

WHITE PAPER ON DISCARDS IN THE BERING SEA AND GULF OF ALASKA MID-WATER POLLOCK FISHERIES

November 13, 2018¹

1	Introduction	1
2	Current Management Measures	1
2.1	Maximum Retainable Amounts (MRAs)	2
2.2	Prohibited Species Catch (PSC)	3
2.3	Gulf of Alaska Pollock Trip Limits	3
2.4	MRAs and Discard Requirements for State Managed Groundfish	4
2.5	Enforcement of MRAs and Discard/Retention Requirements	5
2.5.1	Note on Penalties	5
2.5.2	GOA Pollock Trip Limits	5
2.5.3	Prohibited Species Catch (Halibut, Crab, and Herring) and Groundfish Species on PSC Status	6
2.5.4	Salmon Retention Requirements	6
2.5.5	Enforcement of Maximum Retainable Amounts (MRAs)	6
2.5.6	Logbook Requirements	6
2.5.7	Methodology for Calculating Discard Rates	7
3	Potential Areas of Concern with Increased Retention	8
3.1	Changes in Fishing Practices Due to Changes in Incentives	8
3.2	GOA Pollock Trip Limits	8
3.3	Prohibited Species Catch (PSC)	9
3.3.1	Halibut PSC	9
3.3.2	Herring/Crab PSC	10
3.4	Federal Groundfish MRAs and Problem Species	13
3.4.1	Rockfish (primarily Pacific Ocean Perch, or POP)	13
3.4.2	Sablefish	13
3.4.3	Large Items (primarily salmon sharks and Pacific sleeper sharks)	14
3.5	Groundfish When on PSC Status	14
4	How Did the West Coast Deal with These Challenges in the Whiting Fishery?	14
5	What are the Challenges Associated with Requiring Increased Retention for Vessels and Processors?	15
5.1	Pollock Trip Limits	15
5.2	Species Management	15
5.3	Inefficiency in Fishing Operations	15
5.4	Enforcement	15
6	Next Steps	16

1 Introduction

At their August 2018 meeting in Seattle, the trawl EM Committee tasked members with composing a white paper to explore existing retention rules, as well as opportunities and challenges related to implementing full, maximized, or optimized retention on pelagic trawl catcher vessels. This white paper aims to provide information to allow the trawl EM Committee to address options for full, maximized, or optimized retention as part of their forthcoming Cooperative Research Plan.

2 Current Management Measures

On an annual basis, NMFS determines how much of the total allowable catch (TAC) for each groundfish species in the Bering Sea (BS) and Gulf of Alaska (GOA) is needed for incidental catch in other groundfish fisheries. From there, the remainder of the TAC is made available as a directed fishing allowance. Directed fishing is defined in regulation as “any fishing activity that results in the retention of

¹ Prepared by: Julie Bonney, Ruth Christiansen, Elizabeth Figus (NPFMC), Heather Mann, Katy McGauley, and Jennifer Watson (NMFS)

Accessibility of this Document: Effort has been made to make this document accessible to individuals with disabilities and compliant with Section 508 of the Rehabilitation Act. The complexity of this document may make access difficult for some. If you encounter information that you cannot access or use, please call us at [907-271-2809](tel:907-271-2809) so that we may assist you.

an amount of a species or species group onboard a vessel that is greater than the maximum retainable amount (MRA) for that species or species group.”

During a fishing year, NMFS routinely closes directed fishing for specified groundfish species. Directed fishing closures occur because a fishery has reached a salmon, halibut, or crab bycatch allowance; the directed fishing allowance for a target groundfish species has been reached; or because of overfishing concerns for another groundfish species taken as bycatch. When directed fishing for a species is closed for any of these reasons, incidental catch amounts of a species may still be retained onboard a vessel up to the specified percentage of other retained groundfish catch open to directed fishing.

NMFS attempts to manage groundfish TACs so that directed fishing closures are implemented in a timely manner, thereby providing sufficient portions of the TAC to allow for incidental catch in other fisheries. When the harvested amount of a species approaches or reaches the TAC, NMFS may place the species on “prohibited species” status, and any catch of that species must be discarded. If the harvest amount approaches the overfishing level, then NMFS may close those directed fisheries which take the species as bycatch in order to prevent overfishing.

2.1 Maximum Retainable Amounts (MRAs)

Maximum Retainable Amounts (MRAs) are a management tool used in both the BS and GOA to slow catch of a species so that total harvest can be managed up to, but not over, the TAC by the end of the year. MRAs apply at the vessel level when a groundfish species is closed for directed fishing; when NMFS prohibits directed fishing for a groundfish species, retention of the catch of that species is allowed up to an MRA.

An MRA is calculated as the percentage of the retained catch of a species closed for directed fishing (incidental catch species) to the retained catch of a species open for directed fishing (basis species). A directed fishery closure limits the allowable retention of the incidental catch species. MRAs themselves do not require a vessel to retain a species or lower discard rates, but instead lead to *a discard requirement* if/when catches of incidental species subject to MRAs exceed the allowable amount at a given time.

