative 2b: Eliminate the selective flatfish trawl requirement. Selective flatfish trawl is a type of small footrope trawl that is required shoreward of the RCA north of 40º10' N. lat. The regulation was implemented in 2005 (http://www.pcouncil.org/bb/2007/1107/D6c_ODFW-NWFSC.pdf). The net construction specifics for this regulation are as follows:

> The selective flatfish trawl is a two-seamed net with no more than two riblines (lines that the run the full length of the net), excluding the codend. The breastline (a line that connects the headrope to the footrope) may not be longer than 3 ft (0.92 m) in length. There may be no floats along the center third of the headrope (a line across the top end of the net) or attached to the top panel except on the riblines. The footrope (the main line across the bottom front end of the net) must be less than 105 ft (32.26 m) in length. The headrope must be not less than 30 percent longer than the footrope (§660.130(b)(5)(i)).

As part of this recommendation, the above wording defining the gear and any linking regulations requiring its use would be removed from regulation. In its place, the small footrope trawl language would apply when fishing shoreward of the RCA north of 40º10' N. lat. (like it is to the south of that area). The main reason for the proposed change stems from the specificity of the regulation: it does not provide for the effective placement of flexible grates to exclude non-target fish species nor does it allow for experimentation with new net designs or net configurations.

The trawl fishery is faced with reduced harvest allowance for Pacific halibut under the IFQ program. Work in Alaska has shown that Pacific halibut bycatch can be reduced by the use of flexible grates in bottom trawl nets. A four seam net is required for proper grate installation but the selective flatfish trawl regulation (above) requires a two-seam trawl. The GMT has reviewed the situation and reported their findings, including four alternatives to addressing the issue (GMT 2011). One of the alternatives is to replace the selective flatfish trawl regulation with a four-seam small footrope trawl regulation requirement (for the area north of 40º10' N. lat). The proposal here is the same as the GMT alternative but without the four-seam element.

This proposal has potential negative biological impacts if catch of canary rockfish, an overfished species, should increase. Ultimately canary rockfish catch is limited by the available QP, however, there could be negative impacts for the fleet as a whole if the gear change resulted in disaster tows (tows with amounts of canary equal to a significant portion of the total shorebased fishery canary allocation). The selective flatfish trawl requirement was aimed at maintaining a nearshore flatfish trawl opportunity while reducing impacts to canary rockfish in the bottom trawl fishery rather than moving the shoreward boundary of the RCAs shoreward. An even greater concern now may be impacts to Pacific halibut, which could impede access to IFQ species allocations if vessel individual bycatch quota (IBQ) for halibut are reached. The potential impacts of the proposed change will be addressed if the Council decides to move forward with this recommendation.

Issue 3: Fishing Across Management Lines. This issue was not a high priority action item in the TRREC report, but the Council directed the workshop to scope the issue and see if

something can be done about the situation. The situation is that under IFQ program regulations, vessels must land catches in the management area where they were caught before fishing in another management area. Some vessel owners report that the regulation is expensive to their operations, particularly those that fish out of ports in close proximity to a management line. The four IFQ management areas are (660.140 (c)(2)):

1. Between the US/Canada border and 40°10′N. lat.,
2. Between 40°10′ N. lat. and 36° N. lat.,
3. Between 36° N. lat. and 34°27′ N. lat., and
4. Between 34°27′ N. lat. and the US/Mexico border

The species management lines that correspond to the above areas are shown in Table 2. It shows that 12 of the 25 IFQ species or species groups are managed relative to on one of the above management lines.

