Review of the West Coast Groundfish Trawl Catch Share Program

Draft

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Abbreviations

ACL	Annual catch limit
AMP	Adaptive management program
BMSY	Biomass at MSY
BiOp	Biological Opinion
CHA	Catch history assignments
COP	Council Operating Procedure
CP	Catcher-processor
CSP	Catch share program
CV	Catcher vessel
DPC	Direct program costs
DTS	Dover sole, Thornyheads, and Sablefish
EDC	Economic data collection program
EFP	Exempted fishery permit
EM	Electronic monitoring
FMP	Fishery Management Plan
HG	Harvest guideline
IBQ	Individual bycatch quota
IFQ	Individual fishing quota
LAPP	Limited access privilege program
LEFG	Limited entry fixed gear
LEP	Limited entry permit
MSA	Magnuson–Stevens Fishery Conservation and Management Act
MS	Mothership

MSCV	Mothership catcher vessels
NMFS	National Marine Fisheries Service
QS	Quota share
QP	Quota pound
RCA	Rockfish conservation area
SFFT	Selective flatfish trawl
TCNR	Total cost net revenue
VCNR	Variable cost net revenue
WMC	Whiting Mothership Cooperative

1 Introduction

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires that catch share programs:

> …include provisions for...a formal and detailed review 5 years after the implementation of the program and thereafter to coincide with scheduled Council review of the relevant fishery management plan (but no less frequently than once every 7 years). MSA (303A(c)(1)(G)

National Marine Fisheries Service (NMFS) "Guidance for Conducting Review of Catch Share Programs" (NMFSPI 01-121-01) indicates that subsequent reviews "should be initiated before the end of the program's 12th year, regardless of when the initial review was actually completed" (p. 3).

The catch share program was implemented in 2011 and initial planning for this review (the second trawl catch share program review) began at the September 2022 meeting. At that time, the Pacific Fishery Management Council (Council) decided to begin the process by developing and updating analytical documents that summarize the effects of the trawl catch share program. However, the Council was also in the process of considering revisions to a central provision of the program related to the gears allowed (gear switching). These deliberations were complex and required substantial resources such that it was not possible to commit Council agenda and staff time to a program review.

Further activity on the program review was therefore delayed, pending completion of the gear-switching deliberations. Those deliberations were completed at the April 2024 meeting. An annotated outline of the review was presented at the September 2024 meeting and the Council made a motion that this review should consider the program's performance and provide a diagnosis of why the program is not meeting its economic goals and objectives. The Council wanted this diagnosis to look at program design and factors outside of the Council process, and to focus on the non-whiting bottom trawl sector. In November 2024, the Council also recommended holding five hearings. Two hearings occurred in April 2025 (one online and one in Astoria, OR) and three in July 2025 (one online, one in Eureka, CA, and one in Newport, OR). Reports of the hearings can be found in *Appendix: Public Hearing Summaries*.

1.1 Depth of Focus for This Review

The first trawl catch share review included an in-depth focus on conditions in the fishery that changed after initial implementation of the program. The resources dedicated to the process and recommendations from that review are described in Section 1.5. This review focuses more on how program performance might have changed since the period covered by the first review (although some references to pre-catch share conditions continue to be important). Because changes that have occurred during the catch share program have not been as substantial as the change from pre-catch

share management, less information is needed for the review. As with the previous review, the review results are not intended to be definitive with respect to program performance (not expected to demonstrate certain cause and effect). Rather, review results may indicate areas where further investigation might be warranted to understand the influence of the program over a particular outcome and whether changes are needed.

1.2 Goals and Objectives

The primary purpose of this catch share review is to assess progress in meeting goals and objectives of the program and MSA. The NMFS policy states that the goals and objectives to be covered in the review include those of the program, the groundfish FMP, the Catch Share Policy,[1] and the MSA, but the primary focus should be on those identified in the implementing FMP amendment (Amendment 20).

Many of the goals and objectives from these different sources overlap. The catch share program was expected to help the Council address objectives related to National Standards (NS) 4 (fair and equitable allocation), 5 (consider efficiency), 6 (take into account variations and contingencies), 8 (take communities into account), 9 (minimize bycatch and bycatch mortality), and 10 (promote safety). With respect to the FMP, it was expected to affect achievement of Groundfish FMP Goals 2 (maximize the value of the resource as a whole) and 3 (achieve maximum biological yield) through impacts related to Objectives 6 (achieve greatest net benefit), 9 (reduce wastage), 11 (minimize bycatch), 12 (equitable sharing of the conservation burden), 13 (minimize gear conflicts), and 14 (accomplish changes with minimum disruption). Objectives of Amendment 20, trawl catch share program, and their relation to the MSA and FMP goals and objectives are provided in Table 5.

Amendment 20 included objectives and guiding principles. The difference between the two is that an objective was a motivating reason for implementing the catch share program. A guiding principle was a factor that needed to be taken into account while developing the program. For example, there were already adequate mechanisms in place taking into account the biological structure of stocks and ensuring allowable harvests were not exceeded. They were not reasons that motivated the need for a catch share program but during the program design process it was highly important to take into account the impacts of the program on these factors. Similarly, the costs of administering a program needed to be taken into account but administering a program was not a motivating objective for the development of the program.

[1] NMFS's goals for [its catch share] policy are: to help reduce administrative or organizational impediments to the consideration and adoption of catch shares in appropriate fisheries; to inform and educate stakeholders of the different options and capabilities of catch share programs; and to help organize collaborative efforts with interested Councils, states, communities, fishermen and other fishery stakeholders on the design and implementation of catch share programs. (NMFS Catch Share Policy, p. 3)

Table 1. Goal and Objectives from Amendment 20 and their consistency with management objectives of the groundfish FMP and MSA

Amendment 20 Goal/Objective	Related FMP Management Goals (G) & Objectives (Obj)[a] and MSA National Standards (NS)
Amendment 20 Goal: Create and implement a capacity reduction program that achieves the following:	
Increases net economic benefits.	G-2 - Economics. Maximize value. Obj-6. Maximize net benefits (within constraints). NS-1. Achieve OY…. NS-5. Consider efficiency in utilization…. NS-7. Minimize costs; avoid duplication.
Creates individual economic stability.	Obj-2. Stewardship responsibilities, … stable, and profitable fishery. Obj-14. Least disruption. Obj-15. Avoid unnecessary small entity impacts. NS-6. Allow for variations and contingencies.
Provides for full utilization of the trawl sector allocation.	G-3 – Utilization. Maximize yield …. Obj-9. Full utilization. NS-1. Achieve OY…. NS-9. Minimize bycatch, and bycatch mortality.
Considers environmental impacts.	G-1 - Conservation. Obj-3. Rebuild OFS taking into account …marine ecosystem. Obj-4. Control impacts to non-groundfish species (when appropriate). Obj-5. EFH conservation and enhancement. NS-1. … prevent overfishing.
Achieves individual accountability of catch and bycatch.	Obj-1. Maintain an information flow NS-1. Achieve OY and prevent overfishing. NS-2. Use best available scientific information. NS-9. Minimize bycatch, and bycatch mortality.
Amendment 20 Objectives:	
1. Provide a mechanism for total catch accounting.	G-1 - Conservation. Obj-1. Maintain an information flow Obj-11. Monitor and reduce bycatch/bycatch mortality and regulatory and economic discards. NS-2. Use best available scientific information NS-9. Minimize bycatch, and bycatch mortality.
2. Provide for a viable, profitable, and efficient groundfish fishery.	G-2 - Economics. Maximize value. Obj-2. Stewardship responsibilities, harvest capacity reduction, and a diverse, stable, and profitable fishery. Obj-6. Maximize net benefits (within constraints). NS-5. Consider efficiency in utilization…. NS-7. Minimize costs; avoid duplication.
3. Promote practices that reduce bycatch and discard mortality and minimize ecological impacts.	G-1 - Conservation. G-3 – Utilization. Maximize yield …. Obj-4. Control impacts to non-groundfish species (when appropriate). Obj-5. EFH conservation and enhancement. Obj-9. Full utilization. Obj-11. Monitor and reduce bycatch/bycatch mortality and regulatory and economic discards. NS-1. … prevent overfishing. NS-3. Manage stocks as a unit. NS-4. Ensure that allocations …, promote conservation…. NS-9. Minimize bycatch, and bycatch mortality.
4. Increase operational flexibility.	G-2 - Economics. Maximize value.

Amendment 20 Goal/Objective	Related FMP Management Goals (G) & Objectives (Obj)[a] and MSA National Standards (NS)
	G-3 – Utilization. …promote year-round opportunity. Obj-6. Maximize net benefits (within constraints). Obj-7. Promote year-round marketing (where appropriate). Obj-17. Promote safety at-sea. NS-1. Achieve OY… NS-5. Consider efficiency in utilization…. NS-6. Allow for variations and contingencies. NS-10. Promote safety of human life at-sea.
5. Minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical.	Obj-3. Rebuild OFS taking into account community needs, … Obj-7. Promote year-round marketing (where appropriate). Obj-12. Equitable impacts Obj-14. Least disruption. Obj-15. Avoid unnecessary small entity impacts. Obj-16. Maintain fishing community participation and minimize impacts. NS-4. Ensure that allocations are fair and equitable, … and prevent excessive shares. NS-8. Consider fishing communities to provide for their sustained participation and to minimize adverse economic impacts
6. Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.	G-3 – Utilization. Maximize yield and promote year-round opportunity. Obj-2. Stewardship responsibilities, harvest capacity reduction, and a diverse, stable, and profitable fishery. NS-5. Consider efficiency in utilization…. NS-7. Minimize costs; avoid duplication.
7. Provide quality product for the consumer.	G-2 - Economics. Maximize value. Obj-7. Promote year-round marketing (where appropriate). Obj-6. Maximize net benefits (within constraints)..
8. Increase safety in the fishery.	Obj-17. Promote safety at-sea. NS-10. Promote safety of human life at-sea.
Amendment 20 Constraints and Guiding Principles:	
1. Take into account the biological structure of the stocks including, but not limited to, populations and genetics.	G-1 - Conservation. NS-2. Use best available scientific information. NS-3. Manage stocks as a unit. NS-4. Ensure that allocations …, promote conservation, ….
2. Take into account the need to ensure that the total optimum yields (OYs) and allowable biological catch (ABC) are not exceeded.	G-1 - Conservation. Obj-1. Maintain an information flow NS-1. Achieve OY and prevent overfishing.
3. Minimize negative impacts resulting from localized concentrations of fishing effort.	G-1 - Conservation. Obj-5. EFH conservation and enhancement. Obj-12. Equitable impacts Obj-13. Minimize gear conflicts. Obj-14. Least disruption. NS-1. Achieve OY and prevent overfishing. NS-4. Ensure that allocations …, promote conservation….
4. Account for total groundfish mortality.	G-1 - Conservation. Obj-1. Maintain an information flow Obj-11. Monitor and reduce bycatch/bycatch mortality and regulatory and economic discards. NS-1. Achieve OY and prevent overfishing. NS-2. Use best available scientific information.
5. Avoid provisions where the primary intent is a change in marketing power balance between harvesting and processing sectors.	Obj-12. Equitable impacts Obj-15. Avoid unnecessary small entity impacts. NS-4. Ensure that allocations are fair and equitable, ….

Amendment 20 Goal/Objective	Related FMP Management Goals (G) & Objectives (Obj)[a] and MSA National Standards (NS)
6. Avoid excessive quota concentration.	Obj-12. Equitable impacts Obj-16. Maintain fishing community participation and minimize impacts. NS-4. Ensure that allocations are fair and equitable, … and prevent excessive shares. NS-5. Consider efficiency in utilization. NS-8. Consider fishing communities to provide for their sustained participation and to minimize adverse economic impacts
7. Provide efficient and effective monitoring and enforcement.	- Conservation. - Economics. Maximize value. Obj-6. Maximize net benefits (within constraints). NS-2. Use best available scientific information. NS-4. Ensure that allocations are fair and equitable, …. NS-5. Consider efficiency in utilization… NS-7. Minimize costs; avoid duplication.
8. Design a responsive mechanism for program review, evaluation, and modification.	NS-6. Allow for variations and contingencies.
9. Take into account the management and administrative costs of implementing and overseeing the IFQ or co-op program and complementary catch monitoring programs, as well as the limited state and Federal resources available.	G-2 - Economics. Maximize value. Obj-6. Maximize net benefits (within constraints). NS-5. Consider efficiency in utilization… NS-7. Minimize costs; avoid duplication.

Note: [a] FMP Objectives 8 and 10 are not included here. Objective 8 emphasizes of use gear restrictions to reduce regulatory and economic discards. Objective 10 emphasizes management by spp/spp-groups & gear. The objective of the catch share program is to reduce regulatory restrictions such as gear restrictions. This is evidenced by the gear rule, which sought to eliminate all unnecessary regulatory restrictions. The program supports but does not further management by spp/spp-groups.

1.3 Requirements of Catch Share Reviews

Limited access privilege program (LAPP) reviews, including fisheries managed through IFQs and cooperatives, have specific requirements under the 2007 reauthorization of the MSA.

The term "limited access privilege" is defined as a federal permit to harvest a quantity of fish representing a portion of the total allowable catch of the fishery. The MSA requires that periodic formal and detailed reviews be conducted to assess whether the program is meeting management goals. Section 303A(c)(1)(G) of the MSA states the following requirements for limited access privilege programs:

> MSA 303A(c) Requirements for Limited Access Privilege Programs (1) IN GENERAL (G) include provisions for the regular monitoring and review by the Council and the Secretary of the operations of the program, including determining progress in meeting the goals of the program and this Act, and any necessary modification of the program to meet those goals, with a formal and detailed review 5 years after the implementation of the program and thereafter to coincide with scheduled Council review of the relevant fishery management plan [FMP] (but no less frequently than once every 7 years).

Per the *Guidance for Conducting Review of Catch Share Programs* (NMFS, 2017), the following elements are required to be addressed in reviews:

1) Purpose and need of the review (discuss legal/policy requirements);

2) Goals and objectives of the program and the MSA;

3) History of management, including a description of management prior to the program's implementation, a description of the program at the time of implementation (including enforcement, data collection, and monitoring), and any changes made since the program's implementation or the previous review;

4) Description of biological, ecological/environmental, economic, social, and administrative environments before and since the program's implementation;

5) Analysis of the program's biological, ecological/environmental, economic, social, and administrative effects;

6) Evaluation of those effects with respect to meeting the goals and objectives (i.e., program performance), including a summary of the conclusions arising from the evaluation;

7) A summary of any unexpected effects (positive or negative) which do not fall under the program's goals and objectives, and

8) Identification of issues associated with the program's structure or function and the potential need for additional data collection and/or research.

In addition, the guidance states that within the assessment of the program's performance, it must address the following key areas: A) goals and objectives, B) allocations, C) eligibility, D) transferability, E) catch and sustainability, F) accumulation limits/caps, G) cost recovery, H) data collection/reporting, monitoring, and enforcement, I) duration, J) new entrants, and K) auctions and royalties. Finally, the guidance also requires a discussion of the net benefits to the nation produced by the program. Table 2 describes where each key area is addressed in this report.

Table 2. Performance Analysis Sections Where Key Areas of Catch Share Program Review are Addressed

Key Area	Description of the Catch Share Program Sec. 1.4	Environmental Outcomes Sec 2.1	Full Utilization Sec 2.2	Net Benefits and Related Outcomes Sec 2.3	Accumulation Limits and Excessive Shares Sec 2.4	Individual Economic Outcomes Sec 2.5	Concentration of Value Sec 2.6	Community and Other Outcomes Sec 2.7	Entry, Exit, and New Entrants Sec 2.8
Program goals and objectives:									
Increases net economic benefits				x					
Creates individual economic stability.				x		x			
Provides for full utilization of the trawl sector allocation.			x						
Considers environmental impacts.		x							
Achieves individual accountability of catch and bycatch.		x		x					
Provide a mechanism for total catch accounting.		x							
Provide for a viable, profitable, and efficient groundfish fishery.				x		x			
Promote practices that reduce bycatch and discard mortality and minimize ecological impacts.		x							
Increase operational flexibility.								x	
Minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical.								x	
Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.								x	
Provide quality product for the consumer.								x	
Increase safety in the fishery.								x	

Key Area	Description of the Catch Share Program Sec. 1.4	Environmental Outcomes Sec 2.1	Full Utilization Sec 2.2	Net Benefits and Related Outcomes Sec 2.3	Accumulation Limits and Excessive Shares Sec 2.4	Individual Economic Outcomes Sec 2.5	Concentration of Value Sec 2.6	Community and Other Outcomes Sec 2.7	Entry, Exit, and New Entrants Sec 2.8
Other key areas									
Allocations					x				
Eligibility	x								
Transferability	x								
Catch and Sustainability		x							
Accumulations limits/caps					x				
Cost recovery				x					
Data collection/reporting, monitoring, and enforcement				x				x	
Duration	x								
New entrants									x
Auctions and royalties	x								
Net benefits to the Nation				x					

1.4 Description of the Trawl Catch Share Program

There are separate catch share systems for each trawl sector covered under the trawl rationalization program: the shoreside sector (i.e., shorebased individual fishing quota or IFQ program), the at-sea mothership (MS) sector and the at-sea catcher-processor (CP) sector. The MS and CP sectors are managed under a cooperative structure.

Harvest privileges allocated as part of the trawl catch share program are not rights. Section 303A(f) of the MSA states that harvest privileges are a permit issued for a period of not more than 10 years that will be renewed before the end of that period, unless it has been revoked, limited, or modified. Adverse findings from program reviews (or other studies and reports) could lead to consideration of dissolution of the program, revocation of all or part of quota shares or cooperative allocations, or the implementation of other fundamental program changes.

The mandatory economic data collection (EDC) from all sectors facilitates the monitoring of program performance. Program cost recovery fees for all three sectors were implemented starting in 2014. Program benefits are expected to exceed costs and will be evaluated as part of program performance review.

1.4.1 Shorebased Trawl IFQ Program

The shoreside sector is managed with an IFQ program that replaced most cumulative landing limits and seasonal whiting fishery management with individual fishing quotas. Under the MSA, "an 'individual fishing quota' means a Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person." An IFQ grants an entity the privilege to catch a specified portion of the shoreside trawl sector's stocks/stock complex allocations. Within the IFQ program, vessels are allowed to use a variety of directed groundfish commercial gear to take the shoreside trawl sector allocation, including non-trawl gear, which enables "gear switching." At its April 2024 meeting, the Council recommended gear-switching for sablefish north of 36° N latitude be restricted in years when the annual catch limit (ACL) for northern sablefish is less than 6,000 mt. In those years, all quota share (QS) owners will receive some quota pounds (QP) eligible for gear-switching (any-gear QP). Those with a qualifying history would likely receive most or all of their QP as any-gear QP, while all others will receive a portion as any-gear QP and the remainder as trawl-only QP. In years where the annual catch limit is greater than or equal to 6,000 mt, there will be no restrictions on gear switching.

IFQs have been created in regulation for most stocks/stock complexes managed under the Groundfish Fishery Management Plan (FMP). Some groundfish stocks/stock complexes rarely caught by trawl gear and spiny dogfish are excluded from the IFQ program and may be managed by cumulative landings limits. For species not covered by IFQ, mortality is deducted against the fishery harvest guideline (HG). Halibut individual bycatch quota (IBQ) is required to cover the incidental

mortality of Pacific halibut in the groundfish trawl shoreside fishery north of 40° 10' N. lat. Any bycatch south of 40° 10' N. lat. is accounted for under a 10 mt set-aside shared with the at-sea sectors.

Prior to the start of each fishing year, NMFS issues QP to entities based on the amount of QS they hold and the shoreside trawl sector allocation. The QP must be transferred to a vessel account to be used. When a vessel goes fishing under the IFQ program, all catch (including discards) must be covered by QP from the vessel's QP account (i.e., vessel account). Survival credits may be provided for select species, reducing the amount of QP required to cover the catch. Currently, discard mortality applies to sablefish, lingcod, and Pacific halibut (see Section 4 of 2024 SAFE Document for more details). If there is not enough QP to cover the catch from a trip, there is a 30-day grace period during which adequate QP must be transferred into the vessel's account. A vessel may not begin another IFQ fishing trip, and its permit cannot be sold, until the overage is covered. After the 30-day grace period, the vessel is considered in violation of the program, unless the overage is within the amount allowed by the carryover provision. A carryover provision allows for an overage in one year to be covered by up to 10 percent of the following year's QP; likewise, the provision also allows QP that were not used in one year to be carried over into the following year, up to 10 percent, for select stocks where the ACL is less than the ABC.

Generally, anyone eligible to own a U.S.-documented fishing vessel may also acquire QS and QP.[2] These provisions allow for new entrants into the fishery; for example, a crewmember could purchase quota in small increments. They also allow for ownership of QS by entities that do not otherwise participate in the fishery.

Transferability is an important component; however, it can be and is limited to protect against unintended consequences. For example, there are accumulation limits on the amount of QS that can be controlled by an entity, as well as vessel limits for each IFQ category and total non-whiting groundfish for the amount of QP that may be used annually by a vessel. The intent of these limits is to prevent excessive control of quota by a participant.

An adaptive management program (AMP) allows the Council to use 10 percent of the trawl allocation to provide incentives, support, or other compensation to offset the adverse impacts of the program. To date, these QPs have been passed through to QS holders in proportion to their QS holdings and NMFS will continue to do so until the Council recommends something different (*83 FR 63970*).

A tracking and monitoring program is necessary to ensure that all catch (including discards) is documented and matched against QP. Initially, at-sea observers were required on all vessels, as well as shoreside monitoring during all off-loading (100 percent coverage). The Council has developed a policy to allow electronic monitoring systems that use cameras and other sensors to substitute for observers on certain vessels.

[2] To be eligible to own QS, the person need not actually own a U.S. documented fishing vessel.

1.4.2 Pacific Whiting At-Sea Mothership Sector (MS)

The MS sector is made up of mothership catcher vessels (MSCVs), which harvest fish, and motherships, which process the fish at-sea. Catcher vessels must have an MSCV trawl-endorsed permit which are associated with catch history assignments based on historical catch. In the development of Amendment 20, the Council created a closed class of processors for six MS-endorsed trawl limited-entry permits for those vessels that would be able to process at-sea as MS. Permits were based on historical participation. MSCVs are held to a 20 percent accumulation limit of the whiting CHA and a catch limit of 30 percent of the allocation. MS vessels did operate under a 45 percent processing cap until 2023, at which time the processing cap was removed based on a Council recommendation (see Table 7).

The Pacific whiting MS sector is managed through a system of cooperatives (co-ops) under which catcher vessels choosing to fish in a co-op would be obligated to deliver their catch to an associated MS processor. In March of 2011, the owners of all 37 MSCV permits formed a co-op called the "Whiting Mothership Cooperative (WMC)". All MSCV have participated in the WMC since 2011. However, if an MSCV does not plan to join a co-op, it can participate in a non-co-op fishery as outlined in 50 CFR 660.150.