The MRA tables (Tables 10 and 11 to 50 CFR part 679) show allowable retainable proportions of incidental catch species relative to retained basis species open to directed fishing. The MRA tables are a matrix of proportions representing a range of rates of expected or accepted incidental catch of species closed to direct fishing, relative to target species. As a management tool, MRAs rely on the ability of the vessel operator to selectively catch a particular groundfish species. **The MRA percentages are intended to slow the rate of harvest of a species when insufficient TAC amounts are available to support a directed fishery.**

MRA regulations at § 679.20(e) establish the calculation method and set individual MRAs for groundfish species or species groups, when directed fishing for that species is closed. **Amounts that are caught in excess of the established MRA percentage must be discarded.** NOAA Office of Law Enforcement (OLE) may confiscate the overage amount and assesses a fine for the overages delivered in the same calendar year.

When NMFS prohibits directed fishing for a groundfish species, MRAs buffer the amount of catch of that species occurring in directed groundfish fisheries that remain open. **Ideally, the application of an MRA slows catch of a species, so that harvest can be managed up to the TAC by the end of the year.** Beyond management of a TAC to obtain optimum yield, MRA calculations perform two additional functions. **First, MRAs limit retention to a species expected or accepted incidental catch rate. Second, the MRA functions as a trip limit for retention of incidental catch of a species.** This function allows for limited targeting of a species up to the MRA. This is known as topping off. The MRA tables

assign an MRA percentage for species not open for directed fishing to each species that is open to directed fishing. If a vessel does not catch its MRA while directed fishing for a target species open for directed fishing before the end of a fishing trip, the vessel may be able to make some target sets on the incidental catch species and still not exceed its MRA.

The incentive for vessel operators to top off is directly related to the value of, and available market for, the incidental catch species in relation to the species being targeted. From a management perspective, limiting the amount of incidental catch a vessel operator is allowed to retain is a tool to slow down harvest rates. This does not necessarily reflect an “intrinsic” incidental catch rate but rather reflects a balance between the recognized need to slow harvest rates, minimize the potential for undesirable discards, and, in some cases, provide an increased opportunity to harvest available TAC.

For those species where restricting catch to a particular incidental rate is not necessary, regulations establish a default MRA rate of 20 percent. For many groundfish species, current regulations establish a relatively high MRA for particular species. For example, the highest MRA of 35 percent for arrowtooth flounder as an incidental species is applied to other groundfish species open for directed fishing as basis species. A higher MRA would allow for increased indirect targeting on a species.

MRAs can be challenging to understand since rates for the different species vary depending on the target fishery as well as the area in which a vessel is fishing.

2.2 Prohibited Species Catch (PSC)

In general, a species designated as PSC cannot be retained by a vessel and must be discarded as soon as practicable. The North Pacific Fishery Management Council (NPFMC) and NMFS have adopted measures to limit the catch of species taken incidentally in groundfish fisheries. Certain species are designated as “prohibited species” in the Bering Sea and Gulf of Alaska fishery management plans because they are the target of other fully utilized domestic fisheries. **Full-time prohibited species include Pacific halibut, Pacific herring, Pacific salmon, steelhead trout, king crab, and Tanner crab.** Pacific salmon is the one exception for the mandatory at-sea discard requirement and must be retained.

For other species, when the harvest amount approaches or reaches the TAC, in order to avoid overfishing, regulations at 50 CFR 679.20(d)(2) require prohibiting retention and any catch of that species must be discarded. When this occurs, NMFS publishes a notification in the Federal Register requiring that target species be treated in the same manner as a prohibited species, for the remainder of the year. Species that often go to PSC status during the year are those that have small TACs. These include blackspotted/rougheye, shortraker, thornyhead, other rockfish, skates (big and longnose in the GOA), sculpins, octopus, and sharks. Other species that may reach PSC during the year include Pacific Ocean Perch, northern rockfish, dusky rockfish and Pacific cod. Finally, there is a limited trawl allocation of sablefish that when met requires sablefish to be placed in PSC status.

PSC status determinations affect all gear types (except sablefish) and different gear types drive the particular species catches (not necessarily mid-water pollock fisheries). This can make it lengthy to describe to precisely which area(s) (BS, GOA, or both) or gear(s) a given PSC designation applies.

2.3 Gulf of Alaska Pollock Trip Limits

The GOA pollock trip limit was initially implemented in December 1998 when the Council took emergency action to implement measures consistent with NMFS’ proposed Reasonable and Prudent Alternatives (RPAs) to reduce impacts to Steller sea lions. That action for the GOA included: creating four pollock seasons with limits on the percentage of the TAC which could be taken from any one season; expanding the closure areas around rookery and haul-out sites; and establishing a 300,000

pound trip limit for pollock in the western and central Gulf management areas. In response to Council recommendation, on January 22, 1999, NMFS implemented an emergency action to apply Steller sea lion protection measures, including the action described above, to the 1999 fishing season. The reason for the emergency trip limit action was defined in the Federal Register notice to temporally or spatially disperse pollock harvests in the GOA.