Table 2: Management lines used for IFQ Species (50 CFR 660.140) 1/

Roundfish	**Rockfish**
Lingcod.	Pacific ocean perch S. of 40°10′
Pacific cod.	Widow rockfish.
Pacific whiting.	Canary rockfish.
Sablefish north of 36° N. lat.	Chilipepper rockfish S. of 40°10′
Sablefish south of 36° N. lat.	Bocaccio S. of of 40°10′
	Splitnose rockfish S. of 40°10′
Flatfish	Yellowtail rockfish N. of 40°10′
	Shortspine thornyhead N of 34°27′ N. lat.
Dover sole.	Shortspine thornyhead S of 34°27′ N. lat.
English sole.	Longspine thornyhead N of 34°27′ N. lat.
Petrale sole.	Cowcod S. of 40°10′
Arrowtooth flounder.	Darkblotched rockfish
Starry flounder.	Yelloweye rockfish
Other Flatfish stock complex.	Minor Rockfish slope complex N. of 40°10′
Pacific halibut (IBQ) N of 40°10′	Minor Rockfish shelf complex S. of 40°10′
	Minor Rockfish slope complex N. of 40°10′
	Minor Rockfish shelf complex S. of 40°10′

1/ Species or species groups without north/south latitude designation are managed coastwide)

Alternative 3a: Allow IFQ program vessels to move fixed gear across management lines. This alternative would allow vessel owners to move fixed gear across management lines with groundfish on board the vessel after making an appropriate fishery declaration. Vessels that participate in the shorebased IFQ program may fish in only one management area during a trip (660.140 (c)(2)).

This means that vessel operators must offload their catches before fishing, or resetting their gear when fishing with fixed gear, in a different management area. IFQ program trawl vessels are allowed to fish fixed gear for IFQ species as per § 660.112 (b)(3) and declaring their intent before leaving port. Under current regulations if a fisher makes a fixed gear set in area A, they must land their fish before re-setting their gear in area B. Under the proposal here, they would be allowed to pull their gear in area A, reset it in area B and then land the fish caught in area A. The fisher would report the area where the fish were caught at time of landing. To fish across a management line as describe here, the fisher would first have to declare their intent before leaving port to check and move their gear. Thus a new declaration category will be required.

This recommendation does not allow for setting fixed gear in two (or more) management areas at the same time and delivery of the combined catches to a single port. This prohibition is mentioned because the location of catch from each management area cannot be determined when the catches are mixed. Such separation is important for species that are allocated based on management areas such as minor slope rockfish. Also, this recommendation does not address the issue of fishing across management lines using trawl gear. The workshop did not receive sufficient input on this latter issue to make a recommendation.

Other Recommendations

- Logbooks are not required for fixed gear fishing under the IFQ gear switching program. A federal action or actions by the coastal states would be required to implement such a program. This is an important action that needs to be moved forward.
- Electronic fishing monitoring technology could enhance enforcement monitoring of fishing activities especially when fixed and trawl gear are used on the same trip. This is another important action item that needs to be moved forward.
- The trawl permit length endorsement and associated permit transfer provisions are no longer needed as vessel capacity is no longer an issue under the IFQ program. However, there may be impacts to non-target species and to target species taken with fixed gear under gear switching that will need to be taken into account.

References

GMT. 2011. Groundfish Management Team report on preliminary management measures for 2013-14. Agenda Item E.9.b GMT report 2 November 2011. PFMC, Portland OR 97220. 17p. (http://www.pcouncil.org/wp-content/uploads/E9b_GMT_RPT2_NOV2011BB.pdf)

APPENDIX A: Excerpt from November 2011 Groundfish Management Team Report: Allowance for Four-Seam Trawls Shoreward of the RCA (http://www.pcouncil.org/wp-content/uploads/E9b_GMT_RPT2_NOV2011BB.pdf)

Issue: Allow the use of four-seam trawls shoreward of the RCA to facilitate the use of flexible grates for excluding Pacific halibut from trawl catches. A primary benefit of such a management is reduced catches of Pacific halibut and increase access to shelf flatfishes for the IFQ Program.