As stated in the WMC 2025 annual report, one of the primary purposes of the WMC is to minimize the bycatch of constraining rockfish species and Chinook salmon. Multiple strategies including daily monitoring by Sea State, inseason hot spot closures, night fishing restrictions, and move--along rules are used to mitigate bycatch. One of the key features of the MS co-op is the use of seasonal pools, in which the WMC divides the whiting allocation into five pools spread across the fishing year based on the amount of whiting declared by MSCVs intending to participate in that pool. All other allocations of groundfish species (which are all managed as set-asides as of 2020) are shared pro-rata to the pools. For further details on the WMC, including pool operations, recent inseason closures, bycatch rate rules, and season dates see *Supplemental Informational Report 3, March 2025*.

1.4.3 Pacific Whiting Catcher-Processor Sector (CP)

The CP sector has been operating under a co-op, the Pacific Whiting Conservation Cooperative (PWCC) since 1997, which was formalized for management with the implementation of Amendment 20. There are 10 CP endorsed trawl permits with no accumulation limits. However, if the voluntary CP co-op dissolves, any allocation to the sector will be divided equally among the ten CP endorsed permits and an IFQ fishery will be formed. Under an IFQ structure, an accumulation limit of 5 permits will be implemented.

The CP sector utilizes similar management measures as the MS sector to mitigate bycatch, such as information sharing, use of Sea State, and move-along rules. Further details, including actions taken inseason by the co-op, can be found in *Supplemental Informational Report 4, April 2025*.

1.4.4 Allocations

NMFS Fisheries Allocation Review (01-119, 01-119-01) policies provide a mechanism for ensuring periodic allocation reviews and requires triggers for reviews of sector allocations. The triggers were implemented by this Council in Council Operating Procedure (COP) 27. For the species and species groups for which quota is issued, Amendment 20 (Amendment 20) is reliant on the trawl/non-trawl allocations specified in the FMP[3] as well as those established through the biennial specifications process. Additionally, the FMP includes an allocation of Pacific whiting among the trawl sectors and a Pacific halibut bycatch allocation to the trawl sector (used to determine the amount of Pacific halibut IBQ that will be issued for the shoreside fishery).[4] COP 27 specifies that the trigger for a review of the FMP allocations is the review of the trawl catch share program. A review of these inter-sector allocations as well as the biennial stocks was completed in June 2025 (PFMC 2025).

The NMFS catch share review guidance also states that the allocations that should be reviewed are not just those between sectors but also between entities and subgroups within the program and that the allocation review should explicitly consider the effect of existing accumulation limits on allocations (NMFSPI 01-121-01, pp. 11-12). The trawl catch share program initially allocated QS and catch history assignments (CHAs) among trawl limited entry permit (LEP) holders and provided 20 percent of the whiting QS to shoreside whiting processors. A single CP allocation is given each year to the CP co-op which manages its distribution among members. As described above, if the CP co-op dissolves, then the sector will convert to an IFQ-based fishery with each CP endorsed permit receiving an equal amount of whiting QS. Since the initial QS and CHA allocations, markets have determined redistribution of the allocations, limited by who is eligible to receive the allocation (Section 2.3), transferability rules (Section 2.4), and accumulation limits (Section 2.6). Section 2.1.5 describes the degree to which these access privileges have been consolidated and Section 2.1.6(a)(4) describes their distribution by region

1.4.5 Eligibility

Reviews should evaluate who is eligible to hold quota and the effects of those eligibility criteria (NMFS Procedural Guidance 01-121-01, p. 13). If the necessary resources and information are available, a more comprehensive review effort might also include the effects on those who have left the fishery.

Participation in the catch share fisheries requires access to quota. The distribution of the initial allocation is described in the previous section. All quotas issued under the program are transferable; however, the means of transfer and eligibility requirements for receiving a transfer vary (Table 3).

[3] Including the allocation of sablefish among the trawl, LEFG and OA fisheries).

[4] From the bycatch allocation of Pacific halibut to the trawl fishery, 10 mt is subtracted to cover bycatch mortality in the at-sea whiting fishery and trawl fishery south of 40°10’ N latitude.

Any entity eligible to own a U.S. documented fishing vessel is eligible to acquire shorebased QS. The annually issued shoreside QP are initially given to QS owners. After that initial QP issuance, only vessels with vessel accounts are eligible to receive the QP. They can acquire QP from QS holders, other vessel accounts, or through vessel level carryover. In order to establish a vessel account, a vessel must have a trawl LEP (acquired by ownership or leasing).[5]

Mothership CHAs are the long-term mothership sector privilege analogous to the shoreside QS. Only owners of trawl LEPs are eligible to acquire CHAs—the CHAs can only be transferred from one LEP to another. However, any entity eligible to own a U.S. documented fishing vessel is eligible to own an LEP, even if they do not own a vessel. Each year whiting quota is allocated to mothership co-ops based on the CHAs owned by the co-op members. Any vessel with a trawl LEP is eligible to join and fish the co-op allocation, with the permission of the co-op (including vessels that do not have mothership catcher vessel endorsements). [6]

For the CP sector, only the CP co-op is eligible to receive CP quota. There is only one CP co-op, comprised of all the owners of the CP permits. Only vessels with CP permits are eligible to fish on the CP allocation. Any entity eligible to own a U.S. documented fishing vessel is eligible to own a CP permit.

Table 3. Privilege and eligible recipients of transfers

	Long-term Privilege and Eligible Recipients	Annually Issued Quota and Eligible Recipients
Shoreside IFQs	QS – Any US Citizen	QS owners receive QP and only vessel accounts are eligible to receive transfers of QP.
MS Co-ops	CHAs – Trawl LEPs (LEPs can be owned by any US citizen)	Mothership co-op receives annual quota based on member CHAs and member trawl LEP vessels are eligible to receive assignments from the co-op.
CP Co-ops	Long-term Privileges are Not Formally Issued (but ownership of a CP Permit gives the owner access to the annually issued quota)	CP co-op receives annual quota (CP sector allocation) and member CP permitted vessels are eligible to receive assignments from the co-op.

1.4.6 Transferability

The review should assess whether transferability limitations are conducive to achieving the program objectives (NMFS Procedural Guidance 01-121-01, p. 13).

The previous sections identify who initially received the allocations and is eligible to receive transfers of trawl catch share quota. After the initial allocations of quota at the start of the program,

[5] Once a QP account is established, the vessel can maintain the account even if the LEP permit is transferred from the vessel.

[6] While in practice it has not happened, a vessel with a permit and CHA could decide not to join a co-op and then fish on its CHA in an open fishery. In such a case, in order to catch its quota, the vessel would have to compete with any other vessel that chose not to join a co-op—i.e., their opportunity to catch the quota would not be guaranteed.

there was a moratorium on shoreside QS trading that lasted until 2014—except with respect to widow rockfish QS, for which the trading moratorium expired in 2018. CHAs were initially transferable only with the LEPs to which they were attached but became tradeable separately from their permits as of 2012. There are no individual allocations for the CP sector (except those which may be made by the CP co-op). Other than the specification of who is eligible to receive quota, the primary limitations on transferability are the units in which quota can transfer and accumulation limits in the shoreside and mothership sectors (see Section 2.4 for a discussion of the effects of accumulation limits).

Shorebased QS are transferable in units of virtually any size. The annually issued QP must be transferred in whole pound units. Mothership CHAs are transferred as a unit (similar to limited entry fixed gear (LEFG) tier limits) except that CHAs must be transferred from one limited entry trawl permit to another (in contrast LEFG tier limits can only be transferred with the LEP, i.e., cannot be transferred between permits). Thus, CHAs can be owned only by owners of mothership catcher vessel permits, and owners of such permits can accumulate CHAs from multiple trawl permits (up to the maximum allowed by the accumulation limits). Once the CHAs have been used to determine the amount of quota to be given to a co-op, the co-op can assign catch opportunities to its members in any sized unit it desires, based on the co-op's own rules.

For the CP sector, there is no quota assigned to individuals but rather individuals gain the opportunity to access the CP sector allocation by owning a CP permit and maintaining their membership in the CP co-op (there is only one CP co-op,[7] comprised of all the owners of the CP permits). Once the CP sector allocation is given to the CP co-op the co-op can assign catch opportunities to its members in any sized unit it desires, based on the co-op's own rules.

1.4.7 Duration

The review should indicate the life span of the catch privileges and discuss the pros and cons of the current specification of the catch privilege duration. See Section 3.4.7(d) of the 2017 Review for a summary of the Council's deliberations on the duration of the catch share program.

Although a fixed duration was not part of the Council's final preferred alternative, the MSA restricts the duration of a fishing privilege to 10 years with the possibility of automatic renewal. The trawl catch share program renews automatically unless privileges are revoked, limited, or modified.

1.4.8 Accumulation Limits

The NMFS catch share review guidance states that "reviews should analyze and evaluate the equity/distributional impacts of existing caps and the impacts those caps have had on the creation of

[7] If a CP co-op with a membership that includes all CP permit owners ever fails to form, the CP co-op will convert to an IFQ system.

market power by affected entities [and] analyze whether and to what extent QP caps or limits have generated technical inefficiency for firms operating in a CSP" (NMFS Procedural Guidance 01-121-01, pp 14-15). Capacity control might also be covered in this section and, if so, "should be conducted in a manner consistent with the terminology and methods outlined in NMFS' National Plan of Action for the Management of Fishing Capacity." (NMFSPI 01-121-01, p. 15).

Based on the NMFS guidance, a review of accumulation limits should also consider whether existing data collection and monitoring is adequate to determine ownership and evaluate compliance with the caps and whether the caps are being applied at levels that ensure they are serving their intended purpose. Discussion on data collection and reporting related to accumulation limits can be found in Section 2.4.

Accumulation limits serve to prevent excessive concentration of ownership. Section 2.6 assesses the degree to which ownership has been consolidated. This section looks at indicators of the degree to which accumulation limits appear to be constraining. Given that the limits were set well below those needed to prevent oligopsonistic/oligopolistic control (levels of control that reduce the likelihood of efficient market outcomes), the question arises as to whether they are set so low as to also constrain the efficiency of individual operations. The more owners there are with QS holdings close to the control limits, the more likely it is that the control limits may be inhibiting efficiency (while at the same time they promote other management objectives, such as encouraging the distribution of benefits across more individuals and communities).

The design of the catch share program included limits on the ownership and use of QP and QS to prevent excessive quota concentration (PFMC & NMFS, 2010), an objective of Amendment 20. These limits vary by species, and they are presented in Table E-2 of the FMP, Appendix E (PFMC & NMFS, 2010).

QP limits include the following:

- Vessel use limits ("annual QP limits"): a limit on the total QP that may be used by a single vessel during the year. These include the following:
    - Vessel use limits for IFQ species and Pacific halibut IBQ
    - Vessel use limit for aggregate non-whiting QP

QS limits include the following:

- QS control limit: a limit on the QS that a person, individually or collectively, may own or control, including QS registered to that person, plus those QS controlled by other entities in which the person has a direct or indirect ownership interest, as well as shares that the person controls through other means. These include the following:
    - Control limits for IFQ species and Pacific halibut IBQ

- Control limit for aggregate non-whiting QS[8]

Mothership sector limits include the following:

- A limit on the proportion of whiting an individual or entity can accumulate via ownership of whiting catch history assignments (CHAs)—20%.
- A limit on the proportion of whiting that can be delivered by any catcher vessel—30% (50 CFR 660.111)

Catcher-processor sector limits—none (a 5 permit ownership limit would be imposed if the catcher-processor sector co-op fails to form a single co-op with all catcher-processor permits).

1.4.9 Cost Recovery and Cost Control

NMFS tracks catch share program management costs that would not have been realized except for the program being implemented to recover a portion of the fees associated with operating the catch share program by sector. When cost recovery began in 2014, NMFS recovered only the costs of employees' time (salary and benefits) spent working on the program in the calculation of direct program costs (DPC), rather than all incremental costs of management, data collection, and enforcement. Beginning in FY2023, NMFS has included other categories of incremental costs such as travel, supplies, and equipment. In the spring of each year, NMFS provides an estimate of DPC for the previous period and the cost recovery rates to be charged for the coming year. The MSA caps cost recovery at 3 percent of gross ex-vessel revenue derived from quota landings. In most years, the shoreside sector recovery rate has been capped at three percent while the at-sea sectors are generally well below that level (Table 66). Total annual DPCs for the program are reported in Section 2.3.7.3.

Between 2022 and 2024, NMFS provided the Council with funds for a contractor to study the catch share management program and determine where there might be opportunities for cost savings. For this purpose, two reports were provided, one in September of 2023 (PFMC, 2023) and one in September of 2024 (PFMC, 2024c).

1.4.10 Data Collection/Reporting, Monitoring, and Enforcement

The NMFS catch shares review policy states that reviews "should contain a description and assessment of the existing data collection, monitoring, and enforcement programs (e.g., observers, logbooks, economic data reporting, etc.), including a discussion of any changes since the CSP's implementation or the previous review" (NMFSPI 01-121-01, p. 16). The assessment should indicate whether the information available is adequate to support the review, the reporting burden

[8] Information on the calculation of the control limit for aggregate non-whiting QS is available at the West Coast Region Quota Share and Permits page: https://media.fisheries.noaa.gov/dam-migration/aggregateqs-explanation.pdf

imposed by data collections, and opportunities for improvements along with related costs and opportunity for cost savings. The policy also states that "particular attention should be paid to assessing whether the current enforcement provisions and activities, including resources for conducting the latter, are sufficient to ensure a high rate of compliance with program requirements" (NMFSPI 01-121-01, p. 17). Additionally, "…a description and overall assessment of the CSP's administrative costs should be provided to determine whether total administrative costs are being minimized to the extent practicable, which is consistent with National Standard 7" (NMFSPI 01-121-01, p. 17).

As mandated by the MSA, and in supported in Amendment 20 objectives, various data collections support annual program review and management, as well as this and reviews. Data collection, monitoring, and enforcement programs were described in Section 3.4.3 of the 2017 Review. They include routine permit applications, ownership information used to calculate cumulative share ownership, mandatory and voluntary social science surveys, and the cost recovery information needed to calculate incremental costs. The following are the primary changes that have occurred since the development of the 2017 review:

- Implementation of a formal EM program as an alternative to human observers for monitoring coverage (88 FR 81354).
- Annually, collect detailed ownership information on catcher-processors.
- Collect QS lease revenue and owner participation information (expands coverage to QS owners that were not otherwise covered by EDC data collections).

Additionally, in 2024, NMFS informed the Council that the annual at-sea co-op reports with vessel-level catch and bycatch information that regulations require to be submitted to the Council are considered confidential under the Magnuson-Stevens Act. Thus, these reports may not be released to the public unless an exception applies. Council members and staff and NMFS staff may have access to the reports but may not publicly release their contents, such as in the briefing book or public discussion. The MSA, however, includes an exception that allows for the release of the information if the submitter provides a written authorization. Thus, the co-ops could agree to the public release of this information, including vessel-level catch and bycatch by providing a written authorization. This authorization could allow the Council to include the information in the briefing book or have a public discussion at a Council meeting.

1.4.11 Auctions and Royalties

For catch share programs implemented after January 12, 2007, the MSA requires consideration of auctions or royalties for the initial or any subsequent distribution of limited access privileges. As stated in the NMFS Catch Share Policy:

> Section 303A(d) of the MSA requires the Councils to consider the use of auctions or other means to collect royalties for the initial or any subsequent distribution of limited access privileges…NMFS will assist Councils if and when they determine that it is in the public interest to collect royalties in connection with the initial or subsequent allocations in a limited access privilege program. The Nation's fisheries resources are managed in the public trust by NMFS. Many of the Nation's other public resources consumed or used by private individuals are subject to a payment (i.e., resource rental) for their usage (e.g., oil and gas leases, permit fees for grazing or silviculture on federal lands, auctions of federal radio frequency spectrum). The government recovers some rent for public resources other than fisheries. To date, the recipients of initial allocations of catch shares have received their allocations without a fee based on their historical fishing records; no Council has adopted a program to collect resource rent.

Any FMP or amendment containing a LAPP should include a description of how the MSA Section 303A(d) provision was addressed.

In the design of the program, auctions were considered as a potential way to redistribute QS if QS were issued for a fixed duration (e.g., 15 years). However, fixed duration QS privileges were ultimately not selected, in part due to the SSC's determination that fixed term auctions would have a negative impact on stewardship (PFMC & NMFS, 2010, Appendix F as cited in PFMC & NMFS, 2017)). Furthermore, the groundfish FMP states that:

> The Council will consider the use of an auction or royalties as required by the Magnuson- Stevens Act, along with other nonhistory based methods when distributing quota share that may become available after initial allocation. This may include quota created when a stock transitions from overfished to nonoverfished status, quota not used by the adaptive management program, quota forfeited to "use it or lose it" provisions, and any quota that becomes available as a result of the initial or subsequent reviews of the program. (Groundfish FMP Appendix E, p. E-16)

The auctions and royalties provision gives notice of the Council's intent to consider implementing an auction if QS must be redistributed. The public, industry, and those who acquire QS should be aware that the program can be changed at any time and an auction implemented, following the appropriate process for amending the FMP. If the Council considers such an auction, a full regulatory amendment and rule-making process would accompany that decision. That process would include a complete analysis of the specific proposal and an opportunity for public comment.

1.5 Prior Program Review and Council Recommendations

The first program review commenced in June 2016 with preliminary planning and adoption of a review calendar and commencement of scoping. It was completed with Council adoption of the review document in November 2017 (PFMC & NMFS, 2017). For the review, a large team conducted an extensive analysis, supported by supplemental funding from NMFS. The team that conducted the review included seven primary authors, 14 contributing authors, and 22 other individuals that provided contributions and pre-release review of the document. Due to the amount of information developed, the Council requested that it be summarized around four key policy questions:

1. How did net benefits to the nation derived from this fishery change after implementation of the catch share program?
2. How did financial outcomes for participants in the fishery change following catch share program implementation?
3. Did the distribution of cost, revenues, effort, and net benefits among fishery participants (including communities and user groups) change?
4. Did utilization rates for specific species change following catch share program implementation?

The information addressing these key questions can be found in the executive summary of that review. Information to support an evaluation of each Amendment 20 goal and objective, the MSA National Standards, and catch share design considerations required by the MSA was provided, as reflected in Table ES-1 of the 2017 Review.

The Council's 2017 Review recommendations included moving forward with deliberations on a number of items, listed in Table 4 along with the status of those recommendations.

Table 4. Council recommendations from the 2017 program review and status of the related management measures

Recommendation	Status
Schedule the next review of the trawl catch share program for 2022, with subsequent reviews to occur every six years after that.	Start of this review delayed due to gear- switching deliberations.
At-sea Whiting Fishery Bycatch Needs	
Managing with set-asides instead of bycatch caps, removal of allocation formulas from the FMP, removal of NMFS automatic closure authority.	Completed
Shorebased IFQ Accumulation Limits (Control and Vessel Limits)	
Annual Vessel QP Limits	*Not Taken Up
Eliminate Daily Vessel QP Limits for overfished species (and possible elimination of the daily QP limit policy)	Completed
Shorebased IFQ Sector Harvest Complex Needs	
Post-season Trading	Completed
Post-season Relief from Annual Vessel QP Limits	Completed
Post-season Sale of Additional QP by NMFS	Not taken up.
CP Sector Accumulation Limits	
Accumulation Limit Implementation Alternatives Permit Ownership Limit Processing Limit	Completed consideration of CP accumulation limits (5 permit ownership limit if CP co-op fails to form).
New Data Collections	
Catcher-Processor Owners Survey	Completed
QS Owner Survey for Revenue and Cost Info (includes those who are not otherwise required to submit economic information needed for program monitoring).	Completed
Continuation of adaptive management program QP pass-through	Completed (Indefinite continuation)

** See Amendment 21-4 for items considered, but rejected in this topic.*

As of the completion of the 2017 Review, the Council had not made a determination on whether to pursue consideration of:

- Restricting gear switching
- Changes to the management of sablefish south of 36º N. lat.

At its March 2018 meeting, the Council elected to take up these issues. The Council took final action to recommend a restriction to gear-switching at its April 2024 meeting. It also altered the basis for distributing ACLs between the areas north and south of 36° N lat. using a more recent five-year rolling average of the bottom trawl survey biomass rather than the long term average (2021–2022 Biennial Harvest Specifications) but did not make other modifications to management of southern sablefish.

The Council decided not to include the following possible actions in its 2017 Review follow- on package but rather deferred prioritization to the fall of 2018 through the groundfish workload prioritization process:

- Between Trawl Sector QP Trading (no action taken)

- Carry-over of At-sea Set-asides (no action taken)
- Trawl/Non-trawl Allocation Alternatives (some modifications made as part of the biennial specifications process- see 2025 Intersector Allocation Review)
- Aggregate Non-whiting QS Control Limits and Related QP Weighting Formulas (no action taken, remains on the groundfish workload list)
- Allow at-sea whiting processing south of 42° N lat. (no action taken)
- Increase the 10 percent carryover provision (initially grouped with consideration of ACL flexibility, until ACL flexibility was dropped at the November 2018 Council meeting; remains on the groundfish workload list).

1.6 Management Actions Taken Since the Last Program Review

Between implementation of the catch share program and the 2017 Review and update of Appendix E to the groundfish FMP, there were 139 modifications to the program (PFMC Agenda Item F.5, Attachment 2, September 2016). The last Council action included in this list occurred in April 2016. Since the last review, there have been a number of actions which modified the program and may have affected program performance.

1.6.1 Actions Implemented Since 2015

The 2017 review included data from the following sources through the indicated date.

- Social Science Survey – through 2016.
- EDC data – through 2015.
- PacFIN data – through 2016.
- WCGOP data – through 2015

The economic performance evaluation largely relied on EDC data, for which the 2017 Review time series ended in 2015. Therefore, any actions implemented after the start of 2015 may have impacted the program in a manner not reflected in substantial portions of the last review (because at best, there would have been only a partial year of impact in 2015).

There are three categories to consider when identifying the actions that have occurred since the period covered by the last review:

- Actions taken prior to the last review which were implemented during or after the last data year fully covered by the review (2015). These may include some of the 139 actions just mentioned.

- Actions taken after the last review and implemented prior to the last data year to be used in this review (2023).
- Actions taken after the last review that have not been implemented or were only recently implemented and so will not be reflected in the data for this review.

A list of actions taken and implemented after the start of 2015 through to the end of the data series for this review is provided in Table 5.