The second part of regulation § 679.7(b)(3) stipulated that tender vessels cannot retain on board at any one time more than 272 mt (600,000 pounds) of pollock. The Alaska Board of Fisheries, following the action of the Council, implemented similar regulations within State waters on July 27, 1999. The State trip limit regulation is worded similarly to the NMFS regulation above (see 5 AAC 28.073). The area incorporated into the State trip limit regulation includes State waters adjacent to the Federal management areas 610, 620 and 630, between 147 and 170 degrees west longitude. It should be noted that there is a small discrepancy between the State and Federal regulations. The Federal regulations include management area 640 (between 140 and 147 degrees west longitude) whereas the State regulation cited above extends to the eastward boundary of management area 630 at 147 degrees west longitude. Therefore, State regulations do not currently include management area 640. There is a small pollock fishery in the Prince William Sound area that is currently managed by the State to include the 300,000 pound trip limit, so the regulation discrepancy does not result in different State and Federal management approaches; however, Federal regulations require discards above the 300,000 pound trip limit in contrast to State regulations that require retention above the 300,000 pound trip limit.²

The 1999 GOA pollock trip limits were analyzed in the November 2001 Steller Sea Lion Protection Measures, Final Supplemental Environmental Impact Statement (SEIS), and the pollock trip limit was determined to be one of several necessary Steller sea lion protection measures for the Federal groundfish fisheries off Alaska at the time (in the 2001 biological opinion).

GOA trip limit regulations were revised and implemented May 25, 2009. The revised GOA pollock trip limit regulation prohibited catcher vessels from retaining more than 136 mt (300,000 lb.) of unprocessed pollock during a calendar day and landing more than 136 mt (300,000 lb.) of pollock during a fishing trip. NMFS also prohibited a vessel from landing a cumulative amount of unprocessed pollock from any GOA reporting area that exceeds 136 mt (300,000 lb.) times the number of days the pollock fishery is open to directed fishing in a season. **The objective of this rule was to prevent certain pollock catch and delivery practices that allowed some vessels to circumvent the intent of the original trip limit regulations.** Trip limits were implemented in 1999 (until they were amended in 2009) had become less effective as multiple trips during a day and partial offloads of pollock product during a trip had allowed for increasing amounts of pollock to be caught in some areas of the GOA. These delivery practices caused seasonal pollock quotas to be exceeded and potentially could have been in conflict with Steller sea lion protection measures under Endangered Species Act (ESA) intended to disperse pollock catches in the GOA.

2.4 MRAs and Discard Requirements for State Managed Groundfish

In addition to lingcod, dark, blue, and black rockfish are the only species solely under state management authority. The state has management authority both in state waters and the EEZ. A global groundfish emergency order is published effective January 1st of each year that sets out state bycatch rules for these species for the year, which can be superseded by subsequent emergency order if necessary.

² Under 5 AAC 28.070 (e) – state regulations - a vessel participating in the walleye pollock fishery shall bring on board the vessel all walleye pollock caught while operating the vessel; the permit holder or a crewmember may not take any action intended to discard or release walleye pollock before the fish is brought on board the vessel; and all walleye pollock shall be retained. Any pollock landed in excess of the trip limit will be reported as a trip limit overage on an ADF&G fish ticket.

Rules are set for each state management area – Kodiak, Chignik, South Alaska Peninsula, and Bering Sea-Aleutian Islands. Blue rockfish are rarely found north or west of SE Alaska.

Dark and black rockfish species bycatch rates in the Kodiak area are typically set at 5% and in the Bering Sea-Aleutian Islands are typically set at 20%. In Chignik and South Alaska Peninsula, black rockfish has a bycatch rate of 5% and 20% for dark rockfish.

Lingcod retention regulations are unique in the Kodiak and Chignik areas and are only retainable beginning July 1st until December 31st and only fish 35 inches and greater may be retained up to the bycatch limit; 5% in Kodiak and 20% in Chignik. In South Alaska Peninsula and Bering Sea–Aleutian Islands there is no closed seasons or size limits and bycatch rates are set at 20%.

There are no mandatory retention regulations for any of these species. If landed catches are in excess of the established bycatch amount, the excess must be weighed and reported as a bycatch overages on an ADF&G fish ticket. All proceeds from the sale of excess bycatch shall be surrendered to the state.

2.5 Enforcement of MRAs and Discard/Retention Requirements

2.5.1 Note on Penalties

As with all allegations of potential violations, NMFS Office of Law Enforcement (OLE) has several options. For minor penalties, OLE has the discretion to notify the captain of an allegation and ensure they are aware of the regulation (i.e. compliance assistance). OLE may issue a written warning. This may be appealed by the captain. If not, it counts as a prior violation should another violation occur. Next, OLE may issue a Summary Settlement—a fixed amount or formula (e.g. value of the overage) based on predetermined conditions decided by NOAA General Counsel. Lastly, a violation may be referred to General Counsel for issuance of a Notice of Violation and Assessment (NOVA). General Counsel may decline to prosecute the case, issue a written warning, or issue a NOVA that takes into account more factors than the Summary Settlement schedule can consider. How a violation is handled may change from year to year based on management concerns, OLE workload, and other issues.