Background: Prior to 2005, small footrope trawls (and midwater trawls) were allowed shoreward of the RCA. There were no requirements regarding the number of panels (or seams), the breastline height (which approximates the maximum height of the headrope above the footrope), or the length of the headrope for bottom trawls fished shoreward of the RCA (Figure 1). The selective flatfish trawl became a requirement in 2005 north of 40o 10' N latitude when trawling shoreward of the RCA. Modifications to the "typical" small footrope trawl were required for the development of the selective flatfish trawl (see Figure 1) and are described in Federal Pacific Coast Groundfish Regulations (Page 375; September 2, 2011):

(i) Selective flatfish trawl gear. Selective flatfish trawl gear is a type of small footrope trawl gear. The selective flatfish trawl net must be a two-seamed net with no more than two riblines, excluding the codend. The breastline may not be longer than 3 ft (0.92 m) in length. There may be no floats along the center third of the headrope or attached to the top panel except on the riblines. The footrope must be less than 105 ft (32.26 m) in length. The headrope must be not less than 30 percent longer than the footrope. An explanatory diagram of a selective flatfish trawl net is provided as Figure 1 of part 660, subpart D."

The purpose of this design was to reduce the catch of overfished rockfish species (e.g., canary rockfish), while providing access to a portion of the traditional shelf flatfish fishery (see 2005-2006 FEIS). The restricted breastline length ensured that the headrope height was approximately no more than 1 m above the footrope, and the required ratio of headrope length to footrope length provided a "cutback" headrope. Research in Oregon demonstrated that this low-rise trawl with a "cutback" headrope would maintain or increase flatfish catches while reducing catches of certain larger rockfish and roundfish species (including canary rockfish) and Pacific halibut relative to the most common four-seam trawls that were used by the U.S. west coast groundfish fleet at the time (King et al. 2004; Hannah et al. 2005). The reduced catches of rockfishes, other roundfishes, and Pacific halibut was thought to be facilitated by the low and "cutback" headrope because: (a) some fishes may move up and away from the bottom as they encounter the trawl footrope (e.g., Bublitz 1996; Rose 1996), and, (b) some fraction of certain "schooling" species may exceed 1 meter above the bottom as the trawl passes by (e.g., Pacific whiting and canary rockfish).

Concern and Potential Solution: Under the current IFQ program, many fishermen are concerned of exceeding their Pacific halibut IBQ before accessing their quota pounds (QP) for target species (see the presentation by Dr. John Gauvin, PFMC, Agenda Item I.7.c, Public Comment, Power Point Presentation, April, 2011). Since the inception of the IFQ Program, fishermen have been experimenting with sorting grates (rigid and flexible) that have been successfully used in Alaska trawl fisheries to reduce the catch of Pacific halibut (e.g., Rose and Gauvin 2000). These grates guide certain species (such as Pacific halibut) out of the trawl at fishing depth (through top or bottom escape panels) while allowing for the retention of species that are smaller and/or that exhibit different behaviors within trawls. Flexible grates are preferable to rigid grates because of ease of handling

(e.g., see PFMC, Agenda Item I.7.c, Supplemental Public Comment Power Point, April 2011), and potentially safety concerns.
Although rigid grates may be effectively applied to both four- and two-seam trawls, flexible grates may be ineffective or problematic in two-seam trawls, which are required shoreward of the RCA. The water flow in the back end of a two-seam trawl (e.g., in the areas of the intermediate and codend) may be low, and consequently, these areas of the two-seam net may collapse on occasion during a tow. The result may be reduced halibut escapement or high loss of target species. The water flow throughout four-seam trawls may be higher than two-seam trawls which may result in higher success of flexible sorting grates for excluding Pacific halibut from the catch. Hence, two-seam trawls that are required shoreward of the RCA may not be suitable for the installation of flexible grates.

Considerations for Further Analysis: The GMT acknowledges that the limited Pacific halibut IBQ may be a significant constraint for individuals achieving their target species QP, and consequently, the commercial fishery reaching the ACL for many of the trawl-dominant species. Under Amendment 21, the maximum halibut IBQ allowed for the IFQ Program will be 279,570 lbs (round wt, legal + sublegal) until 2014, and 215,054 lbs (round wt, legal + sublegal) thereafter. These values for Pacific halibut IBQ represent a significant reduction to the annual halibut mortality demonstrated by the limited entry trawl fishery prior to the IFQ Program (e.g., approximately 459,000 to 633,000 lbs round weight for the years 2005 to 2009; Heery et al., 2010). Hence, measures may be required to reduce Pacific halibut catch and increase access to target species.