Table 5. Regulations and amendments modifying the trawl catch share program implemented after the years covered by the 2017 Review

#	Biennial Specifications (Spex), FMP, or Reg Am	Trawl Sectors Impacted			Action/Effective Dates	Action Description
		SS	MS	CP		
1	Reg Am	X	X	X	*Final Council Action:* April 2012. Effective date: May 21, 2015.	Observer/catch monitoring rule (NMFS proposed trailing action): Implement certification and decertification requirements for persons interested in providing certified catch monitors and observers. Update observer provider and vessels' responsibilities relative to observer safety. Make administrative changes to the observer and catch monitor program, including revision to briefing periods in catch monitor certification requirements.
2	Reg Am	X	X	X	*Final Council Action:* Nov. 2014 Effective date: Jan 13, 2016.	Whiting and midwater (MWT) trawl cleanup rule: resolving inconsistencies and numerous unclear and confusing management restrictions relating to the use of midwater trawl gear that arose when catch share regulations were implemented. Require use of MWT gear while targeting whiting north of 40° 10' N. lat. Allow use of MWT gear to target non-whiting during the whiting season (remove restrictions allowing MWT only in whiting fishery). All MWT is exempt from the rockfish conservation area (RCA) restrictions north of 40° 10' N. lat. Establish related declaration categories. Define a Pacific whiting trip as a trip with greater than 50% whiting. For maximized retention trips, allow retention of all prohibited species and provide for handling and disposition requirements.
3	Reg Am	X			*Final Council Action:* Apr. 2015 Effective Date: Nov 4, 2016	Quota share divestiture rule: Allow abandonment of QS and specify rules for forced compliance with divestiture down to the aggregate control limit.
4	Reg Am	X			*Final Council Action:* June 2014 Effective Date: Dec 23, 2016	Dual Registration: Allow vessels to register both a trawl and fixed gear (longline and fishpot) endorsed permit at the same time.
5	Reg Am	X			*Final Council Action:* Apr. 2015 Effective Date: Dec. 26, 2017 Widow transferable in early 2018 and divestiture by Nov 30, 2018.	Widow rockfish QS reallocation and divestiture (New quota allocations made for 2018, in one or two steps). Reallocate widow rockfish based on permit catch history of widow. Remove the daily vessel QP limit for widow rockfish. Allow trading of widow rockfish QS (previously under a trading moratorium). Set a divestiture deadline for complying with QS control limits.

#	Biennial Specifications (Spex), FMP, or Reg Am	Trawl Sectors Impacted			Action/Effective Dates	Action Description
		SS	MS	CP		
6	FMP & Reg Am		X	X	*Final Council Regulatory Action* and *Final Council Amendment 21-3 Action:* Sept 2016. Effective date: Feb. 7, 2018.	Set-asides for the at-sea whiting co-ops: darkblotched rockfish and Pacific ocean perch (POP). Provide automatic authority to NMFS to close at-sea whiting sectors if darkblotched rockfish and POP set-asides plus buffers are likely to be exceeded (see below – authority removed in 2019) Amendment 21-3 changed darkblotched and POP from allocations to set-aside management (did not change formula for amounts).
7	Spex Action	X	X	X	*2019–2020 Management Measure Specifications:* Effective date, Jan 1, 2019.	Removal of automatic authority for NMFS to close at-sea whiting sectors if darkblotched rockfish and POP set-asides plus buffers are likely to be exceeded (originally provided by FMP Amendment 21-3). New lingcod and sablefish discard mortality rates and quota pound survival credit in the shorebased IFQ fishery. Removal of daily vessel quota pound limits in the shorebased IFQ fishery. Allow AMP to pass through to the shorebased IFQ fishery until an alternative use of AMP is implemented.
8	Reg Am	X	X	X	*Final Council Action:* Mar/June 2016 Effective Date: Jun. 1, 2019.	Gear regulation relief package (includes related vessel operation restrictions— identified as a trailing action, relative to the program implementation rules). Eliminate minimum mesh size regulations for the codend and body of the net for bottom trawl gear and midwater trawl gear, except continue to require a 16 inch mesh for the first 20 feet behind the footrope (approach for measuring mesh size was also modified). Eliminate restrictions on double walled codends; eliminate chafing gear restrictions Change the selective flatfish trawl (SFFT) gear definition and restrictions. Allow the use of two four-seam nets with no more than four riblines, and Replace the restriction that requires use of SFFT gear shoreward of the trawl Rockfish Conservation Area (RCA) in the area north of 42° N. lat. with a restriction that requires use of small footrope trawl in that area. Allow vessels to carry and use multiple groundfish trawl gears types on a single trip (fish caught using different gears must be stowed separately)—except that only SFFT is allowed onboard when fishing shoreward of the trawl RCA between 42° N lat. and 40°10' N lat. Allow a vessel to fish in multiple management areas on the same trip and assign catch to management areas in proportion to the vessel's effort in each area on that trip. Allow a new haul to be brought onboard and dumped before all catch from previous haul has been stowed.

#	Biennial Specifications (Spex), FMP, or Reg Am	Trawl Sectors Impacted			Action/Effective Dates	Action Description
		SS	MS	CP		
9					*Final Council Action:* Various, including in 2014, 2016, and 2017. Effective dates: Implemented via Exempted Fishery Permits (EFPs) only, until regs became effective January 1, 2024.	Electronic Monitoring: Electronic monitoring is an alternative to at-sea observers for the monitoring of catch and discards in the trawl catch share fishery. Electronic monitoring EFPs were first issued in 2015. Regulations were then developed based on information collected in the EFPs. EM programs were established in regulation in 2019 for whiting catcher vessels and vessels using fixed gear (gear-switching) in the IFQ fishery, and in 2022 for bottom trawl and non-whiting midwater trawl vessels. Implementation of both programs was delayed until January 1, 2024, with use of EM systems continuing under EFPs until that date.
10	FMP Am and Reg Am		X	X	*Final Council Action:* November 2018. Effective Jan. 16, 2020	Amendment 21-4. Change canary rockfish and widow rockfish management from bycatch allocation to set-asides (effective for 2020). Remove sector allocation/set-aside formulas from the FMP for darkblotched, POP, and widow rockfish.
11	Reg Am	X		X	*Final Council Action:* November 2018. Effective Jan. 16, 2020	Catch Share Review follow-on action (rule promulgated in conjunction with Amendment 21-4): Allow vessels to cover any end-of-year quota pound (QP) account deficits through post-season trading with those who have surpluses (prior to the determination of surplus and deficit carryovers). After the season is over, do not apply the annual vessel QP use limits to vessel accounts with deficits needing coverage (vessels still must cover overages). Eliminate the September 1 deadline for transferring QP to vessel accounts. Adopt a five-permit accumulation limit for catcher-processor limits, but apply that limit only in the event that a catch-processor co-op fails to form. Annually, collect detailed ownership information on catcher-processors. Collect information on quota share ownership.
12	Reg Am	X	X	X	*Final Council Action: Apr, 2016. Effective date:* July 13, 2020	Vessel movement monitoring rule: Allow vessels to switch from MS to Shoreside declaration without first returning to shore. Allow gear-testing without an observer on board. Allow vessels on a trawl IFQ trip to move pot gear across mgmt. lines without returning to shore (mainly for gear-switching vessels).
13	FMP Am	X	X	X	2021–2022 Management Measure Specifications and *Amendment 29.* Effective date, Jan. 1, 2021	FMP Amend 29: Convert the allocations from Amendment 21 formulas for widow rockfish, petrale sole, lingcod south of 40° 10' N. lat., and the Slope Rockfish Complex, including blackgill rockfish, to two-year allocations determined as part of the specifications process.

In addition to regulatory changes made in conjunction with the gear rule (Item 8, in Table 5), the Council authorized a number of trawl EFPs aimed at collecting information on salmon bycatch. Such bycatch information is key in determining the degree to which pre-catch share program restrictions to trawl gear operations may be further reduced. Activities under these EFPs would affect catch share fishery activity covered in this document. Trawl gear EFPs to explore impacts on salmon bycatch started in 2017 and have continued through to the present. In March inter, the Council prioritized moving the remaining trawl gear/midwater rockfish EFPs into regulation in the groundfish workload and management measure process. The following is a history of these EFPs:

- In 2017, the Council approved and NMFS implemented an industry EFP proposal that allowed participants to use any mesh size and small footrope gear shoreward of the RCAs (two of the provisions the Council has recommended as part of the gear rule). This exempted vessels from the selective flatfish trawl gear requirement that applied to the area north of 40° 10' N. lat.

- In 2018, the Council recommended an EFP that included these provisions as well as a number of other provisions that were included in the Council's gear rule recommendations but had not been implemented on time for the 2018 fishery. The 2018 EFP included provisions to allow more extensive use of midwater trawl gear and recommended that NMFS revise the definition of continuous transit in the groundfish regulations.

- The 2019 EFP was similar to 2018, noting that when the trawl gear rule was implemented in 2019, the EFP was not needed for certain activities that were now permitted in regulation.

- Starting in and since 2020, the trawl sector has had one EFP aimed at collecting information on salmon bycatch during certain trawl activities. Specifically, this EFP allows:

    - Year-round midwater trawl for rockfish (allow the targeting rockfish prior to the start of the whiting season)

    - Use of any legal small-footrope bottom trawl gear in the area of 40 10 N. Lat. To 42 N. Lat shoreward of the 100 fm line.

In addition to these Council actions, program performance was also impacted by an end to government subsidies for observer coverage. Starting in 2016, vessels began paying the full cost for their at-sea monitoring. More recently, observer daily rates have increased.

Council actions that do not modify the catch share program directly may still impact its performance. In some cases, the existence of the catch share program has contributed to allowing those actions (e.g., reduction of the trawl RCAs). Some of those actions are provided in Table 6.

While noted here, these are not proposed to be analyzed under the catch share review but are listed here for context that may be helpful in interpreting results from the review.

Table 6. Other actions that might have particular impacts on performance of the catch share program

Action Date	Action Description
Final Council Action: Nov. 2019 Effective Date: Jun. 18, 2020.	Modified the 2020 harvest specifications. Cowcod: Eliminated the ACT and reduced the research set-aside to effectively raise the annual vessel QP use limit for cowcod (without changing the percentage specified in regulation), reducing the chance of a vessel being shut down as a result of high cowcod bycatch. Shortbelly: Increased the ACL for shortbelly in order to reduce the risk of closing midwater trawl fisheries north of 40° 10' N. lat.
Final Council Action: Nov. 2019 Effective Date: Mar. 25, 2021.	New routine preseason and inseason management tools for salmon bycatch mitigation. Block area closures (BACs) for midwater trawl fisheries Establish SFFT allowances for bottom trawl fisheries. Pacific Whiting vessels may develop salmon bycatch mitigation plans and are required to provide annual summary reports on bycatch and effectiveness. Authority to close trawl sectors when Chinook bycatch caps are reached. Rules for accessing a salmon bycatch reserve.
Groundfish FMP Amendment 28: Essential fish habitat Final Council Action: April 2018 Effective date: January 1, 2020	Reopen the groundfish trawl RCA off Oregon and California to bottom trawling. Modify the current configuration of EFH Conservation Areas where groundfish bottom trawl gear is prohibited coastwide. This includes a new EFH Conservation Area prohibiting groundfish bottom trawl gear in most of the Southern California Bight. Prohibit use of all groundfish bottom contact gear in waters off California deeper than 3,500 meters.
2023–2024 Management Measure Specifications Effective date: Jan. 1, 2023	FMP Amend 30: Extension of the Primary Tier Sablefish Season to the end of the year. Could impact the amount of gear switching in the catch share fishery. Regulatory Action: Authorized block area closures tool to for groundfish mitigation purposes and to control bycatch in midwater trawl (shoreside and at-seas sectors) and bottom trawl off Washington.
Final Council Action: March 2023. Effective date: January 1, 2024.	FMP Amendment 32: Non-trawl area management measures, including modification of the Non-Trawl RCA boundaries and allowing IFQ gear switching vessels to fish in the non-trawl rockfish conservation area using stationary vertical jig gear or groundfish troll gear. Modifications also applied to open access and limited entry fixed gear (LEFG) and changes were made to various conservation areas and associated provisions (e.g., use of live bait and transit rules).

1.6.2 Catch Share Program Council Actions Not Yet Implemented in Regulation

These actions have been taken but their impacts will be covered in the next review process (Table 7). The effects of regulations implemented in 2023 or later will not show up in the main economic data for the current review (EDC data).

Table 7. Catch share program related actions taken by the Council regulations will not be effective until the start of 2023 or later.

Action Date	Action Description
Final Council Action: Mar. 2022 Effective Date: Jan. 17, 2023	Pacific whiting utilization in the at-sea sectors Move the whiting season start date from May 15th to May 1st. Move all administrative deadlines associated with the season start date to 45 days prior to May 1st. Allow a processing vessel to be registered to a MS permit and a CP permit in the same calendar year. No limit on the number of times a vessel could change processing permits in a year. Remove MS processor obligation for catcher vessels. Remove MS processor cap of 45 percent.
Final Council Action: Various, including in 2014, 2016, and 2017. Regs became effective January 1, 2024.	Electronic Monitoring: See Item 9 in *Table 3.*
Final Council Action April 2024 Not yet approved by NMFS	Limit gear switching.
2025–2026 Harvest Specifications Final Council Action June 2024 Effective Date: January 1, 2025	Merged shortspine thornyhead north and south into a single coastwide ACL and trawl allocation.

2 Program Performance and Review

This section focuses on evaluating program performance requirements as specified by NMFS's Catch Share Review Policy (NMFSPI 01-121-01).

In accordance with the catch share review policy, this review focuses on changes since the last review. The first review examined changes between 2011 and 2015 relative to the pre-catch share baseline period (2009 and 2010). This review generally focuses on updating analyses and assessing any changes between 2016 and 2023. In some cases where analyses were not completed or cannot be updated, changes across the entire catch share period (2011–2023) are reported.

In the *Net Benefits and Related Outcomes* section, the first subsection (2.3.1) focuses on providing sector and fleet definitions that will be used across sections to evaluate performance. Other major sections correspond to relevant analytical themes, including meeting specific requirements of the catch share review policy such as evaluating progress meeting goals and objectives. Major sections include:

- Section 2.1 Environmental Outcomes
- Section 2.2 Full Utilization
- Section 2.3 Net Benefits and Related Outcomes
- Section 2.4 Accumulation Limits and Excessive Shares
- Section 2.5 Individual Economic Outcomes
- Section 2.6 Concentration of Value
- Section 2.7 Community and Other Outcomes
- Section 2.8 Entry, Exit, Including New Entrants
- Section 2.9 Program Review and Modification

2.1 Environmental Outcomes

Key Takeaways:

- There have been only two occurrences of the trawl allocation being exceeded since the implementation of the catch share program (sablefish north in 2017 and 2022).

- Since the last review, there has been an increase in overall discard mortality, mostly discards of whiting in the whiting fisheries. The bottom trawl sector has the highest discard rate overall, and it has been increasing since 2017.
- The number of Council groundfish stocks considered overfished have dropped from nine stocks in 2002 to four stocks in 2011 (when the IFQ program has started) to one stock (California quillback rockfish) in 2023.
- Bottom trawl effort has continued to decline since 2013 and midwater rockfish fishery effort has increased since 2017.

2.1.1 Groundfish Conservation

One of the primary expectations for Amendment 20 was that it would reduce the incidental catch of overfished groundfish species to assist in rebuilding these stocks. The West Coast groundfish fishery is a multi-species fishery that includes more than 100 species of fish of varying productivity levels. The low productivity associated with some species, especially rockfish species from the genus *Sebastes*, can constrain catches of target species. Amendment 20 increased the incentive for individual vessels to do "everything possible to avoid take of species for which there are conservation concerns, such as overfished species" (PFMC & NMFS, 2010).

The catch share program protected overfished stocks by making fishermen accountable for their entire catch of species covered by the program (not just landings) and by implementing 100 percent at-sea and shoreside monitoring coverage. Since 2014, the Council has been developing a policy that would allow the use of electronic monitoring in place of observers. Regulations implementing EM programs in the trawl catch share program were effective January 1, 2024.

2.1.1.1 Total Catch Accounting and Adherence to Sector Allocations

The most recent Intersector Allocation Review (PFMC, 2025) provides a retrospective look at the trawl (and non-trawl) attainments for all allocated non-whiting stocks (except sablefish north of 36° N. lat) since 2011. Table 1 of the Intersector Review is reproduced here for the trawl sector only in Table 8 and only includes 2011–2023 data for consistency with this review document. Allocation type refers to whether the stock is formally allocated in the FMP (Amendment 21), allocated each biennium, or has changed allocation type over the time series. Sablefish north is managed under a specified allocation formula (see *Figure 6-1 of the Groundfish FMP*) between trawl and fixed gear rather than trawl and non-trawl as the other species shown in Table 9 below. The only species in which the trawl allocation (IFQ + at-sea set-aside) was exceeded was sablefish north in 2017 (by 186.1 mt or 8 percent) and 2022 (by 131.4 mt or 4 percent). The ACL for sablefish north was exceeded in 2017 by 1.62 percent in total.

Table 8. Trawl sector allocation attainment 2011–2023.

Stock/Complex	Allocation Type	Minimum Percent Attain	Maximum Percent Attain	Number of Years >50% Attain	Number of Years >90% Attain
Arrowtooth Flounder	A21	5	63	3	0
Big Skate	Biennial	8	56	1	0
Bocaccio Rockfish (South Of 40 10)	Biennial	9	62	3	0
Canary Rockfish	Biennial	12	79	3	0
Chilipepper Rockfish (South Of 40 10)	A21	6	61	1	0
Cowcod Rockfish (South Of 40 10)	Biennial	0	37	0	0
Darkblotched Rockfish	A21	35	61	2	0
Dover Sole	A21	8	36	0	0
English Sole	A21	1	6	0	0
Lingcod (North Of 40 10)	A21	13	44	0	0
Lingcod (South Of 40 10)	Change	3	18	0	0
Longnose Skate	Biennial	31	80	3	0
Longspine Thornyhead (North Of 34 27)	A21	1	57	1	0
Other Flatfish	A21	9	20	0	0
Pacific Cod	A21	0	37	0	0
Pacific Ocean Perch (North Of 40 10)	A21	9	66	2	0
Petrale Sole	Change	76	100	13	11
Sablefish (South Of 36)	A21	5	85	1	0
Shelf Rockfish North (North Of 40 10)	Biennial	3	51	1	0
Shelf Rockfish South (South Of 40 10)	Biennial	1	30	0	0
Shortspine Thornyhead (North Of 34 27)	Change	25	61	4	0
Shortspine Thornyhead (South Of 34 27)	Change	0	17	0	0
Slope Rockfish North (North Of 40 10)	Biennial	17	37	0	0
Slope Rockfish South (South Of 40 10)	Change	7	33	0	0
Splitnose Rockfish (South Of 40 10)	A21	0	4	0	0
Starry Flounder	A21	0	2	0	0
Widow Rockfish	Change	34	93	10	4
Yelloweye Rockfish	Biennial	0	21	0	0
Yellowtail Rockfish (North Of 40 10)	A21	24	82	7	0

Table 9. Sablefish north of 36° N. lat. mortality, allocation, and attainment, 2011–2023

Year	Trawl Mortality	Trawl Allocation	Trawl Attainment	IFQ Mortality	IFQ Allocation	IFQ Attainment	At-Sea Mortality	At-Sea Set-Aside	At-Sea Attainment
2011	2,384.80	2,597.00	91.8%	2,379.80	2,547.00	93.4%	5.0	50	10.0%
2012	2,215.20	2,517.00	88.0%	2,210.10	2,467.00	89.6%	5.1	50	10.2%
2013	1,848.70	1,878.00	98.4%	1,836.00	1,828.00	100.4%	12.7	50	25.3%
2014	1,872.50	2,038.00	91.9%	1,856.40	1,988.00	93.4%	16.1	50	32.3%
2015	2,191.10	2,249.00	97.4%	2,179.50	2,199.00	99.1%	11.6	50	23.2%
2016	2,311.80	2,461.00	93.9%	2,284.10	2,411.00	94.7%	27.7	50	55.5%
2017	2,652.50	2,466.40	107.5%	2,499.30	2,416.00	103.4%	153.2	50	306.3%
2018	2,398.70	2,571.90	93.3%	2,281.90	2,522.00	90.5%	116.8	50	233.5%
2019	2,619.00	2,631.20	99.5%	2,547.80	2,581.00	98.7%	71.2	50	142.5%
2020	1,825.50	2,686.90	67.9%	1,810.30	2,637.00	68.7%	15.2	50	30.4%
2021	2,342.10	3,239.60	72.3%	2,284.30	3,140.00	72.8%	57.7	100	57.7%
2022	3,216.80	3,085.40	104.3%	2,911.30	2,985.00	97.5%	305.4	100	305.4%
2023	2,845.80	3,968.40	71.7%	2,685.00	3,868.00	69.4%	160.8	100	160.8%

Source: PacFIN; Groundfish Expanded Mortality Multi-year (GEMM) data

For Pacific whiting, only the CP sector exceeded its post-tribal reapportionment, by 18 mt in 2012 and 163 mt in 2022 (both of which were 0.1% or less over the allocation, see Tables 15–17 of the intersector allocation review, PFMC, 2025).

The intersector allocation review also provides an assessment of set asides and the number of times by which the set aside was exceeded. Looking historically at the set aside values compared to the actual mortality (assessed post season) for stocks that are currently managed as set asides, certain stocks were more frequent than others in exceeding the set-aside value (Table 10). This table only includes years when stocks were managed by set-asides in the at-sea fishery (i.e., excludes years when canary, widow, darkblotched rockfish, and POP were managed as allocations). For years where each sector had a sector-specific set-aside (darkblotched and POP for 2018–2020 and canary and widow rockfish in 2020), this analysis combines those values to provide a comparison across the time series.

In general, the set-aside amounts appear to have been set at a value to capture the potential bycatch of each non-whiting groundfish stock and the regulations regarding set-asides and when the Council should act have never been utilized. That is, the degree to which the set-aside was exceeded never put at risk another sector or a harvest specification (nor was there a conservation concern). The at-sea set-aside was exceeded in both years where the trawl allocation for sablefish north was exceeded (2017 and 2022). It is important to consider that the MS and CP co-ops have implemented bycatch avoidance measures and therefore this assessment is likely impacted by one or both co-ops trying to operate within their set-aside value (similar to a HG or allocation). As an example, the 2025 WMC Report describes that the "base rates" established for bycatch species are based on the pro-rata amounts of bycatch allocations (now set-asides) relative to whiting allocations to the MS sector. The fleet's (pools) performance relative to that base rate could require the fleet to move if a bycatch hotspot is encountered.