2.5.2 GOA Pollock Trip Limits

The pollock trip limit is 300,000 pounds per delivery and only applies to the Gulf of Alaska. Vessels are required to retain pollock up to the trip limit due to improved retention improved utilization (IRIU) regulations but must discard pollock catches above the trip limit amount. Many of the Kodiak vessels pack more than 300,000 pounds and some vessels deliver deck loads and/or codend bags. With all the variables in terms of what a fish weighs, roe/non-roe season pollock condition, and the vessel packing capacity itself, it makes it difficult to always be under the 300,000 pound trip limit. **Enforcement of the trip limit has changed in the last year or so with steeper penalties.**

If a vessel delivers more than 300,000 pounds, the processor may process the fish and is allowed to pay the boat for any pollock over the 300K limit. The processor must inform NMFS Office of Law Enforcement (OLE) of the overage and NMFS OLE will charge the vessel for the value of the overage (via a Summary Settlement) for the first three overages in a year; and subsequent overages are handled through a Notice of Violation and Assessment (NOVA) - imposing a fine is decided on a case-by-case basis (some the processors pay on behalf of the vessel which is considered acceptable as long as the fine is paid). For minimal overages, vessels first receive warnings with a maximum of three warnings within a calendar year before triggering a NOVA consideration. In addition, if a vessel has exceeded the three trip threshold in the prior year then the vessel is considered a repeat offender the following year and receives a NOVA immediately with their first overage. A vessel must stay within the three trip overage level for five consecutive years to stay off the repeat offender list to avoid a NOVA for the first overage.

2.5.3 Prohibited Species Catch (Halibut, Crab, and Herring) and Groundfish Species on PSC Status

Bering Sea and Gulf of Alaska trawl catcher vessels are required by law to discard all halibut, crab (king, tanner, opilio) and herring caught in all their fisheries with minimal harm to these PSC species; groundfish species when on PSC status must be treated in the same manner. Because it is at times difficult to sort out and discard every single PSC species at sea, it is expected that some will end up in the vessel's fish hold and delivered to the shoreside processor. In this case, the landed PSC species is required to be recorded on the vessel's fish ticket. NOAA Office of Law enforcement monitors these landings and, if deemed excessive, can issue a written warning or issue a violation to a vessel. Processors can send the landed PSC to the communal Kodiak fishmeal plant or process and donate the PSC (only halibut and salmon) to Sea Share for distribution to food banks.

2.5.4 Salmon Retention Requirements

Pelagic trawl vessels are required to retain all salmon species in the BS and Central and Western GOA in the pollock fisheries. The number and weight of landed salmon by species is required to be recorded on each vessel's fish ticket. The means to determine if a vessel is discarding salmon at sea occurs through at-sea observer compliance reports.

According to the [North Pacific Observer Program Annual report for 2017](#) for the Bering Sea pollock fishery, **complaints received from observers involved handling of salmon during processing:** occurrences of salmon passing the sorting point, no sorters present, failure to place all salmon in the salmon storage bin and removing salmon from the salmon storage bin before the observer had an opportunity to count and sample. No concerns were raised about salmon being discarded at sea. For the Gulf of Alaska some complaints include observers witnessing salmon discard at sea, inconsistent salmon numbers (observer numbers vs. shoreside processor), failure to sort all salmon at the shoreside processors, and at sea discard of catch before the observer had an opportunity to sample or to determine if salmon were in the catch.

The Summary Settlement penalty for discarding a salmon prior to sampling by an observer is \$2,500 per fish. This penalty recognizes the incentives to discard salmon: it is usually an intentional violation; it is relatively easy to do; and because observer salmon counts are extrapolated (in the GOA), one salmon may have a large influence in calculating the final amount.

2.5.5 Enforcement of Maximum Retainable Amounts (MRAs)

Maximum retainable allowance by target fishery is based on tables 10 and 11 to 50 CFR part 679. OLE acknowledges it is difficult for a vessel to always be within the allowable percentages. For minimal overages vessels typically receive three warnings before monetary penalties are imposed. In most cases, the ex-vessel value for the overage amount is paid directly by the processor to NMFS or by the vessel owner via a Summary Settlement for the first two overages per year. The Summary Settlement for a third MRA overage is the value of the overage plus \$1,000. If the overage is considered egregious or the vessel has exceeded the three overage threshold, a monetary fine is imposed on the vessel owner. For repeat offenders, a Notice of Violation (NOVA) can be issued with substantially higher penalties. Processors are required to log the entire delivery amount and notify OLE that a vessel has an overage. The entire MRA species delivery amount can be processed and is allowed to enter commerce.

2.5.6 Logbook Requirements

Recordkeeping and reporting (R&R) regulations are detailed at § 679.5 for shoreside processors, tender vessels, and trawl vessels. R&R requirements include, but are not limited to, paper and electronic documentation, logbooks, forms, reports, receipts, computer printouts, and requests for inspection described in this section. Trawl catcher vessels less than 60 ft. are exempt from R&R (logbook) requirements.

2.5.7 Methodology for Calculating Discard Rates

Bycatch amounts and discard rates for the pollock trawl fisheries are based on information extrapolated from observer data for all species except for salmon in the Bering Sea. If an observer is present on a vessel, the species composition sample is used to establish the type and amount of bycatch species relative to the amount of pollock caught. Observers also estimate the percentage of all the groundfish caught that is retained. The type and amount of bycatch and the percentage of retention are used to establish a bycatch rate. This rate is then applied to the fishery to determine the incidental catch amount that is debited from the TAC. Observers conduct a census at the shoreside processor in the Bering Sea pollock fishery to obtain the species, count, and weight of all salmon in the catch. This amount accrues against established salmon bycatch caps.