Further analysis of this potential management measure may be possible with low or moderate effort, depending on alternatives. Some considerations for analysis of this potential management measure will include: (a) potential for increased (or decreased) catch of overfished species, (b) improved access to target species, and (c) impact to the habitat (e.g., substrate). With these considerations in mind, potential alternatives that could be analyzed with low to moderate effort include:

- *No Action (Status Quo; Selective Flatfish Trawl)*

- *Alternative 1 (Four-Seam Selective Flatfish Trawl):* Allow four-seam trawls shoreward of the RCA, with all regulated specifications equal to the selective flatfish trawl except the number of seams (four instead of two).

- *Alternative 2 (Four-Seam Cutback Small Footrope Trawl):* Allow four-seam trawls shoreward of the RCA, with **cutback headrope** similar to the selective flatfish trawl. All other gear regulations currently in effect for small footrope trawls remain the same (e.g., small footrope, mesh size, chafing gear, etc). Headrope height is unrestricted.

- *Alternative 3 (Four-Seam Small Footrope Trawl):* Allow four-seam, small footrope trawls shoreward of the RCA. All current gear regulations shown for small footrope trawls would remain in place (e.g., headrope height and the headrope length:footrope length ratio are unrestricted).

- *Alternative 4 (Two-Seam Selective Flatfish Trawl Modified with Four-Seam Intermediate & Codend):* Allow existing two-seam selective flatfish trawl nets to be modified to include a four-seam intermediate and cod-end section.

Alternatives 1 – 3 progressively deviate from the selective flatfish trawl while maintaining all features of the small footrope trawl. Alternative 4 is a combination selective flatfish trawl (2-seam)

that is modified to allow four-panel (seam) intermediate and codend that may better facilitate the installation of a flexible grate. Some potential impacts of these alternatives include:

• The alternatives may not significantly impact the habitat (e.g., substrate) relative to status quo because only small footrope trawls are included. The analysis would become more complex if alternatives included large footrope trawls due to their potential impact to the substrate shoreward of the RCA.

• Alternatives 1 – 4 allow four-seam trawls shoreward of the RCA, which will facilitate the use of flexible grates. This action may increase escapement of Pacific halibut from trawls at fishing depth relative to status quo, and subsequently increase access to target species QP.

• Although Alternative 1 may show similar catch rates for overfished species as Status Quo, this alternative would require the most significant modifications to four-seam small footrope trawls that fishermen currently own, and would therefore be most expensive for the fleet to implement. Cost to the fleet decreases with each alternative.
• Catch rates for target species may be significantly higher for alternatives 2 and 3 relative to status quo under equal conditions (i.e., fishing in the same area at the same time).

• Even though catch rates of overfished species may be relatively higher for alternatives 2 and 3 relative to status quo (under equal conditions), the IFQ Program requires 100% observer coverage, and fishermen are individually accountable for constraining catches within their Quota Pounds. This feature of the IFQ Program will likely result in fishermen adjusting their fishing methods to ensure that they remain within their Quota Pounds for overfished species (e.g., tow location and tow duration)

• Alternative 4 may show similar catch rates for overfished species as Status Quo, but would require fewer modifications to develop relative to Alternative 1. Alternative 4 might be a cost-effective solution that would enable fishermen to modify their two-seam selective flatfish trawl nets in a manner that is more compatible with flexible grate halibut excluder designs. This type of modification is common in Bering Sea flatfish trawl fisheries and has achieved successful results.

GMT Recommendation: The range of alternatives that provide for the use of Pacific halibut excluders (grates) could result in increased access to target species while minimizing catch of Pacific halibut, a significant benefit to the IFQ Program. The potential analysis described above could be completed with low to moderate effort since the overall impacts to groundfish would remain within the trawl allocation. That is, any changes to the harvest levels of the IFQ species will be accounted for by existing QPs. For non-IFQ species, changes to trip limits could be accommodated inseason if landings are projected to be greater than the trawl allocation. Further, as noted above, no changes to habitat are anticipated as a result of the proposed alternatives.

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