Table 10. Number of years within or exceeding set-asides

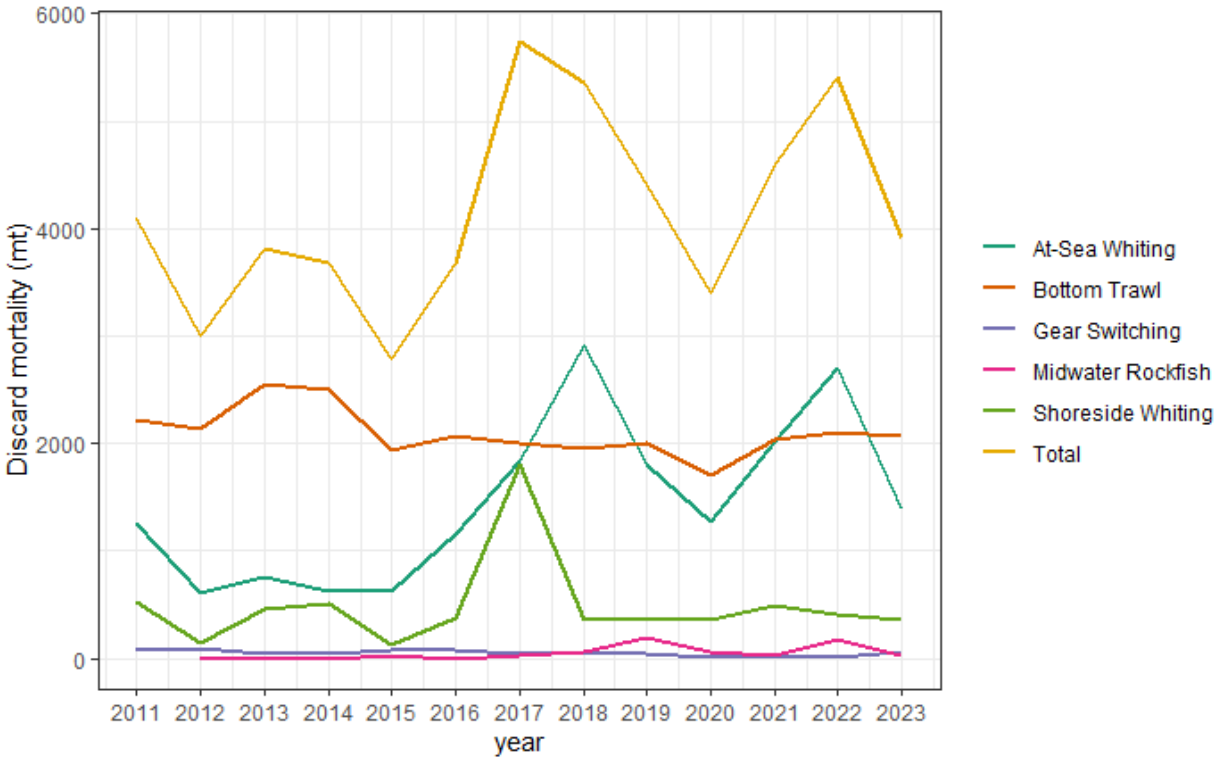
Stock/Complex	Number of Years Within Set-aside	Number of Years Exceeding Set-aside
Arrowtooth Flounder	10	3
Canary Rockfish	4	0
Darkblotched Rockfish	2	4
Dover Sole	12	1
English Sole	10	0
Lingcod (North of 42)	2	0
Lingcod (North Of 40 10)	11	0
Longnose Skate	11	0
Longspine Thornyhead (North Of 34 27)	10	0
Other Fish	4	0
Other Flatfish	10	3
Pacific Cod	10	0
Pacific Ocean Perch (North Of 40 10)	5	1
Petrale Sole	13	0
Sablefish (North Of 36)	8	5
Shelf Rockfish North (North Of 40 10)	13	0
Shortspine Thornyhead (North Of 34 27)	5	8
Slope Rockfish North (North Of 40 10)	8	5
Starry Flounder	10	0
Widow Rockfish	4	0
Yellowtail Rockfish (North Of 40 10)	12	1

Source: Groundfish Expanded Mortality Multi-year (GEMM) data

2.1.1.2 Groundfish Bycatch and Discard Mortality

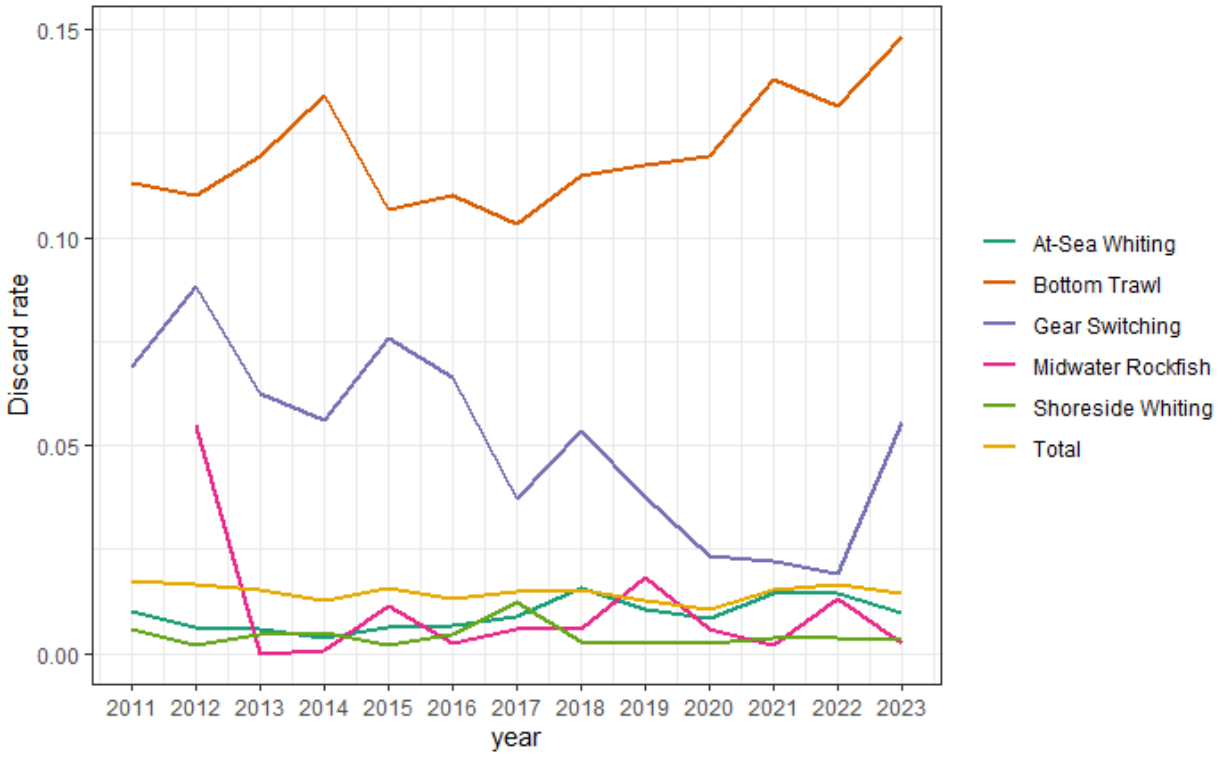
One Amendment 20 objective was to promote practices that reduce discard mortality, especially related to overfished and rebuilding species. In addition, Amendment 20 also documented the intent to ensure continued accountability for total groundfish mortality. The 2017 review showed that discards of all species have dropped since the catch shares program was put into place with the majority due to the drop in the bottom trawl fishery. Figure 1 shows the amount of total discard mortality by sector and combined from 2011–2023. Since the last review, there has been an increase in overall discard mortality, specifically in 2017, 2018 and 2022. Each of those years appear to be driven by increases in discards by the whiting fishery (shoreside in 2017, 2018 and at-sea in 2022). The majority of the discards for those fleets in those years was discards of whiting—which are accounted for against each sector's allocations. However, the rates for each whiting sector (and the catch shares fisheries in general) have been relatively flat (Figure 2). The bottom trawl sector has the highest discard rate overall, and it has been increasing since 2017.

Figure 1. Total discard mortality (discards with discard mortality rates applied) from 2011–2023 for all species (groundfish and non-groundfish) by sector and in total.



Source: Groundfish Expanded Mortality Multi-year (GEMM) data

Figure 2. Discard rate from 2011–2023 for all species by sector and in total.



Note: discard rate (discards with discard mortality rates applied/total mortality). Includes all species (groundfish and non-groundfish)
Source: Groundfish Expanded Mortality Multi-year (GEMM) data

The most recent intersector allocation review looked at the percent of total mortality by allocated stock (not all of which have IFQ) for the trawl sector that was discarded (PFMC 2025). The stocks with the highest discard rates included arrowtooth flounder and English sole, likely due to lack of markets.

2.1.1.3 Overfished Groundfish Species and Pacific Halibut

The Council and NMFS depend upon results from scientific stock assessments to determine whether a harvest rate on a fish stock is too high (overfishing) or the population size for that stock is too low (overfished, Table 11). The Council defines these reference points relative to an unfished population. For example, it has set the biomass at MSY (BMSY) for most rockfish stocks at 40 percent of the unfished biomass and the overfished limit at 25 percent of the unfished biomass. In 2011, the Council approved alternative reference points for flatfish stocks based on their higher productivity and a review of recommended reference points in the scientific literature. Flatfish stocks have BMSY set at 25 percent unfished biomass, with the overfished limit set at 12.5 percent unfished biomass. The number of Council groundfish stocks considered overfished have dropped from nine stocks in 2002 to four stocks in 2011 (when the IFQ program has started) to one stock (California quillback rockfish) in 2023. California quillback is a nearshore stock and therefore unlikely to be encountered in the

catch share fisheries. There is only 0.2 mt of mortality of quillback rockfish off California attributed to the bottom trawl sector in 2023. The decrease in stocks considered overfished started before introduction of the catch share program, but has continued during the IFQ program. There have not been any groundfish stocks subject to overfishing since 2006.

Table 11. Status of previously overfished species through time as reported annually in the NMFS Status of Stocks Report)

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Bocaccio	R*	R	R*	R	R*	R	*						
Darkblotched	R*	R	R*	R	R*	R	*						
Petrale Sole	R*	R	R*	R	*				*				*
Cowcod	OF	OF	R*	R	R*	R	R	R	*				
Canary	OF*	OF	R*	R	R*								*
POP	OF*	OF	OF	OF	OF	OF	*						
Yelloweye Rockfish	OF*	OF	OF	OF	OF*	OF	R	R	R	R	R	R	R
CA Quillback Rockfish													OF
# overfished	4	4	3	3	2	2	0	0	0	0	0	0	1
# rebuilding	3	3	4	4	3	3	2	2	1	1	1	1	1
Total	**7**	**7**	**7**	**7**	**5**	**5**	**2**	**2**	**1**	**1**	**1**	**1**	**2**

Note: OF=Overfished. Stock considered overfished

R=Rebuilding. Stock no longer overfished, but not rebuilt

** designates a year when a stock assessment (benchmark or update) was completed.*

Source: https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-reports

With regards to Pacific halibut, the 2025 Intersector Allocation Review provided a retrospective analysis of the attainment of the trawl allocation as well as the IFQ and at-sea allocations/set-asides. The IFQ sector has had a maximum attainment of 43 percent of their allocation (plus the 5 mt set-aside for south of 40° 10' N. lat.) from 2011–2023 (PFMC, 2025). The at-sea sectors have averaged 11 percent attainment, with a maximum of 35 percent in 2022. Overall, the trawl allocation has increased attainment of the Pacific halibut allocation since the previous review (30.8 percent to 31.4 percent, PFMC, 2025).

2.1.2 Catch and Sustainability

According to NMFS guidance, the review should assess whether the program has kept harvest within applicable limits such as ACLs (see Section 2.1.1), evaluate achievement of full utilization (see Section 2.2), analyze impacts on the minimization of bycatch and bycatch mortality (see Section2.1.1.1), and discuss changes in the status of the stocks covered by the program (see 2.1.1.3 regarding overfished species). The most recent comprehensive assessment of stock status was the 2024 SAFE document (see Table 2-4 on page 36 for management quantities estimated from the most recent stock

assessments informing management in 2025 and beyond). As of the drafting of this document, there is one rebuilding groundfish stock (yelloweye rockfish) and one overfished stock (quillback rockfish in California).

2.1.3 Other Environmental and Ecosystem Impacts

2.1.3.1 Protected and Prohibited Species (Except Pacific Halibut)

This section covers prohibited species with the exception of Pacific halibut, which is managed with IBQ and covered in Section 2.1.1.1 .

The groundfish fishery operates under specific bycatch guidelines for salmon according to the 2017 Opinion. The threshold for the non-whiting trawl sector[9] as a whole is 5,500 Chinook salmon and 560 coho salmon. There is the 11,000 chinook guideline for whiting (all 3 non-tribal and tribal sectors) and a 474 coho guideline. Plus, there is the 3500 Chinook reserve available to all sectors. Table 12 and Table 13 below show the Chinook and coho bycatch by year from 2011–2023. Prior to 2017, the groundfish fishery operated under a different incidental take statement, but the time series is provided for perspective. Overall, the whiting sectors have a higher bycatch of Chinook compared to the non-whiting sectors of the catch shares program. There have been no exceedances of any guidelines by either sector since the 2017 BiOp was issued.

Table 12. Chinook Bycatch in Catch Shares Sectors, 2011–2023

Sector	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Whiting	8089	6597	5011	13554	3808	3791	5206	6858	5582	2456	2195	5017	5798
Catcher-processor	2696	1941	1763	3785	1545	2684	3051	2951	2653	670	1513	2001	3375
Shoreside	3724	2359	1263	6859	2002	738	1435	1334	2143	1719	547	2336	1266
Mothership	1669[a/]	2297	1985	2910	261	369	720	2573	786	67	135	680	1157
Non-Whiting Catch Shares	190	334	398	1639	1501	423	278	445	593	590	633	807	999
Bottom Trawl	190[b/]	313[c/]	324[c/]	978	1019	376	244	350	434	516	436	625	796
Midwater Rockfish		21	74	661	482	47	34	95	159	74	197	182	203
Grand Total	**8279**	**6931**	**5409**	**15193**	**5309**	**4214**	**5484**	**7303**	**6175**	**3046**	**2828**	**5824**	**6797**

Source: Informational Report 2b, June 2025

a/ Estimates include tribal and non-tribal mothership

b/ Estimates include midwater trawl and LE CA halibut

c/ Estimates include LE California Halibut

[9] Bottom trawl, non-whiting midwater trawl, IFQ-fixed gear, LE and OA fixed gear fisheries, and select recreational fisheries outside of the primary seasons are included within this threshold.

Table 13. Coho Bycatch in Catch Shares Sectors, 2011–2023

Sector	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Hake sectors	151	33	39	271	13	7	28	11	177	88	69	143	56
Catcher-processor		13		8	4	2			5		2	4	8
Shoreside	136	16	33	167	9	5	28	11	168	86	65	139	48
Mothership	15a/	4	6	96					4	2	2		
Non-Whiting Catch Shares	22	27	50	46	8	9		1	5	3	10	4	4
Bottom Trawl	22b/	23c/	50c/	18	1	9		1	5	2	6	2	2
Hook and Line				16									
Midwater Rockfish		4		12	7					1	4	2	2
Grand Total	**173**	**60**	**89**	**317**	**21**	**16**	**28**	**12**	**182**	**91**	**79**	**147**	**60**

Source: Informational Report 2b, June 2025

a/ Estimates include tribal and non-tribal mothership

b/ Estimates include midwater trawl and LE CA halibut

c/ Estimates include LE California Halibut

Other than salmon, the main protected species with interactions with catch shares fisheries include eulachon, green sturgeon, short-tailed albatross, and humpback whales. The groundfish fisheries operate under a BiOp for each of these species. Eulachon and green sturgeon interact with trawl gear only. Most bycatch of eulachon occurs in the midwater trawl fisheries followed by bottom trawl gear (Table 14). The reinitiation threshold established in NMFS 2018 has never been exceeded, but did reach 99 percent in 2023 (*Informational Report 3a, June 2025*).

Table 14. Estimated eulachon bycatch by sector, 2011–2023.

Year	At-Sea Hake estimated bycatch count	Catch Shares Bottom Trawl estimated bycatch count	Midwater Hake estimated bycatch count	Midwater Rockfish estimated bycatch count	Total estimated bycatch (count)
2011	1,484	141	0	-	1,625
2012	23	171	0	-	194
2013	317	676	2,079	-	3,072
2014	267	2,831	0	-	3,098
2015	56	660	0	0	716
2016	6	52	0	0	58
2017	34	11	16	8	69
2018	285	344	0	163	792
2019	1,088	803	858	528	3,277
2020	269	5,146	1,980	1,180	8,575
2021	6,172	8,381	7,784	1,565	23,902
2022	980	7,123	8,583	7,907	24,593
2023	2,342	1,537	987	2,610	7,476

Source: Informational Report 2b, June 2025

For green sturgeon, the Biological Opinion for the Pacific Groundfish Fishery states that the incidental take of Southern DPS green sturgeon in the combined federally managed fisheries should not exceed more than 28 fish per year, while allowing for up to 86 takes per year in no more than two years within a nine-year period (NMFS, 2012). There is no way to distinguish the northern and southern DPS outside of genetic identification. While green sturgeon was historically caught in the at-sea hake fishery, the only fishery with bycatch since 2011 is the IFQ bottom trawl fishery (Table 15). The ITS has never been exceeded.

Table 15. Estimated bycatch of green sturgeon, 2011–2023.

Year	Total estimated SDPS individuals	Total estimated individuals
2011	20.5	38.5
2012	10.7	21.6
2013	5	10.4
2014	15.7	39.9
2015	3.5	6.2
2016	12.2	26.1
2017	1	2
2018	0	0
2019	0	0
2020	0	0
2021	0	0
2022	1.9	2
2023	1.5	2

Source: Informational Report 2b, June 2025

Short-tailed albatross (and other seabirds) typically interact with longline vessels (of which there is limited effort in the catch share fisheries). There have been no documented takes of short-tailed albatross in the catch share fisheries, including with gear switching vessels using longline gear or trawl vessels, including with the warps or third wires. There has been only one observed take in the LE sablefish fishery in 2011. The take threshold established for the groundfish fishery as a whole in the 2017 BiOp has not been exceeded (see Figure 3 of *Informational Report 3a, June 2025*; USFWS, 2017).

In 2024, NMFS released the BiOp for Humpback Whales and Sea Turtles (NMFS, 2024b). Both species have been historically encountered with sablefish pot gear, although there have been no recorded entanglements with IFQ pot gear (or hook-and-line gear). There were also recent entanglements noted for the midwater trawl fishery, which was noted as a fleet where entanglements could occur in the continued operation of the groundfish fishery. The ITS states that "6.62 humpback whales (from any of the three DPSs off the West Coast, both listed and unlisted) could be entangled in any given year, with the possibility of 6.25 killed or seriously injured in any given year as a result of the PCGF. We also anticipate that the annual average over any five-year period will not exceed 2.67

individual(s) entangled, leading to no more than 2.30 serious injuries or mortalities over that same five-year period."

2.1.3.2 Habitat Impacts

The last catch share review primarily described habitat impacts as a function of changes in effort (reviewed in the following section). It concluded that habitat impacts may have been reduced since the catch share program was implemented due to reductions in the annual average number of bottom trawl gear hauls. Since the last catch share review, the Council underwent another essential fish habitat (EFH) review, which described new (at the time) research on the impacts of groundfish gear, and particularly trawl gear, on habitat (now documented in *Appendix C to the Groundfish FMP*). Appendix C to the Groundfish FMP describes the impacts of fishing gear types on habitat types. Appendix C notes that "significant effort has been devoted to the development of trawl gear designs that minimize disturbance to the seafloor and benthic organisms....[and] some of these studies showed significant reductions in mortality" of benthic organisms while maintaining catch efficiency.

While not a direct change to the catch share program, data from the catch share program supported changes including Amendment 28, which included the following:

- New configuration of areas closed to bottom trawling to protect EFH;
- Removal of the trawl rockfish conservation area off Oregon and California;
- New deep water closure of groundfish bottom contact fishing in West Coast waters deeper than 3500 meters (PFMC, 2020).

Recently available information from the *Fishing Effects Database* supports the conclusions of the FMP that show habitat recovery rates vary due to multiple factors, including gear and habitat type. However, as noted by the HC in March 2025, "Current research on the effects of trawling indicates that trawl gear can substantially impact benthic habitats through the removal of marine invertebrates, modification of natural habitats, resuspension of sediments, and alteration of oxidation of stored organic matter" (Bradshaw et al., 2021; Epstein et al., 2022; Hiddink et al., 2017; Sciberras et al., 2016).

2.1.3.3 Changes in Magnitude and Distribution of Effort

The last catch share review provided a standalone analysis on the magnitude and distribution of effort. This report incorporates the analysis presented in Somers et al., (2025), which is the fishing effort report produced biennially by WCGOP. Key results from that report related to changes in effort for the catch share fisheries include the following:

Bottom Trawl

- Continuation in the decline of bottom trawl effort since 2013, with 2023 seeing the lowest hours since 2011 (Somers et al., 2025, Figure 2).
- Median haul duration generally decreased since implementation of the IFQ program (Somers et al., 2025, Figure 3)
- Astoria (and nearby areas) continues to have the greatest proportions of landings, with the highest proportion occurring in 2023.
- Expanding processing opportunities in Central to Northern California (Eureka, Fort Bragg, and Moss Landings) have resulted in increasing in recent years.
- Proportions of landings off Washington and in California (south of 36° N. lat) are similar across the IFQ time period.
- More recent time periods show the continued concentration of bottom trawl effort in the northern part of the West Coast.
- There have been no shifts in the seasonality of bottom trawl landings outside of historic time periods.
- In terms of depth, the proportion of hauls between 100–150 fm saw large increases in recent years, likely due to the opening of the Trawl RCA off OR and CA under Amendment 28 (Somers et al., 2025, Figure 7)

Midwater Rockfish

- Since the re-emergence of the midwater rockfish fishery, fleetwide tow hours have been approximately ~1,100 hours per year with the tow duration per haul increasing from 2017 to 2023.
- The majority of midwater rockfish landings occurred from central Oregon to southern Washington
- Since 2020, there has been an increase in the proportion of landings near Eureka, CA.
- Fishing effort continues to be concentrated near Astoria and Newport, OR (Somers et al., 2025, Figure 9)

Shoreside Whiting

- Landings have declined in recent years since the high in 2019, but overall above the annual catch from 2011–2016.

- Tow hours have increased from 2016 to a historical high of 8,600 hours in 2020. Recent years (2022–2023) have averaged ~7,200 hours.
- Majority of landings occur between southern Washington and central Oregon
- Effort from 2011–2023 is most concentrated off Newport, OR
- Fishing depth is highly variable, but the majority occur between 50–200 fm.

At-Sea Whiting

- Landings for the CP fleet are higher than that of the previous review period, but have been declining in general since 2017. Landings overall have decreased for the MS since the previous review period (with a spike in 2022 similar to the CP fleet).
- At-sea tow hours have decreased in recent years relative to 2016–2020, but are variable. The median tow duration for both at-sea sectors was the highest in 2022 over the period of 2002–2023 (3.8 hours).
- Fishing effort tends to be concentrated off Oregon for both sectors across the entire time series (2011–2023), although primary locations of effort do vary by year (Somers et al., 2025, Figures 19–21)
- Landings have historically primarily come from depths of 100–250 fm, and have been increasingly concentrated in the 100–200 fm depths in 2021–2023.

Gear Switching

- Pot landings have been increasing overall since 2013, with a high in 2023, whereas there has been limited to no effort by gear switchers using hook-and-line gears since 2020.
- The number of pots has ranged from 25,000 to 50,000, with increases in 2021–2023.
- Pot landings tend to occur near Astoria and Newport, OR, with some effort between 37 and 35° N. lat., where hook-and-line landings were patchier in nature when present.
- Catch share pot effort is concentrated off Washington and Oregon, with some areas off San Francisco and Morro Bay persisting across the time series.
- The majority of pot landings tend to occur between September and December since the implementation of the catch share program. Hook-and-line landings (when occurred) typically peaked in September and October
- In terms of depth, there has been a concentration of pot effort into shallower depths (150-350 fathoms) since 2016. The majority of hook-and-line effort was in the 150–250 fm bin.