In the Bering Sea, all catcher vessels targeting pollock are required by regulation to have full (100 percent) observer coverage.³ In the Gulf of Alaska, the data used to determine the predominant (target) species retained during a trip depends on the amount of observer coverage and the type of vessel (mothership, catcher processor (CP), or catcher vessel (CV)). If a groundfish vessel is in the full coverage stratum, then observer data are used to determine the trip target. For all other vessels not in the full coverage stratum, a landing report is used to determine trip target. Determining the trip target is a three-step process that is implemented within the catch accounting system:

1. if 95% or more of the retained catch is pollock, then a pelagic pollock target is assigned;
2. if the sum of all flatfish is greater than the amount of any other species, then flatfish is assigned as the trip target;
3. if neither pollock nor flatfish is determined as the target, then the groundfish species that has the highest proportion of the retained catch is assigned as the target (inclusive of bottom pollock target).

The Gulf of Alaska (GOA) pollock fishery is in the partial coverage observer category. A key data concern relating to the GOA pollock fishery is that catcher vessel observers follow different sampling protocols when vessels deliver to a tender as opposed to a shoreside processing plant. On observed trips where the vessel is targeting GOA pollock and delivers to a tender, the observer does not have an opportunity to census the offload to account for all the salmon bycatch that has been intercepted and take systematic genetic samples, as would be done if delivery were made at a shoreside plant. Since pollock deliveries to tenders represent a significant portion of pollock deliveries in some areas of the GOA, the inability to census salmon has the potential to create high variance in total Chinook salmon bycatch estimates.

In addition, not taking a census from the tender vessels may lead to bias in the analysis of the genetic stock composition of GOA salmon bycatch (and subsequently the understanding of the Chinook salmon bycatch stock of origin), if there is a difference in the salmon populations encountered by catchers delivering to a tender and those delivering shoreside. In recent years, the Council has prioritized implementation of a robust sampling protocol for Chinook salmon in the GOA trawl pollock fisheries to better understand the stock composition of salmon taken as bycatch; however, stock of origin estimates have been stable over the past 5 years in the GOA so this may no longer be a pressing data concern.

A related concern for vessels is that the offload census of salmon bycatch, which an observer conducts shoreside, provides more precise data for managing the Chinook salmon PSC limit in the GOA pollock fishery. Because of the configuration of tender vessels, a census of the delivery is not an option. When

³ Under the American Fisheries Act (AFA), all vessels allowed to harvest pollock are specifically designated whether they are catcher vessels, catcher processors, or motherships.

offload data are not available, NMFS estimates Chinook salmon PSC using at-sea samples and extrapolates samples to the delivery of the sampled haul. Observers strive to take multiple, equal-sized samples from throughout the haul to obtain the largest sample proportion possible. However, even with large sample sizes that reduce detectability issues, Chinook salmon is a relatively uncommon species and is characterized by many small and zero counts with occasional large counts. There is a relationship between the abundance of given species in a haul, sample size, and the level of precision in the resulting estimate of species catch from sampling.

In general, managers can have very high precision in the catch estimate for common (target species) with very small samples of the haul. Conversely, even large samples of a haul provide relatively imprecise estimates of catch for very rare species, like Chinook salmon. **Since Chinook salmon bycatch limits in the trawl fishery are fully utilized, imprecise estimates have the potential to shut down the fishery and cause fishermen to forgo pollock harvest opportunities.**

Currently Tender vessels are not required to comply with observer coverage. Observers only collect data on vessels and at plants that are required to comply with observer coverage requirements. There are additional logistical and safety considerations that could be problematic with trying to collect data on tender vessels. Tenders often mix catch from multiple vessels in one delivery to a processor and therefore there is no way to identify which haul a salmon came from. Also, since tender vessels are not required to comply with observer coverage, there is no way to verify that salmon had not been removed from the catch prior to delivery at a shoreside processor. NMFS has not supported the approach of deploying observers from tenders due to the safety concerns involved.

3 Potential Areas of Concern with Increased Retention

3.1 Changes in Fishing Practices Due to Changes in Incentives

All vessels fishing for pollock in the BS and GOA are required by regulation to retain all pollock in order to improve the retention and utilization of the fish resource (reducing waste of target groundfish species). Currently there is no sorting by size of pollock. Some ancillary bleeding of pollock from a trawl net may and often does occur during the course of fishing operations and this information is generally not recorded by either the observer or the vessel captain. In extremely rare circumstances, the intentional discard of a partial bag (deckload) of fish may occur due to safety and stability concerns. When this happens, a vessel skipper will confer with the observer and both will estimate and record the species and amount of discard.

3.2 GOA Pollock Trip Limits

Pollock trip limits for the PWS state fishery and the GOA federal fisheries are managed differently. Under the federal system vessels are required to discard all pollock catches above 300,000 pounds and these vessels can be severely penalized when they exceed this limit. In contrast, under the PWS state fishery vessels are required to keep all pollock they catch even if their catches are above the 300,000 pound trip limit. For these trips, vessels do not get paid for any catches above the limit and enforcement actions only occur when vessels are repeat offenders and/or overages are egregious. **The differences between these two management systems may provide a good case study to determine changes in vessel behavior between the two systems when considering a different pollock trip limit management system for the GOA federal fisheries when utilizing EM for compliance monitoring.**

After reviewing e-landings records for both state PWS pollock deliveries and Central GOA federal pollock deliveries, there seemed to be little difference in the frequency of overages between the two management systems. As such, additional investigation was conducted. Full pollock retention has been required for many years within the PWS state fishery; however, the first year that the [PWS pollock fishery registration packet](#) explicitly included language requiring full retention of pollock was in 2018.