2.1.3.4 Lost Gear

Lost gear can have impacts on fish and habitat. Lost gear can keep "ghost" fishing, as when a lost pot attracts fish that then die and become bait, entrapping more fish or entangling protected species. Lost gear can also damage habitat when its movement through waves and currents disturbs the bottom. Because of the absence of adequate pre-catch share records, it was not possible to conclude anything about the impact of the catch share program on lost gear. For that reason, this review will not go further into the lost gear issue and it will not be addressed in future reviews, unless there are substantial changes in conditions.

2.2 Full Utilization

The Groundfish Trawl Catch Share Program has a goal to "provide for full utilization of the trawl sector allocation" (Amendment 20, PFMC & NMFS, 2010). There are a number of factors that can impact the capacity of the trawl fishery to reach full utilization, particularly in the non-whiting sector. Acknowledging that there are constraints to high utilization, specifically due to overfished species rebuilding requirements, goals for the overall groundfish fishery include achieving maximum biological yield, promoting year-round availability of quality seafood, and promoting recreational fishing opportunities (FMP Goal). The utilization of allocations for both the shorebased IFQ program and the utilization of allocations by motherships and catcher-processors is discussed here.

2.2.1 Shorebased IFQ Program Utilization

Key takeaways

- Overall, the total non-whiting IFQ sector allocation and catch have increased since the last review.
- Despite increased catch, higher quotas for several stocks caused utilization of the non-whiting shorebased IFQ sector allocation to remain low between the 2016–2023 period (at 25%). Utilization of the total IFQ non-whiting allocation decreased slightly from the previous review period (2011–2015) from 28.4% to 26.4% across all years (2011–2023).
- Shorebased IFQ attainment of Pacific whiting has declined 5% since the previous review (2011–2015) from 84.5% to 79.4% (2011–2023), with the lowest average attainment, 74.6%, in the last four years (2020–2023)
- Stocks which are normally nearly fully utilized such as petrale sole and sablefish (north) have had variable attainment rates since 2020, with sablefish north experiencing lower than average attainment in three of the last four years (between 69% and 73% attainment, compared to 2011–2023 average of 91%).

- Catch and utilization rates for midwater rockfish species have increased due to the re-emergence of a viable non-whiting midwater trawl fishery.
- Shortspine and longspine thornyheads show a declining catch and utilization trend, corresponding with declining prices (see Section 2.3.3) and profitability of the DTS trawl fishery (see Section 2.5.1.2)

Implementing catch shares in a fishery is expected to lead to greater economic efficiency including increased profits and utilization of quota; however, that is not always observed in practice including in the shorebased IFQ program (Kuriyama et al., 2016). In a multispecies fishery, quotas may not be fully utilized for a variety of reasons. As discussed in Kuriyama et al. 2016, inefficiencies in the quota market; constraining species; and low profitability of some stocks may all contribute. While it has been found that both prices and the distribution of quota have been inefficient (Holland & Kasperski, 2016; Holland & Steiner, 2024), it is likely that low demand is a larger factor (Oremus et al., 2023). In the previous review, which analyzed data from 2011 to 2015, numerous rockfish, flatfish, and roundfish had utilization rates of far less than 50%, on average, the IFQ sector's utilization of its entire allocation was 28.4% (PFMC & NMFS, 2017). The previous review concluded that for the IFQ program, numerous factors were likely contributing to underutilization of the total non-whiting shoreside IFQ allocation, and highlighted challenges with markets (including low consumer demand) and challenges with catch-quota balancing, particularly in the presence of potentially constraining stocks and concerns about exceeding quotas during "lightning strike" events, despite the formation of risk pools.[10]

Overall, the non-whiting IFQ sector allocation and catch have increased since the last review (Figure 3). In particular, after first increasing in 2015, quotas again increased in 2017. Stocks primarily contributing to this increase include Dover sole, arrowtooth flounder, and canary rockfish (PFMC, 2025). Between 2017 and 2020, quotas were relatively consistent, before fluctuating some between 2021 and 2023, where quotas reached a high since the program began (Figure 4). During the previous review, there was lower utilization of the whiting allocation in 2015 and 2016,[11] but utilization recovered quickly and maintained higher levels of utilization until 2022 and 2023, when catch and utilization rates dropped again. The total catch for non-whiting species has risen slightly since 2011, but the total percent utilization of the allocation has remained close to 25% since the start of the catch share program (Table 16).

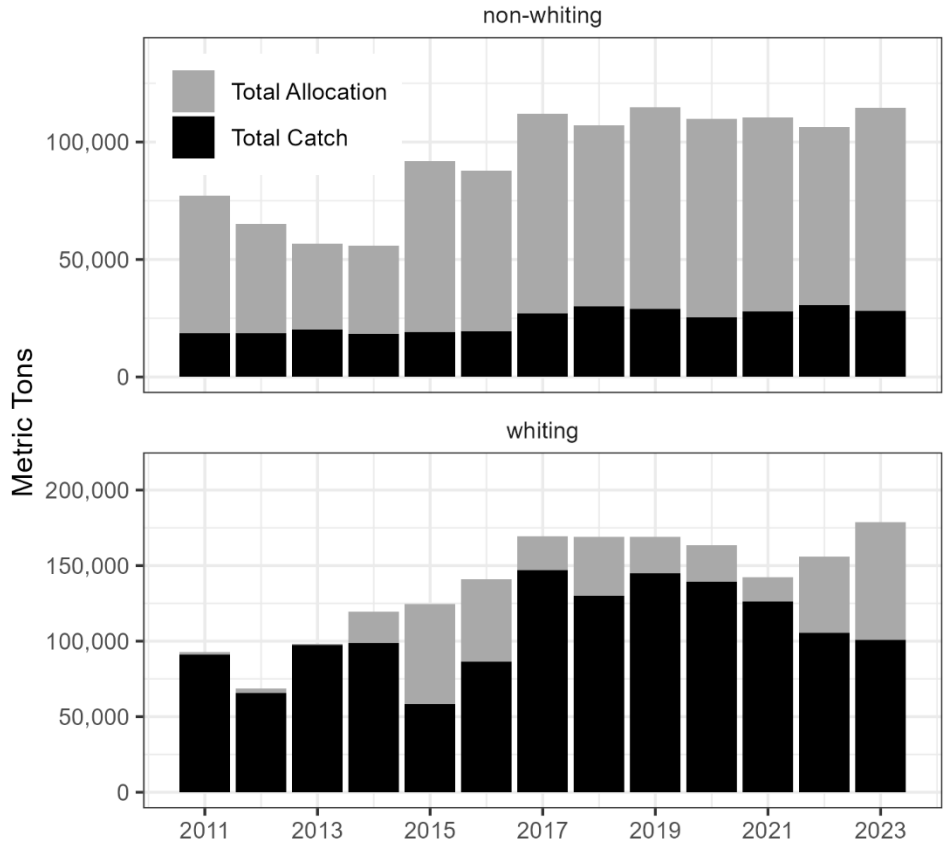
The allocation for Pacific whiting in the shorebased IFQ program increased consistently from 2012 to 2017 and has remained relatively consistent in the years since, with some fluctuations. The Pacific

[10] "Lightning strike" catch events, where a vessel catches more than its allocation of a species and is prohibited from fishing for the remainder of the year, have occurred and in one case limited the vessel's ability to participate in the following year (Groundfish Management Tea report, 2016). While some fishermen form groups to create quota pools and reduce the risk of any single vessel from being shut down due to a lightning strike event, it does not entirely eliminate said risk (Holland and Jannot 2012).

[11] Due to low catchability of Pacific whiting due to anomalously warm water (referred to as 'The Blob')

whiting allocation utilization in terms of percentages were very high (95.6 to 99.3%) for 2011–2013, then decreased to below 50% in 2015 after which it rose to between 75% and 89% in 2017–2021 before falling again (Figure 3).

Figure 3. IFQ Sector Total Catch and Allocation by Species Group



Source: Annual allocation data sourced from NOAA Fisheries IFQ Sector Balances website https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=155:1:::::; catch data is from the Groundfish Expanded Mortality Multi-year (GEMM) data.

Table 16. IFQ Sector Total Catch, Allocation, and Percent Utilization

	Non-Whiting Species			Pacific Whiting		
Period	Total Catch (mt)	Total Allocation (mt)	Percent Utilization	Total Catch (mt)	Total Allocation (mt)	Percent Utilization
CS	24,042	93,037	26.4%	107,116	137,908	79.4%
2011–2015	19,011	69,380	28.4%	82,313	100,764	84.5%
2016–2019	26,405	105,433	24.9%	127,131	162,202	77.7%
2020–2023	27,968	110,214	25.4%	118,105	160,046	74.6%

Note: 'Non-Whiting Species' is the sum of the individual allocations and/or catch for all allocated stocks for the IFQ sector

Source: NOAA Fisheries IFQ Sector Balances website https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=155:1

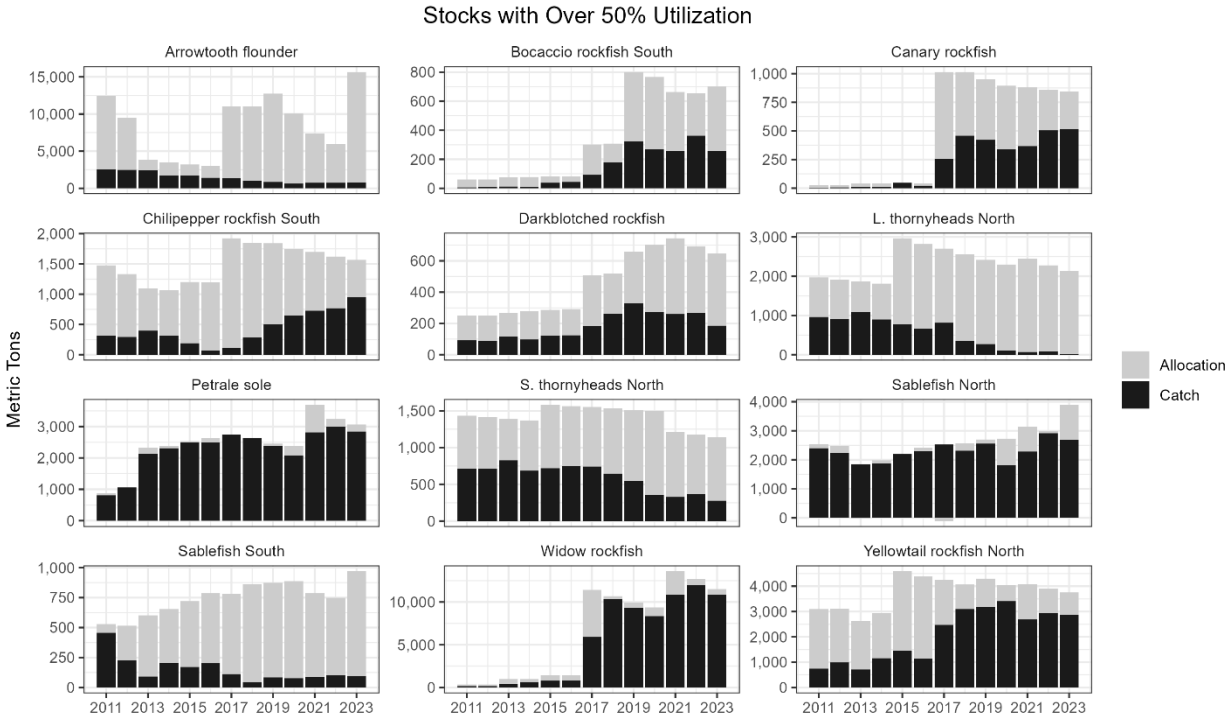
Since 2011, 12 non-whiting stocks have had at least 50% attainment of the shorebased IFQ allocation (Figure 4). Across all years, petrale sole, sablefish (north), widow rockfish, and yellowtail rockfish are the only stocks where average utilization is greater than 50%, with petrale sole and sablefish (north) being the highest utilized stocks (averaging 94.1% and 90.7% respectively).

Since 2020, utilization rates for petrale and sablefish (north) have been variable. For petrale, utilization dropped below 90% for the first time in the time series in 2020, to 87.2% and dropped even more in 2021 to 76.3% (Table 17). However, while catch did decline in 2020, lower utilization in 2021 was the result of an increase in the allocation in that year, as catch did increase relative to 2020. Sablefish north exhibits a similar pattern in utilization in recent years, with catch declining in 2020 compared to 2019, increasing in 2021, but not enough to maintain a high utilization rate (utilization was 68.5% in 2020 and 72.9% in 2021). However, in contrast with petrale, where catch levels increased in 2022 and 2023 to meet higher quotas resulting in near-normal high utilization rates, sablefish north catch in 2023 declined from 2022 levels despite receiving the highest allocation since the catch share program began.

As discussed in the intersector review (PFMC, 2025), the non-whiting midwater trawl fishery has re-emerged as a result of increasing allocations of key midwater rockfish species including canary, yellowtail, and widow rockfish, resulting in higher catch and utilization of these stocks since 2017 (Figure 4).

Other stocks that have seen increases in landings and utilization include shelf rockfish species such as chilipepper and bocaccio rockfish. Several stocks have seen declining catch and utilization rates over time, including longspine and shortspine thornyheads, arrowtooth flounder, and sablefish south. Declines in sablefish north utilization as well as longspine and shortspine thornyheads, not only correspond with ex-vessel price decreases, which have affected almost all IFQ stocks since 2016 (see Section 2.3.3), but also declining participation, revenue, and profitability of the DTS trawl fishery (see Section 2.5.1.2).

Figure 4. IFQ Sector Utilization of Non-Whiting IFQ species



Note: Only species that had at least one year of utilization over 50% between 2011 and 2023 were included in the graphs above.

Source: NOAA Fisheries IFQ Sector Balances website https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=155:1

Table 17. IFQ Sector Percent Utilization (%) of Non-whiting Species with at least one year above 50% Utilization

Stock	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Average 2011–2023	Average 2011–2015	Average 2016–2023
Arrowtooth flounder	20.3	26.4	63.3	50	52.3	46.8	12.5	9.3	6.7	6.1	10	12.1	5.1	**24.7**	**42.5**	**13.6**
Bocaccio rockfish South	8.9	14.7	17.2	11.3	47.2	50.8	30.3	63.3	40.4	34.7	38.5	55.3	36.5	**34.5**	**19.9**	**43.7**
Canary rockfish	14.2	27.6	25.6	25.7	103.6	48.3	25	45.1	44.3	37.9	41.8	58.8	61.2	**43.0**	**39.3**	**45.3**
Chilipepper rockfish South	21.2	21.9	35.9	29.3	15.7	6.3	5.8	15.7	27	37.2	42.8	47.6	61	**28.3**	**24.8**	**30.4**
Darkblotched rockfish	36.2	36.1	43.6	35.1	42.8	42.1	35.8	50.8	50	38.7	34.8	38.4	28.4	**39.4**	**38.8**	**39.9**
L. thornyheads North	48.9	47.6	58.6	49.6	25.9	23.4	30.2	13.7	11.4	4.8	2.9	3.3	1	**24.7**	**46.1**	**11.3**
Petrale sole	93.2	100.3	91.9	97.3	98.4	94.9	100.2	100.6	97.5	87.2	76.3	92.8	92.6	**94.1**	**96.2**	**92.8**
S. thornyheads North	49.9	50.3	59.8	49.8	45.4	47.8	47.8	41.8	36.2	24	27.2	31.2	24.2	**41.2**	**51.0**	**35.0**
Sablefish North	94.2	90.6	101.2	94.8	100.2	95.4	104.6	91.5	99.1	68.5	72.9	97.7	68.9	**90.7**	**96.2**	**87.3**
Sablefish South	86.2	44.4	15.1	31.6	23.6	25.8	14.5	5.6	10.2	9.2	11.1	13.4	9.7	**23.1**	**40.2**	**12.4**
Widow rockfish	40.2	45	41.4	65.8	57.3	59	52	97	93.9	88.8	79.5	94.5	94.7	**69.9**	**49.9**	**82.4**
Yellowtail rockfish North	23.9	32	27.3	39.6	31.6	26.2	58.1	75.8	73.9	84.2	65.7	75.2	76.1	**53.0**	**30.9**	**66.9**

Note: Warmer and darker colors indicate a higher utilization rate in that year. Only species that had at least one year of utilization over 50% between 2011 and 2023 were included in the table.

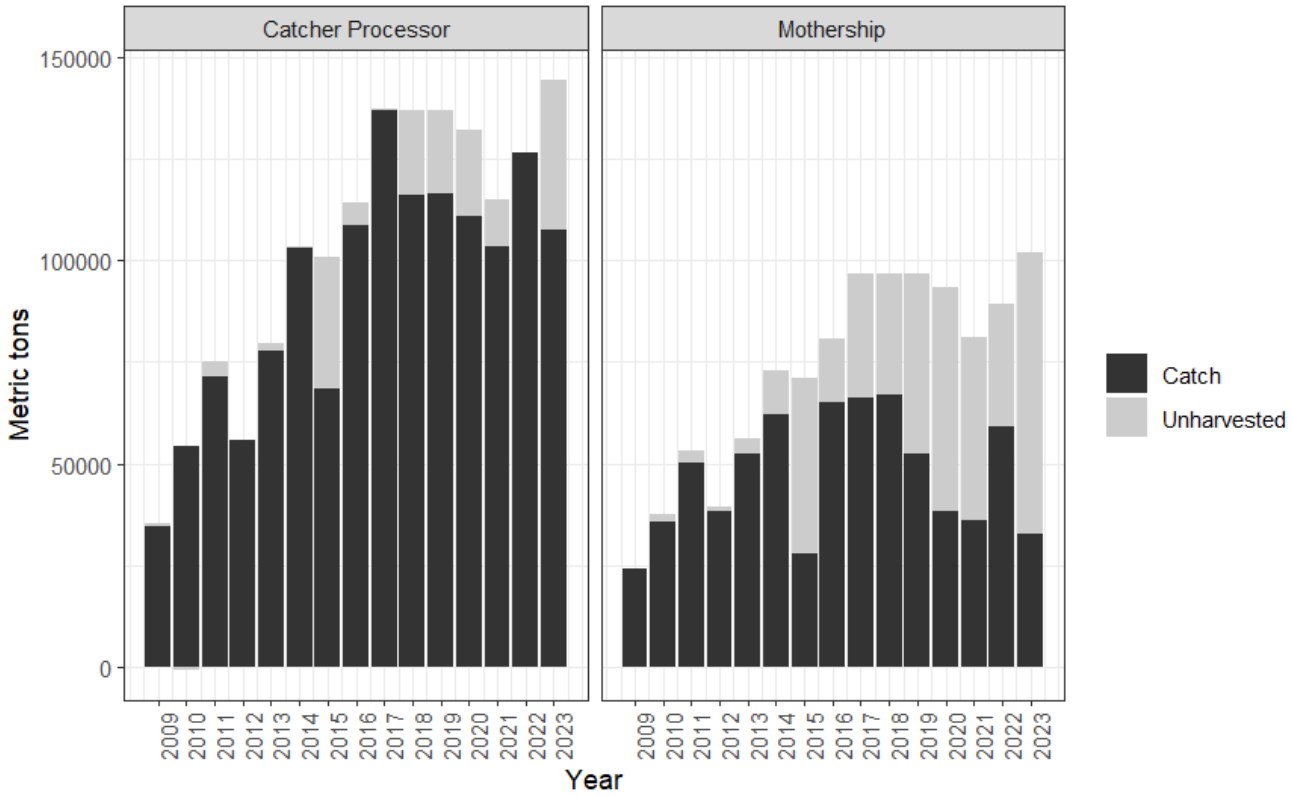
Source: NOAA Fisheries IFQ Sector Balances website https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=155:1:::::::;

2.2.2 At-sea Sector Utilization

Key takeaways:

- Catcher-processor utilization has been variable since 2015. Full utilization of the CP allocation was only achieved in 2017 and 2022.
- Mothership utilization has declined since the last review due to a combination of higher allocations and decreased catch between 2019 and 2023.

Figure 5. At-sea Sector Post-Tribal Reapportionment Allocation Utilization



Source: NOAA Fisheries IFQ Sector Balances website https://www.webapps.nwfsc.noaa.gov/apex/ifq/f?p=155:1; catch data are from the Groundfish Expanded Mortality Multi-year (GEMM) data.

The catch share program's goal of full utilization extends to the mothership and catcher-processor at-sea sectors. Utilization of the catcher-processor sector allocation was high in most years with the exception of 2015 and 2023 and the allocation was nearly fully utilized in 2012–2014, 2017, and 2022 (Figure 6). Lower than average utilization in the 2016–2023 period compared to 2011–2015 aligns with higher allocations and higher total catch.

While the mothership sector also experienced higher allocations in the 2016–2023 period, catch rates did not increase, leading to declines in utilization, particularly since 2019. Catch in 3 of the last

4 years was the lowest since 2015, where anomalous ocean conditions constrained landings for all whiting fisheries.

To account for the at-sea mortality of non-whiting groundfish, Amendment 21 (which was developed in concert with Amendment 20) developed at-sea set-asides which are amounts deducted from the trawl allocation before the trawl sector IFQ is dispersed. The list of species for which at-sea set-asides are defined have varied since 2011, but the list and values in place for 2025 and 2026 are shown in Table 18.

Table 18. Set-Asides by Species

Species	Set-aside (mt)
Arrowtooth Flounder	100
Canary Rockfish	20
Darkblotched Rockfish	100
Dover Sole	10
Lingcod N of 40 10	15
Longnose Skate	5
Other Flatfish	100
Pacific Ocean Perch	300
Petrale Sole	5
Sablefish North	429
Shelf Rockfish North	35
Shortspine Thornyhead	70
Slope Rockfish North	300
Widow Rockfish	300
Yellowtail Rockfish	360

Source: 89 FR 70406

However, allocations were initially set for four species: canary rockfish, darkblotched rockfish, widow rockfish, and POP. All four stocks were overfished at the time that Amendments 20 and 21 were developed and implemented, and the latter three were considered trawl-dominant stocks and had formal allocations specified in the FMP via formulas. Each at-sea sector was allocated a specific amount with an expectation that the at-sea cooperatives managed their operations to not exceed that value. If they exceeded or were projected to exceed the allocations for these stocks, one or both of the sectors would be closed automatically (50 CFR 660.60(d)(1)(ii)). Each at-sea sector exceeded their initial allocation of darkblotched rockfish at one time (CPs in 2011 and MS in 2014). The 2014 overage resulted in an emergency Council meeting in order to re-open the fishery since the allocation overage was not expected to result in a conservation concern, jeopardize the ACL, or adversely affect other sectors. As noted in the rule for Amendment 21-3 (*83 FR 757*):

> Closure occurred after six hauls caught 4.5 mt of darkblotched rockfish, which was nearly 75 percent of their 2014 allocation, with the most of that catch coming from

> three of the hauls. Some of the largest hauls were delivered to motherships so closely in time that feedback on the size of the catches from observers came too late for the MS coop to effectively respond. Prior to this "lightning strike" event, the sector had made 969 hauls and caught only 2.5 mt of darkblotched rockfish. After the sector was re-opened by an emergency meeting of the Council, the sector made 330 additional hauls that brought in over 14,500 mt of Pacific whiting and only 0.1 mt of additional darkblotched rockfish.