After polling several vessel operators that participated in both the 2018 PWS fishery and the federal CGOA pollock fishery, it became clear that operators were confused about the different requirements between the two management systems. While the state PWS pollock management system may be a reasonable approach for allowing increased retention within a pelagic pollock EM monitoring environment in the GOA, it will likely need to be tested within an Exempted Fishery Permit since the available data does not elucidate changes in vessel behavior.

3.3 Prohibited Species Catch (PSC)

3.3.1 Halibut PSC

The discard mortality rate (DMR) methodology for halibut taken in groundfish fisheries was revised starting in 2017. The assumed DMR for catcher vessels employing pelagic (mid-water) trawl gear in both the GOA and BSAI is now assumed to be 100% (all halibut taken incidentally are dead). Before the change, DMRs ranged from 65% to 76% in the GOA midwater pollock fishery and 81% to 89% in the BS. As a PSC species, by regulation pollock vessels encountering halibut should be discarding them; however, given the de minimis encounters of halibut, it is almost operationally impractical to sort this species from the catch of pollock. Halibut are rarely discarded at sea since halibut bycatch rarely occurs and the operations of pelagic trawl fishing where catch is dumped directly from the cod end into refrigerated sea water (RSW) tanks makes it extremely difficult to sort incidental halibut from the pollock catch while at sea. **In practice, retention of halibut is not generally enforced as a violation. Shoreside processors then discard the landed halibut at sea, send the landed halibut to a communal fish meal plant, or donate the landed halibut to Sea Share for distribution.**

If pelagic trawl vessels using EM for compliance were exempted (via NMFS/IPHC regulations) from discarding halibut within the pelagic trawl pollock fishery, the result is the same – 100% of the halibut would be dead whether discarded at sea (as intended by regulation) or delivered to the processing plant under a specific exemption.

Tables 1 and 2 below show the annual amount of halibut mortality attributed to pelagic trawl gear for both the bottom pollock and pelagic pollock targets in the GOA and BSAI over the years 2009 - 2018. The data reported in Tables 1 and 2 are from the NMFS catch reports and include several caveats. For both the GOA and BSAI, some data are not available due to confidentiality constraints. In the BSAI, from 2009 to 2015, only data from catcher vessels delivering to shoreside processors is included; from 2016 to 2018 the data includes catcher vessels delivering to both motherships and shoreside processors. On average, 11.9 mt of halibut mortality occurred in the GOA pelagic pollock trawl gear fisheries annually (low of 0.1 mt and a high of 26.1 mt). In the BSAI, on average 61.5 mt of halibut mortality occurred annually (low of 9.9 mt and a high of 150 mt).

Table 1 Annual halibut mortality usage Pelagic trawl, pelagic pollock and bottom pollock targets GOA-wide (610, 620, 630, 640) – catcher vessels only

Year	GF* (mt)	Halibut* (mt)	Rate	Halibut PSC (mt)
2009	37,161.00	3.2	0.01%	2.2
2010	70,776.20	25.2	0.04%	17.9
2011	69,923.10	24.6	0.04%	14.9
2012	94,518.00	11.3	0.01%	8
2013	80,430.50	28.9	0.04%	19.2
2014	127,959.50	0.1	0.00%	0.1
2015	154,546.70	15.3	0.01%	10.1
2016	170,221.20	19.2	0.01%	11.4
2017	175,665.10	7.8	0.00%	9.2
2018	147,164.00	22.1	0.02%	26.1
Avg	112,836.50	15.8	0.01%	11.9

*some groundfish and halibut catch not included due to confidentiality constraints

Table 2 Annual halibut mortality usage for pelagic trawl gear, pelagic pollock and bottom pollock targets BSAI - 2009 thru 2015 catcher vessels delivering to shorebased processors and 2016 - 2018 catcher vessels delivering to motherships and shorebased processors. halibut mortality usage Pelagic trawl, pelagic pollock and bottom pollock targets GOA-wide (610, 620, 630, 640) – catcher vessels only

Year	GF* (mt)	Halibut* (mt)	Rate	Halibut PSC (mt)
2009	353,741.00	161.2	0.05%	127.9
2010	356,095.90	105.9	0.03%	82.8
2011	515,955.90	119	0.02%	103.3
2012	524,312.20	177	0.03%	150
2013	541,628.90	28.3	0.01%	24.3
2014	549,873.20	61.8	0.01%	52.5
2015	571,120.90	32.6	0.01%	28.3
2016	693,380.00	21.4	0.00%	18.9
2017	687,074.40	16.7	0.00%	17
2018	702,235.00	9.9	0.00%	9.9
Avg	549,541.70	73.4	0.01%	61.5

*some groundfish and halibut catch not included due to confidentiality constraints