The 2011 overage by the CP sector actually experienced even more rapid accumulations of darkblotched rockfish bycatch, and would have been closed late in 2011. However, the MS sector (which had completed fishing that year) had unused allocation of darkblotched that was able to be transferred to the CP sector.

To provide more flexibility, reduce the risk of inseason closure, reduce operational costs, and take into account that ACLs for these stocks were generally underattained, the Council moved to using set-asides rather than allocations for the four stocks (and removed the formula for setting the values for darkblotched, widow, and POP) through Amendment 21-3 and 21-4 to the FMP in 2018 and 2019. Moving to set-aside management was posited as a potential way provide flexibility to the whiting sectors to continue fishing in years were bycatch exceeded those amounts—as long as the harvest specifications were not in jeopardy and there were no impacts to other fisheries or conservation concerns. This was particularly in light of other constraining stocks like sablefish or Chinook salmon that were resulting in co-ops having to prioritize which stocks to avoid and finding it difficult to maximize avoidance of all of them at the same time.

In recent meetings, there have been several discussions at the Council regarding at-sea set-aside overages and the expectation that the sectors were to stay within those set-asides. However, as noted in Am 21 FEIS:

> In the trawl rationalization program, several species/sector combinations are not scheduled to be managed using IFQs or bycatch limits. It is these sector/species combinations where set-asides are necessary and where allocations are not necessarily appropriate. The perspective taken to establish a set-aside is different from the perspective taken for establishing allocations. Since set-asides are not accompanied with a firm and direct management tool, the appropriate amount of fish attributed to a set-aside is best examined as an amount that can reasonably accommodate the incidental amount of fish that a sector could take. This differs from an allocation where a firm catch level is established that is a direct target, and that target may be lower than historic catch amounts.

An expectation that set-asides would be reviewed and adjusted as needed through the biennial harvest specifications process, with inseason management only if specific criteria are met, is defined at 50 CFR 660.150(c)(2)(i)(B)(1) and 50 CFR 660.160(c)(3)(i):

At-sea set-asides of non-whiting groundfish species will be managed on an annual basis unless there is a risk of a harvest specification being exceeded, unforeseen impact on other fisheries, or conservation concerns, in which case inseason action may be taken. Set-asides may be adjusted through the biennial specifications and management measures process as necessary.

2.3 Net Benefits and Related Outcomes

Several goals of the catch share program and the groundfish FMP as well as requirements under the MSA relate to improving overall economic outcomes and net benefits. [12]

This section begins by providing definitions for sectors, fleets, and fishing activities used to summarize EDC data. Then, trends in total net benefits are reviewed across all sectors as well as by sector. Subsequent sections report out high-level trends in ex-vessel prices and landings, profit margins (as an indicator of efficiency), product value, the performance of the quota market, and governance cost trends. Section 2.5 focuses on average outcomes at the vessel and processor level and for catcher vessels, also explores trends in profitability by target fishery or gear type.

2.3.1 Sector, Vessel/Processor Type, and Activity Definitions

Because the catch share program is complex and diverse, this report evaluates outcomes at a variety of levels: by sector, primary harvesting or processing species group or 'type' (whiting or non-whiting), and by harvesting activity (by gear type and/or target species or species group). This follows how analyses and data are organized in the NOAA Fisheries EDC Fisheries Economics Explorer (FISHEyE) tool (Steiner et al., 2021). This section describes how each group is defined in order to better guide interpretation of results.

2.3.1.1 Sector and Vessel/Processor Type definitions

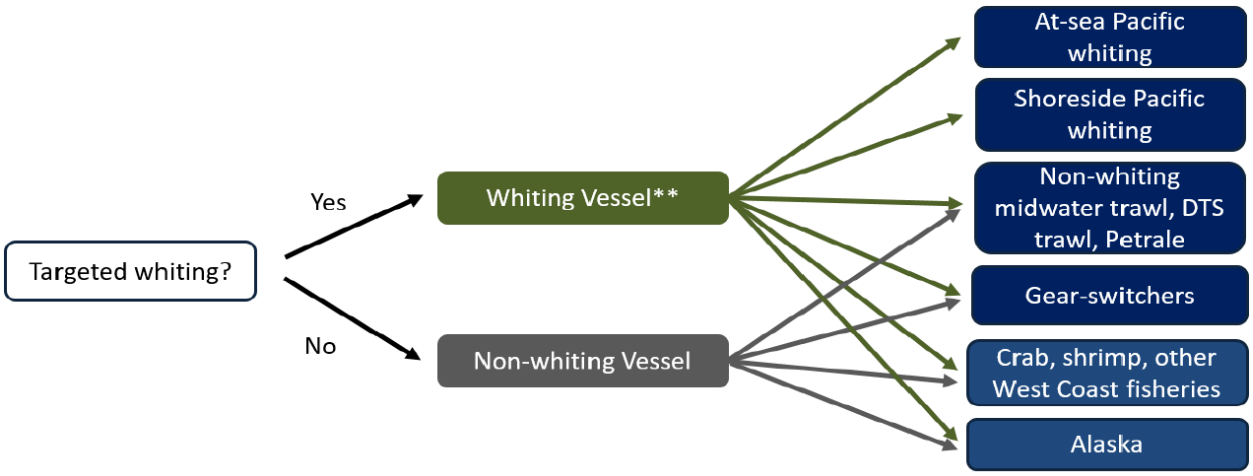
The sectors consist of catcher vessels, motherships, catcher-processors, and shorebased processors. Data or analyses conducted at the sector level provide information on all vessels or processors that participated in the catch share program in that sector.

Within the catcher vessel and shorebased processor sectors, vessels and processors are classified into either whiting or non-whiting (Figure 6, Figure 7). The purpose of separating processors and vessels this way is because whiting vessels tend to be larger and catch a higher volume of fish. Annual catch limits for Pacific whiting may furthermore be more variable than other non-whiting species, which can make interpreting trends more difficult when aggregated. When participating in West coast fisheries, motherships and catcher-processors are exclusively "whiting" at-sea vessels—

[12] Under the MSA, LAPPs should promote social and economic benefits and the groundfish FMP includes maximizing the value of the groundfish resource as a whole as a goal.

vessels that process or catch and/or process Pacific whiting (Steiner et al., 2021). Shorebased processors and catcher vessels are classified as "whiting" if they took at least one whiting trip[13] or purchased at least one whiting delivery. The classification of "non-whiting" is for vessels and processors that did not engage with the whiting fishery. Vessels and processors classified as "whiting" may also participate in the non-whiting fisheries (see Figure 23) .

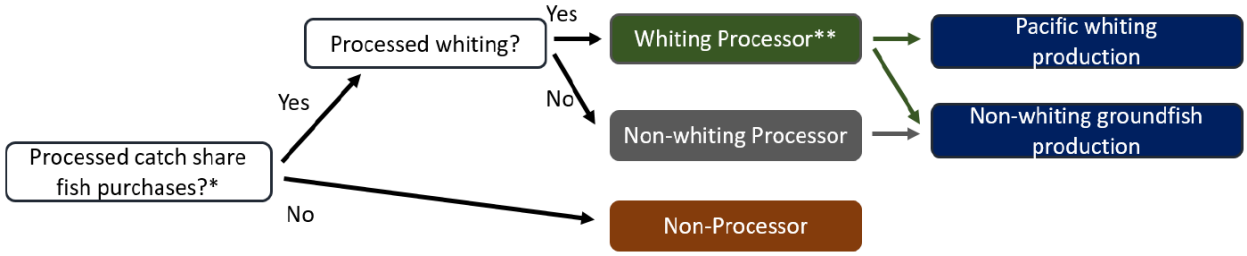
Figure 6. Classification of Catch Share Catcher Vessels



*Note: **Does not include vessels that only caught whiting as bycatch.*

Source: PMFC and NMFS 2017

Figure 7. Classification of Catch Share First Receivers and Shorebased Processors



*Note: * Processors that receive catch share groundfish species, but not Pacific whiting, are characterized as "non-whiting processors." **Does not include processors that only receive whiting as bycatch.*

Source: PMFC and NMFS 2017

2.3.1.2 Catcher Vessel Activity Types

Beyond vessel type classification, catcher vessels may further be characterized in terms of the different sub-fisheries that they participate in within the catch share program.

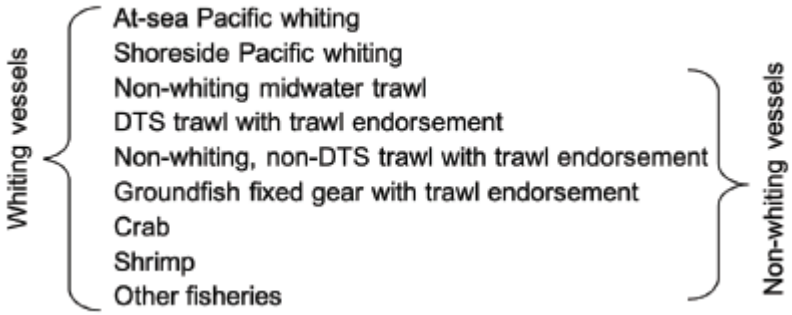
[13] Where a whiting trip is defined as a trip where 50% or more of the revenue on that trip comes from Pacific whiting.

As described in Steiner et al. (2021):

> There is no single definition of fishery, nor is there a single agreed-upon method for assigning landings or vessels to fisheries. The EDC Program established its own set of fisheries and rules in order to respond to specific management questions and to account for differences in targeting strategies that might affect economic analysis and interpretation. (p. 5)

For catcher vessels, ex-vessel revenue is used to categorize individual deliveries into various activities, both catch share and non-catch share (Figure 8, Figure 9). The gear type, location of delivery (shoreside or at sea), and the species group that contributes to the largest proportion of ex-vessel revenue on the delivery determines the activity type.

Figure 8. Vessel Types and Activities

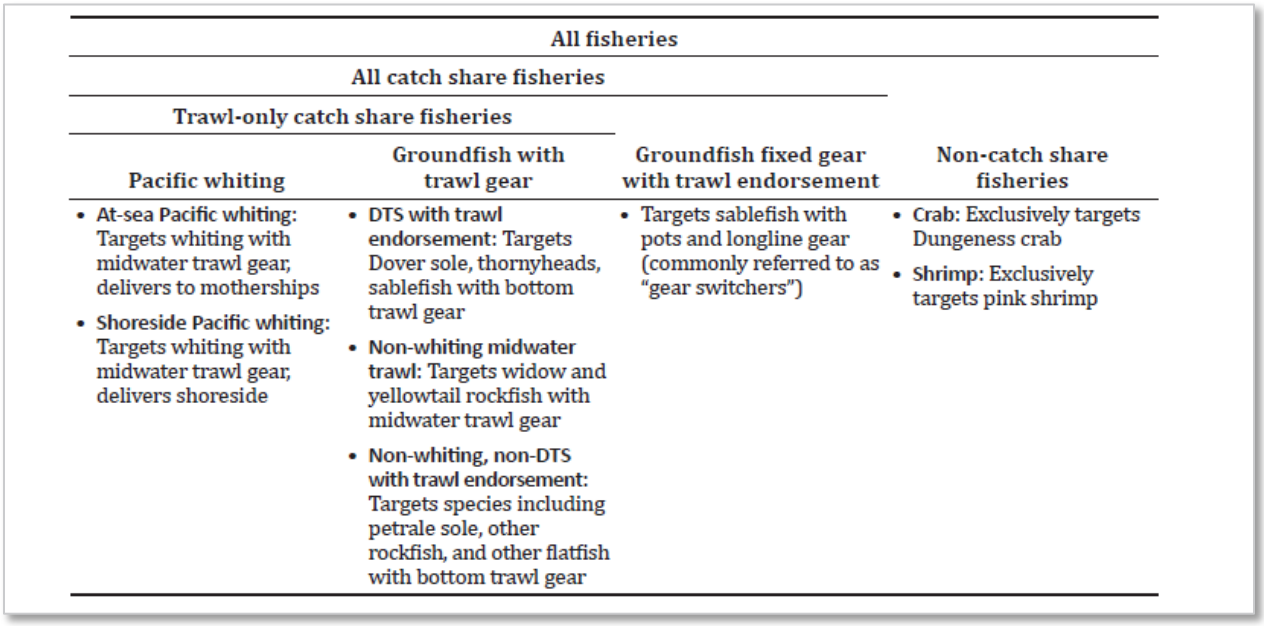


Source: Steiner (2021)

For Pacific whiting fisheries, two activities are described: shoreside and at-sea, indicating the location of delivery to either a floating mothership processor or a shorebased processing facility (Figure 8).

Within the non-whiting activties, there are four activity types that are discussed in this report: Dover sole, thornyheads, and sablefish (DTS) with trawl endorsement, non-whiting midwater trawl, non-whiting, non-DTS with trawl endorsement, fixed gear with trawl endorsement. DTS trawl vessels target Dover sole, thornyheads, and sablefish with bottom trawl gear. Non-whiting midwater trawl gear typically targets widow and yellowtail rockfish. Non-whiting, non-DTS vessels target other rockfish, other flatfish, and petrale sole with bottom trawl gear. Fixed gear vessels with trawl endorsements are commonly referred to as "gear switchers" and target sablefish with pots and longline gear (Figure 9).

Figure 9. Catcher Vessel Activity Types



All fisheries			
All catch share fisheries			
Trawl-only catch share fisheries			
Pacific whiting	Groundfish with trawl gear	Groundfish fixed gear with trawl endorsement	Non-catch share fisheries
• At-sea Pacific whiting: Targets whiting with midwater trawl gear, delivers to motherships • Shoreside Pacific whiting: Targets whiting with midwater trawl gear, delivers shoreside	• DTS with trawl endorsement: Targets Dover sole, thornyheads, sablefish with bottom trawl gear • Non-whiting midwater trawl: Targets widow and yellowtail rockfish with midwater trawl gear • Non-whiting, non-DTS with trawl endorsement: Targets species including petrale sole, other rockfish, and other flatfish with bottom trawl gear	• Targets sablefish with pots and longline gear (commonly referred to as "gear switchers")	• Crab: Exclusively targets Dungeness crab • Shrimp: Exclusively targets pink shrimp

Source: Steiner (2021)

2.3.2 Net Benefits from Sector Activity

Key Takeaways

- Between 2011 and 2023, total net benefits across all sectors averaged $69.9 million per year, an increase from the pre-catch share period mean of $33.3 million.
- While average annual net benefits remain higher than the pre-catch share period, high relative catch limits and catch of Pacific whiting across sectors are a main contributing factor and the catcher-processor sector continues to be the single largest contributor to net benefits overall (66.4% of average annual net benefits 2011–2023).
- Between 2020 and 2023 net benefits of the program declined by $17. 8 million (from $77.7 million for 2016–2019 to $59.9 million for 2020–2023).
- In 2023, net benefits were negative, stemming from a major decline in net benefits from all sectors, particularly from the catcher-processor and shorebased processing sectors.
- There have been several changes through time in how individual companies assign costs and earnings to individual operations, which complicates the ability to compare the programs' effects on net benefits over time.

An explicit goal of the catch share program is to increase net economic benefits. Net economic benefits measure the size of the net benefit created by the fishery from society's perspective, defined

as the net value generated by the fishery. The Council anticipated net economic gains from the implementation of the program, primarily through increases in efficiency and productivity resulting from both consolidation and increased flexibility, as well as higher product volume and prices (PFMC & NMFS, 2010).

Using data collected through the EDC Program, net benefits are calculated by subtracting monetary costs from gross revenue for fishing activities, summed over participants in each sector (to calculate total cost net revenue or TCNR).[14] Costs include variable costs such as crew wages, production worker wages, captain compensation, fuel, cost recovery fees, fishing gear, packing materials, and monitoring (EM, observers, and shoreside catch monitors) as well as fixed costs such as capitalized expenditures and expenses on vessel equipment, processing equipment, maintenance, and repair. TCNR includes is an indicator of accounting (cash flow) profitability. Because TCNR is affected by large, infrequent fixed cost expenditures, such as new engines, it is best interpreted as a multiyear average as an indicator of long-term profitability.

2.3.2.1 Total Net Benefits and Net Benefits by Sector

The previous review found that the net benefits of the program (as measured using TCNR[15]) more than doubled from the pre-catch share period to the first five years of the program, driven primarily by the catcher-processor sector which in turn was affected by large increases in Pacific whiting allocations and catch between 2011 and 2015.

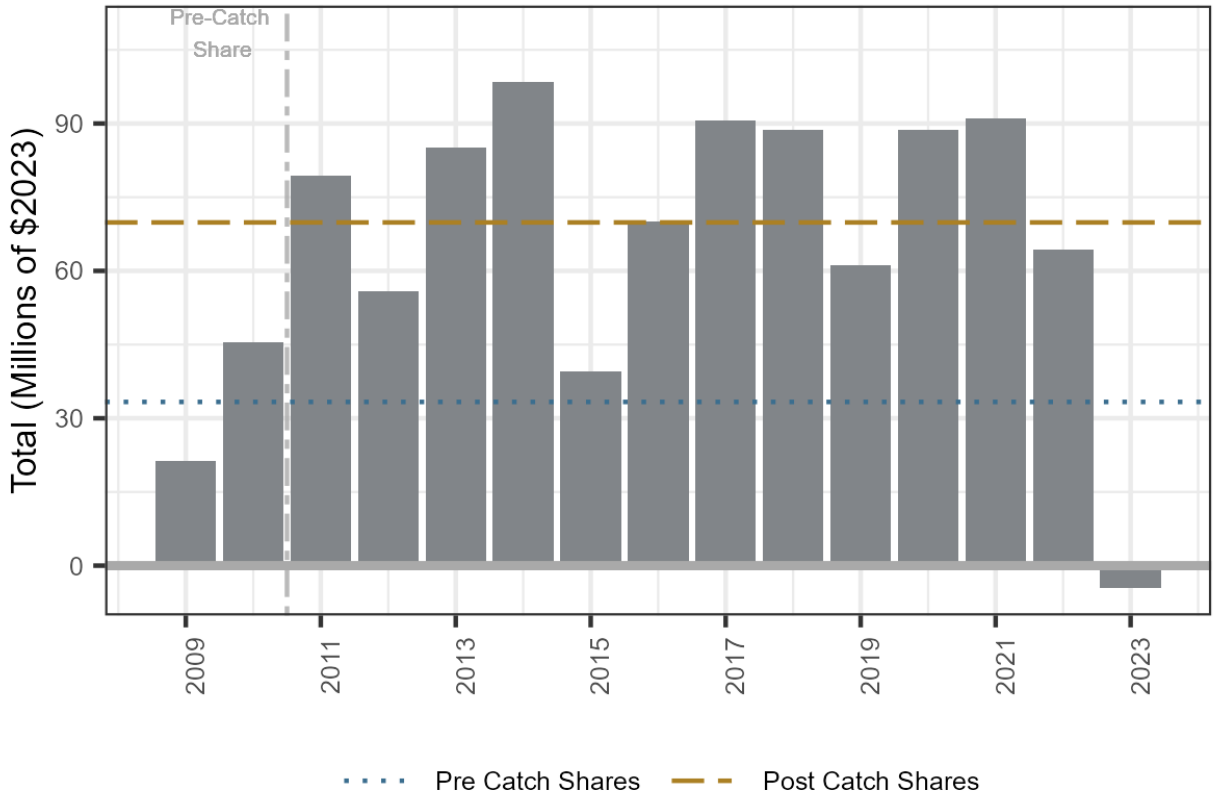
The current review finds that since 2015, trends have largely continued, with net benefits from the catcher-processors sector being the single largest contributor of net benefits overall between 2016 and 2023 (Figure 11). Between 2011 and 2023, total net benefits across all sectors averaged $69.9 million per year, an increase from the pre-catch share period mean of $33.3 million (Figure 10, Table 19). While increases from the pre-catch share period exist across all sectors, increases were largest for the catcher-processor sector ($20.9 million) and catcher vessel sector (all CVs across non-whiting and whiting [MSCVs and shoreside whiting] fisheries at $11.2 million) and lowest for the shorebased processing ($3.7 million) and mothership sectors ($675,000). The large contribution of the catcher-processor sector to net benefits across all years (66.4%) is particularly notable because the sector was already operating as a cooperative prior to 2011 (since 1997), so few economic benefits were expected under the program for this sector (PFMC & NMFS, 2010). Within the catcher vessel and shorebased processing sectors, increases are also largely attributable to the Pacific whiting fishery (Figure 12). For catcher vessels and shorebased processors that did not target or process whiting

[14] Data required to estimate net benefits using consumer surplus, as outlined NMFS' Economic Guidelines for conducting cost-benefit analyses (NMFS' Economic Guidelines for conducting cost-benefit analyses) are not available.

[15] Note that while net benefits are measured using TCNR, in this section this measure excludes buyback fees, which as described in the previous review, are not included because they are transfers to taxpayers. Buyback fees are included in TCNR calculations in the individual economic outcomes section.

(non-whiting vessels and processors), average annual net benefits have decreased 6.5% from $9.2 million in the pre-catch share period to $8.6 million in the catch share period (Table 20).

Figure 10. Total Net Benefits 2009–2023

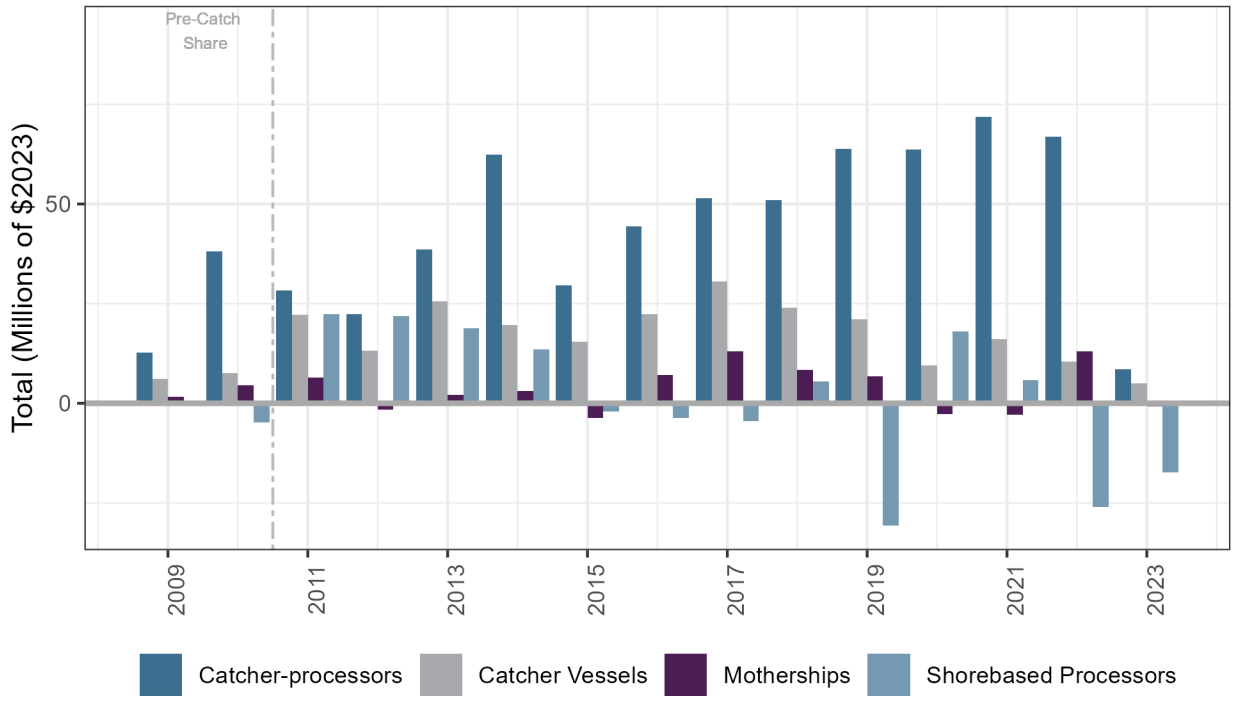


Note: horizontal dashed lines are the pre-catch shares (2009–2010, blue dotted) and post catch shares (2011–2023, gold dash) averages.