3.3.2 Herring/Crab PSC

Like halibut, herring and crab (king, tanner, opilio) are PSC species required by regulation to be discarded. Similar to encounters with halibut, herring and crab taken by pollock catcher vessels are encountered in very small amounts (see table 3 and 4) and **it is operationally impractical to sort out each animal from the pollock catch.** In rare cases when a vessel does encounter a large school or ‘ball’ of herring, vessels are able to discard as described in the rockfish section below. Additionally, for the AFA fishery in the Bering Sea, when herring interactions do occur, Sea State, Inc. provides updates to catcher vessel fleet notifying them of where encounters take place so they can avoid the specific locations where interactions are happening. In the GOA, when large encounters of herring occur, vessels communicate on the fishing grounds to inform each other of areas to avoid. For crab, these are generally

mixed in the pollock catch. Vessel crew are able to remove and discard those animals on the outside of the net as it is being brought aboard, but these numbers are typically not recorded by the vessel observer. Crab PSC delivered to a processing plant are counted and weighed and then discarded.

Table 3 Pacific Herring PSC in the pollock targets, PTR gear, shoreside sector, BSAI and GOA, 2009-2018

	BSAI	GOA
Year	Herring	Herring
2003	622	12
2004	905	253
2005	508	12
2006	395	9
2007	322	21
2008	33	1
2009	63	8
2010	11	1
2011	238	11
2012	1605	1
2013	191	10
2014	136	5
2015	1106	78
2016	725	147
2017	670	5
2018	422	27
Total	7952	601
Total 2009-2018	5167	293
Avg 2009-2018	516.7	29.3

Source: Mary Furuness, NMFS

Table 4a King, tanner, and opilio crab PSC in the pollock targets, pelagic gear, PTR gear, shoreside sector in GOA, 2009-2018. BKCR = Blue King Crab, BTCR = Bairdi Tanner Crab, GKCR = Golden King Crab, OTCR = Opilio Tanner Crab, RKCR = Red King Crab

Year - GOA	BKCR	BTCR	GKCR	OTCR	RKCR	TOTAL
2009	0	54	0	0	0	54
2010	0	31	0	0	0	31
2011	0	0	0	0	0	0
2012	0	372	0	0	0	372
2013	0	1,349	0	0	0	1,349
2014	0	0	0	0	0	0
2015	0	0	0	0	0	0
2016	0	0	51	27	0	78
2017	0	0	0	0	0	0
2018*	0	426	0	0	0	426
Total	0	2,232	51	27	0	2,310
Avg 2009-2018	0	223	5	3	0	231

*Through Oct 27, 2018

Source: NMFS

Table 4b King, tanner, and opilio crab PSC in the pollock targets, pelagic gear, PTR gear, shoreside sector in BSAI, 2009-2018. BKCR = Blue King Crab, BTCR = Bairdi Tanner Crab, GKCR = Golden King Crab, OTCR = Opilio Tanner Crab, RKCR = Red King Crab

Year - BSAI	BKCR	BTCR	GKCR	OTCR	RKCR	TOTAL
2009	0	372	0	963	40	1,375
2010	0	521	0	881	20	1,422
2011	0	1,952	0	1,907	0	3,859
2012	0	321	0	536	0	857
2013	0	1,134	0	1,293	0	2,427
2014	0	129	0	546	0	675
2015	0	734	0	0	0	734
2016	0	0	0	0	0	0
2017	0	0	0	0	1	1
2018*	0	638	0	0	9	647
Total	0	5,801	0	6,126	70	11,997
Avg 2009-2018	0	580	0	613	7	1,200

*Through Oct 27, 2018

Source: NMFS

3.4 Federal Groundfish MRAs and Problem Species

The incidental species most often encountered during the Bering Sea and the GOA pollock fishery include:

3.4.1 Rockfish (primarily Pacific Ocean Perch, or POP)

Managed as an MRA with an allowable rate of 5% when targeting pollock. In the Bering Sea, POP is most often encountered as a large school that is taken as a cohesive aggregation within a specific portion of the trawl net allowing for ease of sorting at the discretion of the vessel. In the GOA, POP can be in cohesive aggregations as in the BS and thus relatively easy to discard or be incidental catch throughout the haul. However, if the POP taken incidentally is mixed throughout the bag, it makes it extremely difficult to sort and discard this POP catch at sea.

3.4.2 Sablefish

When directed fishing for sablefish is closed, they are managed under an MRA of 1% when targeting pollock. In the GOA, sablefish is always a bycatch species, never open for directed fishing by trawl gear except when checked into the Rockfish Program. PSC status for sablefish in the GOA is usually triggered by sablefish catch in the non-pollock trawl fisheries, not from incidental catch in the pollock fishery. Until recently, it was uncommon to encounter a high number of sablefish in the pollock fishery but small sablefish have recently been caught in higher numbers in the pollock target due to large recent year classes. In the BS, vessels typically do not receive compensation for sablefish delivered with their pollock due to their small size. In the GOA, vessels have been paid for their incidental catches of sablefish with two caveats: the size is greater than two pounds and the sablefish is of food grade quality. Since the amount of sablefish encountered is minimal and mixed throughout the catch, sorting is difficult and unlikely to occur.

3.4.3 Large Items (primarily salmon sharks and Pacific sleeper sharks)

These occurrences are relatively rare but because of their large size are easily sorted out of the catch and discarded at sea. Sorting is desirable since these large sharks don't easily go down into the tanks and if they do go into the tanks, plug the processor's fish pumps while offloading at the dock.

Additional incidental species specific to the GOA pollock fishery are forage fish with an MRA of 2%. Forage fish includes eulachon, smelt, and capelin. Forage fish are very small in size, the catch is minimal and mixed throughout the catch making sorting difficult and thus unlikely to occur.

EM Committee contributors to this document were not in agreement as to whether vessel skippers and observers must or generally do agree on discard estimates. **Some members felt skippers and observers should agree on discard estimates so that both are recording the same number in their respective logbooks. Others felt skippers and observers may discuss what species will be kept by the vessel and which discarded, but they don't agree on discard estimates.**

The Observer manual has passages that read:

“Observers must make an independent estimate of at-sea discards for all sampled hauls.”

and

“You [the observer] can refer to the discard information recorded in the vessel logbook to verify your independent observations, but do not use these entries to provide discard data!”

Contributors to this White Paper hope FMA staff will help resolve this issue during the November 2018 EM Committee meeting in Seattle and clarify the language below:

In the Bering Sea and the GOA, the vessel skipper and observer may discuss which incidental species are intended to be discarded prior to any catch being brought on board. The vessel observer records his/her best estimate of “percent retained” for each species encountered in the observer at-sea species composition samples.

3.5 Groundfish When on PSC Status

In the Bering Sea and in the GOA, if and when sablefish goes on PSC status, vessels encountering sablefish are required to slow their fishing operations to remove and discard sablefish from their catch. This slow dumping is challenging as it results in a loss of time and can be dangerous for a vessel and its crew. While sorting, a full bag is typically trailing behind a vessel (due to limited deck space) and has the potential to cause safety and stability issues due to potential rough weather and increased time on deck. Additionally, pollock fish quality is sacrificed since the bag can be in the water for several hours with the fish being rolled around from wave action versus hauled back quickly and dumped into the tanks within 30-60 minutes. If and when POP goes on PSC status, vessels are able to discard POP when in cohesive aggregations or be in a similar situation as sablefish if incidental catches are throughout the haul.

4 How Did the West Coast Deal with These Challenges in the Whiting Fishery?

<Placeholder for summary document to include:>

- A. Regulations before implementation of EM
- B. Current discard rules and monitoring requirements with EM in place
- C. Effects on vessels and processors

D. Lessons learned that are applicable in the NP

5 What are the Challenges Associated with Requiring Increased Retention for Vessels and Processors?

5.1 Pollock Trip Limits

The most probable change in vessel behavior if the penalty for overages are removed or diminished is for more trips to be at or above the trip limit even if the vessel does not get paid for the overages. This behavior would maximize the value of each trip since each trip would be closer to, at or over the limit. However, it is important to note that pollock delivered over the trip limit is considered illegal catch and would therefore not count towards any future historical catch share program. Processors receive the same economic return for any pollock delivered regardless if the trip is at or below the 300,000 limit - all processed pollock can enter commerce. This may create an economic incentive for processors to encourage vessels to exceed the trip limit. However, when processors are at maximum processing capacity this incentive is removed since vessel rotation and turnaround time is paramount for both the processor's fleet and the processing facility.

5.2 Species Management

Requiring increased or full retention of incidental groundfish could potentially result in the TAC/ABC being reached sooner during the course of the fishing year. It could also potentially make staying within a species ABC more challenging which may result in managers taking a more conservative/cautious management approach when deciding on fishery closures.

5.3 Inefficiency in Fishing Operations

It generally takes 2-3 tows to fill a Bering Sea pollock catcher vessel and 1-3 tows to fill a GOA pollock vessel. In the GOA, after completion of the first tow and perhaps even during the first tow it can be extremely difficult to be precise about the amount of fish needed to fill the vessel hold to capacity without going over the trip limit. In the BS AFA pollock fishery, vessels have individual pollock allocations so any type of system where some pollock is restricted from being discarded could incentivize vessels to not fill their bags/vessel holds prior to returning to port for delivery. **This would result in vessels having to take extra trips in order to catch their available pollock quota. It could also result in a vessel keeping their overages as partial deckloads when returning to port for delivery.** This is a practice vessels actively try to avoid and want to prevent. In the GOA, which operates as a race for fish, vessels want to maximize each trip meaning they are more likely to bring in deckloads or full cod ends versus coming in with partial trips.

In the Bering Sea, full retention of incidental species such as rockfish equates to a certain percentage of a vessel's capacity not being occupied by pollock, which could result in a loss of revenue for a vessel. Further, not all processing facilities pay a pollock vessel for the rockfish they retain resulting in increased loss of revenue and time. In the GOA POP prices can be equal to or even higher than pollock and most all processors buy and process POP if processing capacity is available.

5.4 Enforcement

Enforcement would become easier with a full retention rule but has the potential to become more complicated/difficult with some version of optimized or maximized retention. The EM Committee should work closely with OLE to ensure enforcement issues are addressed early and often in the process of developing recommendations to change existing discard regulations.

6 Next Steps

The EM Committee requested this White Paper so that it might inform progress on a Cooperative Research Plan for 2019. EM Committee members are encouraged to utilize this document, as well as the forthcoming completed section 4, before and during the November 2018 EM Committee meeting.