While the program continued to generate positive net benefits across all sectors overall since the last review, between 2020 and 2023 net benefits of the program declined by $17. 8 million (from $77.7 million for 2016–2019 to $59.9 million for 2020–2023). In 2023, net benefits were negative stemming from a major decline in net benefits from all sectors, particularly from the catcher-processor and shorebased processing sectors.

There have been several changes through time in how individual companies assign costs and earnings to individual operations, which complicates the ability to compare the programs' effects on net benefits over time.

Figure 11. Total Net Benefits by Sector



Note: This presents total annual net benefits (measured using total cost net revenue, TCNR) across all sectors, vessels, and processors. All dollars are in real $2023 terms.

Source: FISHEyE

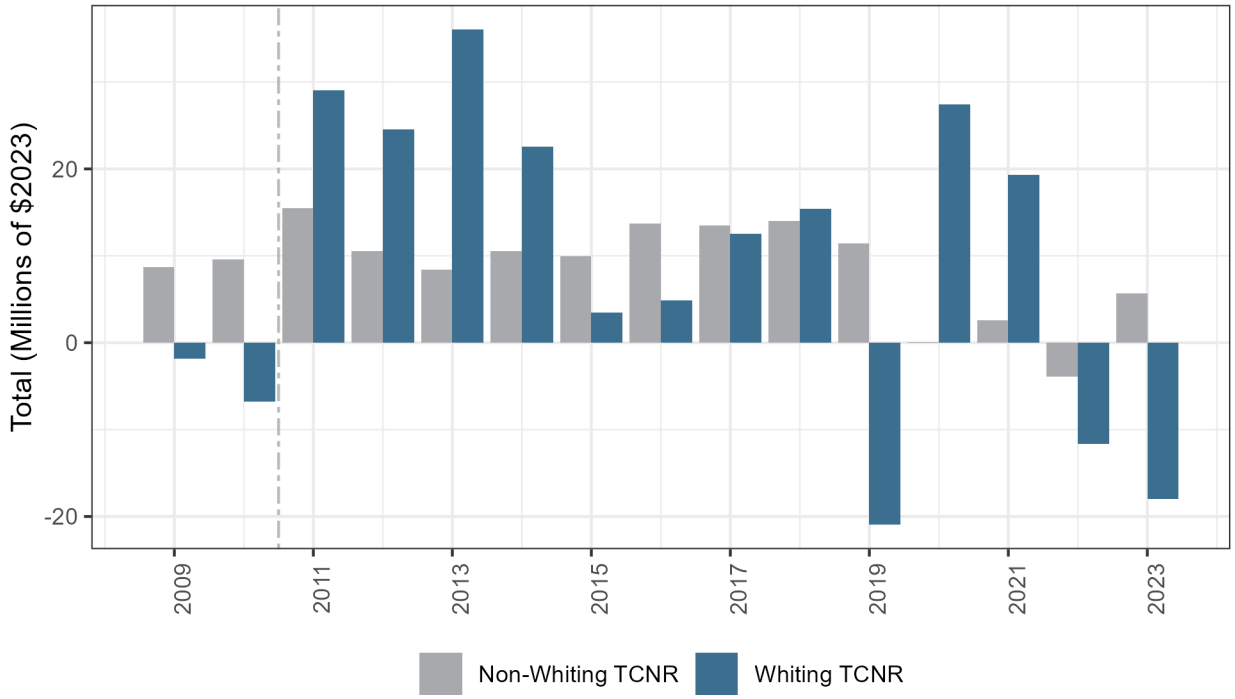
Table 19. Total Net Sector Benefits by Sector and Period

Period	Catcher Vessels	Catcher-processors	Motherships	Shorebased Processors
Pre-CS	6,854,532	25,443,684	3,050,012	-2,023,784
CS	18,080,613	46,378,094	3,725,104	1,678,566
2011–2015	19,220,377	36,246,403	1,250,149	14,920,898
2016–2019	24,476,342	52,647,986	8,846,145	-8,332,635
2020–2023	10,260,179	52,772,817	1,697,755	-4,863,148

Note: This presents total annual net benefits (measured using total cost net revenue, TCNR) across all sectors, vessels, and processors. All values represent averages across the period. All dollars are in real $2023 terms.

Source: FISHEyE

Figure 12. Net Benefits Across Catcher Vessel and Shorebased Processing Sectors by Vessel/Processor Type



Note: This presents total annual net benefits (measured using total cost net revenue, TCNR) across shorebased processing and catcher vessel sectors. In each year, Individual catcher vessels and shorebased processors are classified as either "whiting" or "non-whiting" (see section 2.3.1.1 for definitions). All dollars are in real $2023 terms.

Source: FISHEyE

Table 20. Average Net Benefits Across Catcher Vessel and Shorebased Processors by Period by Vessel/Processor Type

Year	Non-Whiting TCNR	Whiting TCNR
Pre-CS	9,159,151	-4,328,403
CS	8,618,857	11,140,321
2011–2015	11,000,325	23,140,950
2016–2019	13,156,417	2,987,289
2020–2023	1,104,463	4,292,568

Note: This presents total annual net benefits (measured using total cost net revenue, TCNR) across all sectors, vessels, and processors. Net benefits from the entire mothership and catcher-processor sector are within the whiting total. In each year, Individual catcher vessels and shorebased processors are classified as either "whiting" or "non-whiting" (see section 2.3.1.1 for definitions). All dollars are in real $2023 terms. All values represent averages across the period.

Source: FISHEyE

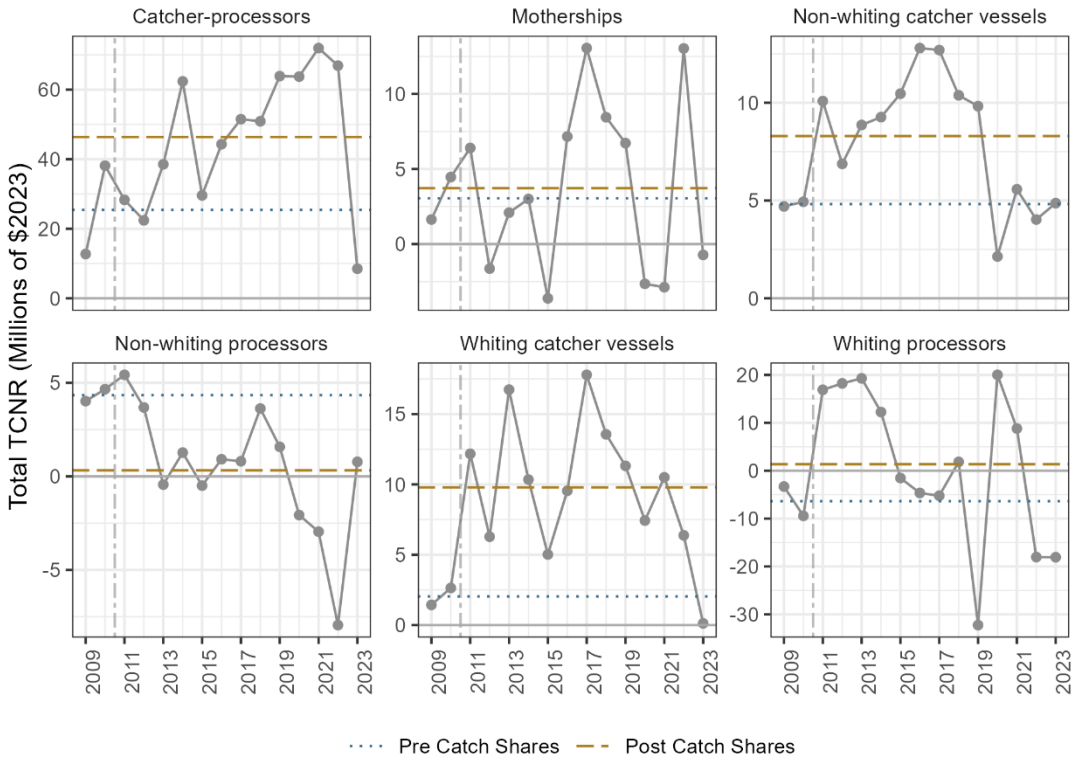
Across sectors, trends in net benefits have varied (Figure 13). Consistent with the previous review, catcher-processors have had the highest TCNR in almost any year, and TCNR had generally increased over time 2009–2021, before suddenly plummeting in 2023, contributing to the large decrease in

total net benefits across sectors in that year (Figure 13).[16] Motherships also experienced a decline in TCNR between 2022 and 2023, though large interannual swings in TCNR have been more common across the catch share period (Figure 13). Outcomes in recent years across whiting sectors appear to be driven by changes in and access to markets for different seafood commodities and product types (Section 2.3.5). Catcher-processors have consistently produced surimi and fillets as primary product forms, but in 2023 production prices for both declined, as did total purchase volumes. Motherships also always produced surimi but were more consistent producers of fillets after 2018. Shoreside processors sporadically produced fillets before 2018 but have not had substantial production of that product form since. They tend to produce frozen round products and headed-and-gutted products.

While total annual net benefits across non-whiting processors decreased on average 2011–2023 compared to the pre-catch share period (Figure 12), total net benefits across non-whiting vessels increased on average in the same period, despite a roughly 50% decline in TCNR between 2020 and 2023 (Figure 13). In contrast, net benefits for non-whiting processors have remained below the pre-catch share period average in all years except 2011. Net benefits for non-whiting processors declined shortly after the program was implemented, fluctuated between low positive and low negative TCNR between 2012 and 2017 before experiencing sharp declines to negative TCNR between 2020 and 2022. Whiting processor and vessel TCNR averages remain higher on average during the catch share period compared to the catch share period, though both experienced declines between 2022 and 2023.

[16] VCNR also decreased suddenly in 2023 for catcher-processors (Figure)

Figure 13. Net Benefits by Sector and Vessel/Processor Type



Note: whiting and non-whiting vessels are catcher vessels only. Non-whiting processors and whiting processors are shorebased processors only. Individual catcher vessels and shorebased processors are classified as either "whiting" or "non-whiting" (see section 2.3.1.1 for definitions). All dollars are in real $2023 terms

Source: FISHEyE

Table 21. Total TCNR by Sector and Vessel or Processor Type

Period	Catcher-processors	Motherships	All Processors	Whiting processors	Non-whiting processors	All Catcher vessels	Whiting catcher vessels	Non-whiting catcher vessels
Pre-CS	25,443,684	3,050,012	-2,023,784	-6,365,515	4,341,730	6,854,532	2,037,111	4,817,420
CS	46,378,094	3,725,104	1,678,566	1,356,128	322,438	18,080,613	9,784,194	8,296,419
2011–2015	36,246,403	1,250,149	14,920,898	13,030,604	1,890,294	19,220,377	10,110,346	9,110,031
2016–2019	52,647,986	8,846,145	-8,332,635	-10,065,473	1,732,838	24,476,342	13,052,762	11,423,580
2020–2023	52,772,817	1,697,755	-4,863,148	-1,815,367	-3,047,782	10,260,179	6,107,935	4,152,244

Note: whiting and non-whiting vessels are catcher vessels only. Non-whiting processors and whiting processors are shorebased processors only. Individual catcher vessels and shorebased processors are classified as either "whiting" or "non-whiting" (see section 2.3.1.1 for definitions). All dollars are in real $2023 terms. All values represent averages across the period.

Source: FISHEyE

2.3.3 Ex-Vessel Price, Ex-vessel Value, and Catch

Key Findings:

- Dover sole, arrowtooth flounder, and other flatfish catches have declined since the last program review. Petrale sole was the only flatfish species whose catch substantially increased.
- Rockfish species catches have generally increased since the last program review, the primary exceptions were longspine thornyhead and shortspine thornyhead.
- Real ex-vessel prices were below the 2011–2015 average for most species between 2016 and 2023.
- Total catch of all allocated QP has been above average since the last program review but lower prices have resulted in lower real gross ex-vessel revenue.

Data in this section are derived from information presented in Holland & Steiner (2024) to provide background information on the IFQ species catch, value and ex-vessel prices during the catch share program. Information is provided for all allocated groundfish species.

Some trends in the catch data over the period are noted. Arrowtooth flounder catch has decreased from over 5.6 million pounds (lb) in 2011 to 1.8 million lb in 2023. Canary rockfish stocks were determined to be rebuilt over the period. Catch increased from about 10,000 lb in 2011 to more than 1.1 million lb in 2023. Dover sole catch is about half its 2011 level (17.3 million lb) in 2023 (8.5 million lb). Whiting catch has varied from 201 million lb in 2011 to 223 million lb in 2023. The lowest catch of Pacific whiting during the period was 129 million lb in 2015 and the most catch occurred in 2017 (324 million lb). Petrale sole and yellowtail rockfish catches more than tripled during the period. Widow rockfish was determined to be rebuilt and the catch the each of the last three years considered was over 23 million lb.

Table 22. Catch of IFQ species (million lb) 2011 through 2023

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Arrowtooth flounder	5.58	5.50	5.37	3.82	3.68	3.13	3.04	2.25	1.88	1.34	1.62	1.60	1.76
Bocaccio rockfish (S of lat 40°10'N)	0.01	0.02	0.03	0.02	0.09	0.10	0.20	0.40	0.71	0.59	0.56	0.80	0.56
Canary rockfish	0.01	0.02	0.02	0.02	0.10	0.05	0.56	1.01	0.93	0.75	0.81	1.11	1.14
Chilipepper rockfish (S of lat 40°10'N)	0.69	0.64	0.87	0.69	0.42	0.17	0.24	0.64	1.10	1.43	1.60	1.70	2.09
Cowcod (S of lat 40°10'N)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Darkblotched rockfish	0.20	0.20	0.26	0.22	0.27	0.27	0.40	0.58	0.73	0.60	0.57	0.59	0.41
Dover sole	17.27	16.06	17.58	14.32	13.75	15.86	16.20	14.05	12.73	10.42	8.88	10.24	8.45
English sole	0.30	0.32	0.49	0.52	0.73	0.83	0.56	0.47	0.45	0.28	0.42	0.64	0.51
Lingcod	0.64	0.84	-	-	-	-	-	-	-	-	-	-	-
Lingcod (N of lat 40°10'N)	-	-	0.75	0.53	0.41	0.57	1.37	0.97	0.94	0.73	0.76	0.60	0.88
Lingcod (S of lat 40°10'N)	-	-	0.04	0.04	0.07	0.05	0.05	0.11	0.18	0.13	0.10	0.11	0.11
Longspine thornyhead (N of lat 34°27'N)	2.12	2.01	2.40	1.98	1.69	1.45	1.80	0.77	0.61	0.24	0.16	0.17	0.05
Minor shelf rockfish (N of lat 40°10'N)	0.03	0.09	0.07	0.08	0.07	0.08	0.53	0.60	1.03	1.15	0.89	0.66	0.60
Minor shelf rockfish (S of lat 40°10'N)	0.01	0.03	0.04	0.02	0.02	0.01	0.01	0.01	0.03	0.05	0.06	0.03	0.10
Minor slope rockfish (N of lat 40°10'N)	0.32	0.49	0.43	0.41	0.50	0.35	0.36	0.45	0.60	0.49	0.63	0.47	0.42
Minor slope rockfish (S of lat 40°10'N)	0.11	0.27	0.26	0.22	0.15	0.11	0.12	0.16	0.10	0.10	0.11	0.15	0.06
Other flatfish	1.53	1.51	1.77	1.85	1.84	1.89	1.61	1.36	1.00	0.97	0.91	0.85	0.70
Pacific cod	0.56	0.87	0.34	0.37	0.83	0.85	0.09	0.01	0.01	0.01	0.00	0.04	0.09
Pacific halibut (IBQ; N of lat 40°10'N)	0.07	0.10	0.07	0.06	0.08	0.08	0.08	0.07	0.07	0.06	0.07	0.07	0.06
Pacific ocean perch (N of lat 40°10'N)	0.10	0.12	0.11	0.09	0.11	0.12	0.21	0.20	1.02	1.14	0.98	0.83	0.50
Pacific whiting (a.k.a. Pacific hake)	201.03	144.76	215.22	217.63	128.71	190.24	324.31	287.14	319.41	307.50	278.74	232.65	222.55
Petrale sole	1.79	2.33	4.70	5.10	5.51	5.51	6.07	5.83	5.27	4.60	6.21	6.63	6.25
Sablefish (N of lat 36°N)	5.29	4.93	4.08	4.15	4.86	5.07	5.57	5.09	5.64	3.98	5.04	6.43	5.90
Sablefish (S of lat 36°N)	1.01	0.50	0.20	0.45	0.37	0.45	0.25	0.10	0.19	0.17	0.19	0.22	0.21
Shortspine thornyhead (N of lat 34°27'N)	1.57	1.57	1.83	1.51	1.58	1.65	1.63	1.42	1.20	0.79	0.73	0.81	0.61
Shortspine thornyhead (S of lat 34°27'N)	0.02	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Splitnose rockfish (S of lat 40°10'N)	0.09	0.13	0.10	0.15	0.06	0.03	0.03	0.08	0.03	0.04	0.04	0.06	0.04
Starry flounder	0.03	0.02	0.01	0.03	0.01	0.03	0.02	0.00	0.00	0.00	0.00	0.00	0.00

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Widow rockfish	0.30	0.34	0.91	1.44	1.80	1.85	13.05	22.80	20.55	18.38	23.84	26.39	24.02
Yelloweye rockfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellowtail rockfish (N of lat 40°10'N)	1.63	2.19	1.59	2.57	3.20	2.52	5.44	6.81	7.01	7.51	5.93	6.47	6.31
Total Non-Whiting	41.28	41.1	44.33	40.67	42.2	43.08	59.49	66.24	64.01	55.95	61.11	67.67	61.83

Source: Holland & Steiner (2024)

Table 23 shows the ex-vessel price per pound in real 2023 dollars for IFQ species and Figure 14 shows the annual weighted average ex-vessel price for all IFQ non-whiting species. Ex-vessel price per pound has varied for most species; however, the general trend for most species is that the ex-vessel price after 2017 is less than the mean ex-vessel price over the entire period. That trend was true for almost all species after 2019. The exceptions were for a few species whose price was about equal. Figure 14 shows that the weighted average real ex-vessel price in 2011 for all non-whiting species was more than double the comparable price in 2020–2023. The trend corresponds to other U.S. fisheries that experienced lower prices after the COVID-19 pandemic. The economic conditions that impact prices are described in greater detail in the 2024 NMFS Snapshot paper (NMFS, 2024a).

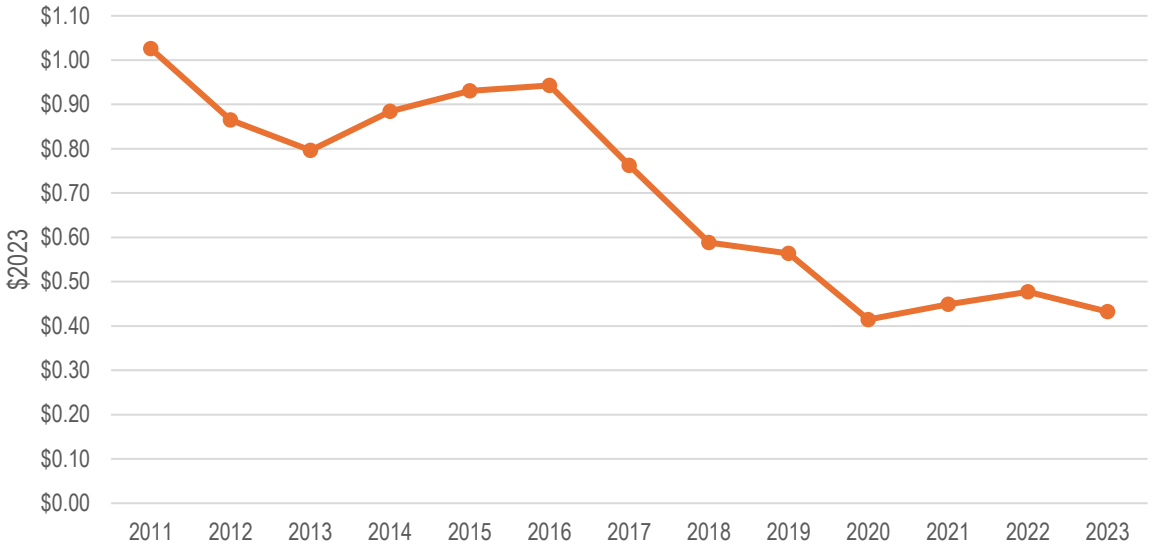
Within the DTS fishery, ex-vessel price for sablefish north decreased from an average of $2.05 per pound (2016–2019) to $0.87 (2020–2023), representing a decrease of 59% in real terms (2023$). Dover sole decreased 20% from $0.51 to $0.41 per pound, longspine thornyheads decreased from $0.50 to $0.22 (55%), and shortspine thornyheads decreased 47% from $0.78 to $0.41 (Table 24). The ex-vessel price for whiting in 2023 was $0.08, lower than any year since the catch share program was implemented, except for 2020.

Gross ex-vessel value by IFQ species is shown in Table 23. The total value for all species is shown at the bottom of the table. In terms of value compared to 2011, four of the five lowest years were during 2020 through 2023. This corresponds with the lower prices that were realized in recent years since catch in those years was above the catch share program annual average. The strong U.S. dollar and tariffs have impacted export markets and the price U.S. consumers pay for imported seafood products. In general, as stated in NMFS (2024a):

> Price changes at the first-wholesale level are largely driven by market forces. The reasons for the change in price for a given species can vary depending on the supply chains, the markets those products feed, and international competition…For flatfish, rockfish, and sablefish, prices in 2020–2023 are low relative to price levels over the past decade.

Table 24 compares real ex-vessel prices for non-whiting IFQ species over various periods of time. It once again shows that the early years of the IFQ program generated the highest real ex-vessel prices. Information is color-coded with darker blue indicating the most significant price improvements and darker red indicating the most significant price declines.

Figure 14. Non-whiting Annual Weighted Real Ex-vessel Price per Pound



Source: Holland and Steiner 2024

Table 23. Ex-vessel price per pound (2023$) for IFQ species, 2011 through 2023

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2011–2023 Avg
Arrowtooth flounder	$0.12	$0.15	$0.12	$0.09	$0.10	$0.09	$0.09	$0.07	$0.05	$0.04	$0.03	$0.02	$0.01	$0.07
Bocaccio rockfish (S of lat 40°10'N)	$0.88	$0.91	$1.01	$1.97	$0.90	$0.94	$0.57	$0.58	$0.54	$0.44	$0.39	$0.44	$0.41	$0.77
Canary rockfish	$0.69	$0.66	$0.64	$0.68	$0.42	$0.56	$0.49	$0.39	$0.54	$0.28	$0.28	$0.32	$0.36	$0.49
Chilipepper rockfish (S of lat 40°10'N)	$0.80	$0.72	$0.69	$0.80	$0.81	$1.02	$0.59	$0.53	$0.48	$0.39	$0.34	$0.46	$0.48	$0.62
Cowcod (S of lat 40°10'N)	$0.58	$0.38	$0.48	$0.94	$1.01	$0.99	$0.74	$0.55	$0.32	$0.29	$0.46	$0.34	$0.43	$0.58
Darkblotched rockfish	$0.62	$0.63	$0.60	$0.51	$0.55	$0.54	$0.50	$0.38	$0.39	$0.25	$0.28	$0.27	$0.27	$0.45
Dover sole	$0.53	$0.54	$0.56	$0.56	$0.56	$0.54	$0.52	$0.52	$0.49	$0.43	$0.45	$0.42	$0.41	$0.50
English sole	$0.33	$0.34	$0.36	$0.32	$0.28	$0.30	$0.29	$0.23	$0.19	$0.15	$0.07	$0.05	$0.04	$0.23
Lingcod	$0.85	$0.90	-	-	-	-	-	-	-	-	-	-	-	$0.87
Lingcod (N of lat 40°10'N)	-	-	$0.87	$0.85	$1.03	$1.12	$1.09	$1.06	$1.06	$0.89	$0.90	$0.90	$0.86	$0.97
Lingcod (S of lat 40°10'N)	-	-	$0.86	$1.10	$1.06	$1.07	$1.08	$1.05	$1.04	$1.07	$1.01	$1.00	$0.98	$1.03
Longspine thornyhead (N of lat 34°27'N)	$0.53	$0.56	$0.54	$0.52	$0.53	$0.55	$0.56	$0.47	$0.40	$0.19	$0.18	$0.26	$0.26	$0.43
Minor shelf rockfish (N of lat 40°10'N)	$0.04	$0.00	$0.03	$0.01	$0.03	$0.11	$0.18	$0.05	$0.09	$0.10	$0.03	$0.06	$0.06	$0.06
Minor shelf rockfish (S of lat 40°10'N)	$0.02	$0.01	$0.21	$0.37	$0.08	$0.07	$0.09	$0.24	$0.02	$0.01	$0.03	$0.01	$0.03	$0.09
Minor slope rockfish (N of lat 40°10'N)	$0.01	$0.00	$0.01	$0.08	$0.09	$0.10	$0.05	$0.02	$0.01	$0.00	$0.01	$0.03	$0.02	$0.03
Minor slope rockfish (S of lat 40°10'N)	$0.10	$0.33	$0.85	$0.86	$0.78	$0.63	$0.76	$0.62	$0.32	$0.41	$0.38	$0.56	$0.36	$0.53
Other flatfish	$0.51	$0.52	$0.41	$0.39	$0.39	$0.37	$0.35	$0.34	$0.36	$0.29	$0.32	$0.29	$0.29	$0.37
Pacific cod	$0.76	$0.78	$0.71	$0.66	$0.72	$0.72	$0.69	$0.71	$0.66	$0.48	$0.33	$0.47	$0.44	$0.63
Pacific ocean perch (N of lat 40°10'N)	$0.66	$0.49	$0.60	$0.52	$0.60	$0.50	$0.40	$0.33	$0.44	$0.29	$0.28	$0.25	$0.22	$0.43
Pacific whiting (a.k.a. Pacific hake)	$0.14	$0.18	$0.16	$0.14	$0.09	$0.09	$0.09	$0.09	$0.11	$0.07	$0.10	$0.11	$0.08	$0.11
Petrale sole	$1.88	$1.89	$1.58	$1.41	$1.51	$1.46	$1.38	$1.36	$1.39	$1.28	$1.22	$1.19	$1.17	$1.44
Sablefish (N of lat 36°N)	$3.69	$2.60	$2.24	$2.72	$2.78	$2.97	$2.77	$1.93	$1.46	$0.89	$0.96	$1.03	$0.76	$2.06
Sablefish (S of lat 36°N)	$2.95	$2.63	$2.40	$3.00	$3.08	$2.46	$2.63	$2.02	$2.04	$1.64	$1.59	$2.59	$1.31	$2.33
Shortspine thornyhead (N of lat 34°27'N)	$0.97	$1.05	$1.07	$1.15	$1.06	$0.98	$0.86	$0.66	$0.60	$0.41	$0.39	$0.45	$0.40	$0.77
Shortspine thornyhead (S of lat 34°27'N)	$5.81	$1.04	$5.41	$2.94	$1.39	$4.69	-	-	-	-	-	-	-	$3.55
Splitnose rockfish (S of lat 40°10'N)	$0.07	$0.11	$0.10	$0.08	$0.10	$0.06	$0.12	$0.16	$0.01	$0.03	$0.01	$0.03	$0.01	$0.07
Starry flounder	$0.59	$0.55	$0.52	$0.42	$0.43	$0.41	$0.45	$0.40	$0.23	$0.01	$0.43	$0.08	$0.01	$0.35

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2011–2023 Avg
Widow rockfish	$0.53	$0.55	$0.57	$0.55	$0.51	$0.51	$0.35	$0.30	$0.31	$0.23	$0.27	$0.29	$0.27	$0.40
Yelloweye rockfish	$0.66	$0.62	$0.68	$0.55	$0.71	$0.58	$0.70	$0.42	$0.43	$0.36	$0.19	$0.30	$0.11	$0.48
Yellowtail rockfish (N of lat 40°10'N)	$0.65	$0.66	$0.63	$0.60	$0.59	$0.53	$0.36	$0.33	$0.36	$0.21	$0.23	$0.27	$0.23	$0.44
Average non-whiting ex-vessel price	$1.03	$0.87	$0.80	$0.88	$0.93	$0.94	$0.76	$0.59	$0.56	$0.41	$0.45	$0.48	$0.43	$0.70

Source: Holland & Steiner (2024)

Table 24. Average real ex-vessel price and percentage change by catch share program time period

IFQ Species	2011–2015 avg	2016–2023 avg	2016–2019 avg	2020–2023 avg	% change 2011–2015 2016–2023	% change 2011–2015 2016–2019	% change 2016–2019 2020–2023
Arrowtooth flounder	$0.12	$0.05	$0.08	$0.03	-56.9%	-35.3%	-66.7%
Bocaccio rockfish (S of lat 40°10'N)	$1.13	$0.54	$0.66	$0.42	-52.5%	-42.0%	-36.1%
Canary rockfish	$0.62	$0.40	$0.50	$0.31	-34.9%	-19.9%	-37.4%
Chilipepper rockfish (S of lat 40°10'N)	$0.76	$0.54	$0.66	$0.42	-29.8%	-14.3%	-36.3%
Cowcod (S of lat 40°10'N)	$0.68	$0.52	$0.65	$0.38	-24.0%	-4.1%	-41.5%
Darkblotched rockfish	$0.58	$0.36	$0.45	$0.27	-38.1%	-22.3%	-40.9%
Dover sole	$0.55	$0.47	$0.52	$0.43	-14.1%	-5.9%	-17.4%
English sole	$0.33	$0.17	$0.25	$0.08	-49.4%	-22.5%	-69.3%
Lingcod	$0.88						
Lingcod (N of lat 40°10'N)	$0.92	$0.99	$1.08	$0.89	7.5%	18.1%	-18.0%
Lingcod (S of lat 40°10'N)	$1.01	$1.04	$1.06	$1.02	3.1%	5.3%	-4.2%
Longspine thornyhead (N of lat 34°27'N)	$0.54	$0.36	$0.50	$0.22	-33.1%	-7.6%	-55.1%
Minor shelf rockfish (N of lat 40°10'N)	$0.02	$0.09	$0.11	$0.06	286.4%	388.6%	-41.9%
Minor shelf rockfish (S of lat 40°10'N)	$0.14	$0.06	$0.11	$0.02	-54.7%	-23.9%	-81.0%
Minor slope rockfish (N of lat 40°10'N)	$0.04	$0.03	$0.05	$0.02	-21.1%	18.4%	-66.7%
Minor slope rockfish (S of lat 40°10'N)	$0.58	$0.51	$0.58	$0.43	-13.5%	-0.3%	-26.6%
Other flatfish	$0.44	$0.33	$0.36	$0.30	-26.5%	-20.0%	-16.2%
Pacific cod	$0.73	$0.56	$0.70	$0.43	-22.5%	-4.3%	-38.1%
Pacific ocean perch (N of lat 40°10'N)	$0.57	$0.34	$0.42	$0.26	-41.0%	-27.3%	-37.7%

IFQ Species	2011–2015 avg	2016–2023 avg	2016–2019 avg	2020–2023 avg	% change 2011–2015 2016–2023	% change 2011–2015 2016–2019	% change 2016–2019 2020–2023
Pacific whiting (a.k.a. Pacific hake)	$0.14	$0.09	$0.10	$0.09	-34.9%	-33.1%	-5.3%
Petrale sole	$1.65	$1.31	$1.40	$1.22	-21.0%	-15.5%	-13.1%
Sablefish (N of lat 36°N)	$2.81	$1.60	$2.28	$0.91	-43.1%	-18.7%	-60.1%
Sablefish (S of lat 36°N)	$2.81	$2.04	$2.29	$1.78	-27.6%	-18.7%	-22.1%
Shortspine thornyhead (N of lat 34°27'N)	$1.06	$0.59	$0.78	$0.41	-44.0%	-26.9%	-46.8%
Shortspine thornyhead (S of lat 34°27'N)	$3.32	$4.69	$4.69	-	41.4%	41.4%	-
Splitnose rockfish (S of lat 40°10'N)	$0.09	$0.05	$0.09	$0.02	-41.6%	-4.9%	-77.1%
Starry flounder	$0.50	$0.25	$0.37	$0.13	-49.7%	-25.8%	-64.4%
Widow rockfish	$0.54	$0.32	$0.37	$0.27	-41.7%	-32.2%	-27.9%
Yelloweye rockfish	$0.64	$0.39	$0.53	$0.24	-40.0%	-17.3%	-54.9%
Yellowtail rockfish (N of lat 40°10'N)	$0.63	$0.32	$0.40	$0.24	-49.7%	-36.9%	-40.5%
Average non-whiting ex-vessel price	$0.90	$0.56	$0.69	$0.44	-37.2%	-23.1%	-35.7%

Source: Based on data provided in Holland and Steiner 2024

Table 25. Gross ex-vessel value of IFQ species (thousands of 2023$)

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Arrowtooth flounder	$659	$813	$621	$331	$351	$289	$266	$150	$90	$54	$53	$33	$25
Bocaccio rockfish (S)	$10	$18	$29	$39	$76	$89	$114	$230	$383	$260	$221	$347	$228
Canary rockfish	$6	$10	$14	$16	$42	$27	$275	$395	$503	$209	$229	$360	$408
Chilipepper rockfish (S)	$548	$465	$603	$548	$338	$171	$144	$339	$524	$554	$546	$778	$1,001
Cowcod (S)	$0	$0	$0	$0	$1	$1	$1	$1	$1	$1	$2	$1	$2
Darkblotched rockfish	$125	$125	$154	$111	$148	$147	$199	$223	$281	$148	$159	$162	$109
Dover sole	$9,235	$8,645	$9,877	$7,977	$7,693	$8,523	$8,381	$7,283	$6,273	$4,510	$4,034	$4,284	$3,497
English sole	$99	$111	$177	$170	$202	$250	$165	$107	$85	$42	$31	$30	$23
Lingcod	$544	$754											
Lingcod (N)			$654	$446	$421	$641	$1,489	$1,026	$998	$644	$685	$539	$757
Lingcod (S)			$32	$45	$74	$58	$58	$119	$188	$136	$97	$111	$109
Longspine thornyhead (N)	$1,123	$1,117	$1,290	$1,037	$892	$802	$1,011	$363	$242	$47	$28	$44	$12

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Minor shelf rockfish (N)	$1	$0	$2	$1	$2	$8	$95	$28	$94	$112	$24	$39	$38
Minor shelf rockfish (S)	$0	$0	$9	$8	$2	$1	$0	$3	$1	$1	$2	$0	$3
Minor slope rockfish (N)	$3	$1	$3	$32	$44	$34	$17	$7	$4	$2	$7	$13	$9
Minor slope rockfish (S)	$12	$89	$220	$187	$120	$69	$94	$102	$31	$40	$41	$82	$22
Other flatfish	$787	$789	$724	$730	$722	$703	$568	$456	$359	$283	$296	$246	$205
Pacific cod	$423	$682	$242	$241	$601	$614	$66	$10	$8	$3	$1	$19	$38
Pacific ocean perch (N)	$67	$58	$65	$47	$66	$60	$84	$64	$453	$335	$269	$208	$109
Pacific whiting	$28,901	$26,521	$33,814	$29,823	$12,068	$16,250	$28,952	$25,546	$33,844	$22,410	$26,824	$24,649	$18,793
Petrale sole	$3,357	$4,416	$7,408	$7,198	$8,295	$8,037	$8,370	$7,925	$7,338	$5,902	$7,592	$7,917	$7,287
Sablefish (N)	$19,491	$12,823	$9,129	$11,317	$13,528	$15,055	$15,423	$9,840	$8,247	$3,534	$4,821	$6,641	$4,502
Sablefish (S)	$2,974	$1,323	$481	$1,365	$1,152	$1,102	$657	$202	$381	$285	$308	$572	$270
Shortspine thornyhead (N)	$1,520	$1,653	$1,956	$1,732	$1,680	$1,621	$1,412	$934	$723	$320	$281	$362	$241
Shortspine thornyhead (S)	$108	$1	$44	$18	$2	$21							
Splitnose rockfish (S)	$6	$15	$10	$12	$6	$2	$4	$12	$0	$1	$1	$2	$1
Starry flounder	$15	$10	$4	$14	$6	$11	$7	$1	$0	$0	$0	$0	$0
Widow rockfish	$161	$189	$518	$791	$912	$939	$4,509	$6,885	$6,361	$4,212	$6,323	$7,772	$6,390
Yelloweye rockfish	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1	$0
Yellowtail rockfish (N)	$1,060	$1,454	$1,006	$1,547	$1,894	$1,339	$1,961	$2,281	$2,520	$1,562	$1,373	$1,719	$1,430
Total	**$71,237**	**$62,083**	**$69,085**	**$65,782**	**$51,340**	**$56,864**	**$74,321**	**$64,534**	**$69,932**	**$45,603**	**$54,248**	**$56,929**	**$45,510**
Total Non-Whiting	**$41,111**	**$34,255**	**$34,005**	**$35,026**	**$38,463**	**$40,038**	**$44,571**	**$37,872**	**$34,588**	**$22,120**	**$26,375**	**$30,764**	**$25,054**

Source: Holland and Steiner 2024

Note: (N) is North. (S) is South

2.3.4 Changes in Profit Margins

Key Takeaways:

- The general trend was for the trawl catch share fisheries profit margin to increase until about 2017, but it has declined since, with the 2023 profit margin being approximately the same as in 2009.
- The catcher vessel profit margin tended to be greater under the catch share program relative to pre-catch share program years. Exceptions to the trend were almost exclusively during the 2020–2023 period for the DTS trawl, gear switchers, and at-sea whiting fisheries.
- The shoreside processors profit margin has been greater for non-catch share fishery activities, as defined in FISHEyE,[17] than for groundfish, both before and after the catch share program was implemented and has had negative groundfish fishery profit margin estimates, on average, from 2016 through 2023.
- The Mothership profit margin showed no specific trends but was highest during the 2016–2019 period (17%) and about 0 during other catch share program periods (2011–2015 and 2020–2023).
- Catcher-processors had the largest estimated profit margin of any sector, about 40% on average before and after the catch share program was implemented, but had its lowest profit margin of any year considered in 2023 (10%)

One of the objectives of the catch share program is to "Provide for a viable, profitable, and efficient groundfish fishery". Additionally, MSA National Standard 5 requires that conservation and management measures, where practicable, consider efficiency in the utilization of fishery resources, but not as their sole purpose. It is intended to ensure that management measures are efficient and effective in utilizing fishery resources while also preventing overfishing and rebuilding overfished stocks. This section considers profit margins as a proxy for efficient and effective use of the resource as well as providing for a viable, profitable, and efficient groundfish fishery. Economic efficiency is not estimated. Economic efficiency is when all goods and factors of production in an economy are distributed or allocated to their most valuable uses and waste is eliminated or minimized.

This section calculates profit margins using total cost net revenue (TCNR, revenue minus the costs of fishing and/or production) as a percentage of gross revenue. Profit margin estimates in this section use TCNR reported in FISHEyE divided by gross revenue. The calculation shows the percentage of revenue left over after costs are paid. This measure is calculated for each fishing activity reported in

[17] Non-catch share fisheries include "Crab", "Shrimp", or "Other fisheries". The "Other fisheries" category primarily consists of salmon, tuna, and fixed gear sablefish without a trawl permit.

the FISHEyE data tool. As noted in the FISHEyE documentation, most of the costs incurred by the sectors are included in the EDC survey, which is the basis for FISHEyE data; however, not all costs are included, notably quota lease costs (see Section 2.5.5 for a discussion of net revenue and quota leasing) and land-based expenses like storage and office space. Therefore, the information reported in this section should be considered an upper bound of the profit margins presented. Also note that fixed costs are distributed in proportion to the gross revenue generated by a given activity; to the extent this assumption does not hold, it could alter the estimated profit margin for a fishing activity.

Profit margins are first reported in tables as annual totals, and reported in Figure 15 and Figure 16 later in this section per-day for all the vessel types. Shorebased processors are not included in the profit margin per day figures since FISHEyE does not report that statistic for them.

Catcher vessel profit margin estimates by fishery grouping are presented in Table 26. In general, the profit margins tended to be greater under the catch share program relative to pre-catch share program years, consistent with findings from the previous review (PFMC and NMFS 2017). When there were exceptions to the trend, it was almost exclusively during the 2020–2023 period for the DTS trawl, gear switching, and at-sea whiting fisheries.

The general trend was for trawl catch share fisheries profit margins to increase until about 2017 and has declined since, with 2023 profit margin being approximately the same as in 2009. Using the year groupings at the bottom of the table, profit margin increased after the catch share program was implemented, with the 2016 through 2019 period having the largest profit margins. Profit margins declined in recent years with the 2020–2023 period having lowest profit margins of the catch share year groupings considered. In 2023, both the shoreside and at-sea whiting catcher vessel fishery profit margin estimates were negative for the first time since the catch share program was implemented (the whiting at-sea catcher vessel activity was negative in 2012). Low prices at both the vessel and processor level were a primary cause of the change in estimated profit margin.

For shoreside processors, the profit margin has been greater for non-catch share species activities as defined in FISHEyE, than for groundfish, both before and after the catch share program was implemented (Table 27). During the years the catcher vessels had some of their highest profit margin estimates (2016 through 2019), the shoreside processors had negative groundfish fishery profit margin estimates. Profit margin estimates for whiting production were lower than groundfish production in most years, but the difference was less, on average, under the catch share program.

Mothership profit margins varied by year under the catch share program (Table 28). On average, the pre-catch share years' profit margin estimate (9%) is about half of the 2016–2019 period estimate (17%). The profit margin estimates for 2011–2015 (1%) and 2020–2023 (0%) were substantially lower. The previous program review noted that there was no clear trend for motherships. Their profit margin is the lowest of the sectors in the fishery, and the authors felt it may have been affected by internal decisions about the distribution of costs and revenues among motherships and at-sea catcher vessels with common ownership (PFMC and NMFS 2017).

Catcher-processors have the largest profit margin compared to other sectors (Table 28), and this has remained unchanged throughout the catch share period. Their profit margin was calculated to be approximately 40%, on average, before and after the catch share program was implemented. However, in 2023, the estimated profit margin was only 10%.

Table 26 Catcher vessel profit margin estimates by fishery group

Year	All fisheries	All catch share fisheries	Groundfish with trawl gear	Trawl only catch share fisheries	DTS trawl	Non-whiting, non-DTS trawl	Non-whiting midwater trawl	Gear Switchers	Pacific whiting	Shoreside Pacific whiting	At-sea Pacific whiting
2009	9%	6%	11%	6%	14%	-6%		10%	-8%	-20%	7%
2010	11%	8%	10%	7%	11%	2%		37%	2%	-18%	26%
2011	20%	20%	21%	20%	21%	20%		22%	19%	19%	19%
2012	13%	12%	15%	12%	13%	18%	26%	15%	9%	14%	-1%
2013	26%	25%	23%	25%	21%	25%	34%	26%	26%	26%	27%
2014	22%	18%	22%	18%	20%	26%	9%	27%	15%	15%	16%
2015	23%	21%	25%	21%	24%	27%	27%	23%	14%	12%	18%
2016	27%	26%	27%	24%	26%	27%	30%	38%	22%	24%	19%
2017	29%	29%	27%	29%	26%	26%	36%	28%	31%	28%	37%
2018	27%	25%	26%	25%	28%	22%	28%	32%	24%	23%	27%
2019	22%	21%	27%	21%	26%	27%	29%	29%	17%	12%	28%
2020	19%	14%	11%	15%	-21%	23%	20%	-2%	17%	13%	26%
2021	26%	22%	24%	23%	18%	25%	25%	16%	22%	23%	19%
2022	9%	11%	11%	11%	9%	19%	1%	17%	10%	7%	16%
2023	14%	6%	19%	6%	21%	21%	15%	0%	-6%	-3%	-17%
Pre-CS	10%	7%	11%	7%	13%	-2%		24%	-3%	-19%	17%
2011-2015	21%	19%	21%	19%	20%	23%	24%	23%	17%	17%	16%
2016-2019	26%	24%	26%	24%	26%	26%	30%	30%	22%	20%	26%
2020-2023	17%	13%	16%	14%	7%	22%	15%	8%	11%	10%	11%

Source: FISHEyE

Table 27 Shoreside processor profit margin estimates by fishery group

Year	All production	Groundfish production	Other species production	Non-whiting groundfish production	Pacific whiting production
2009	9%	0%	17%	10%	-14%
2010	2%	-3%	6%	9%	-29%
2011	13%	12%	14%	13%	11%
2012	14%	13%	14%	11%	16%
2013	13%	10%	14%	9%	11%
2014	8%	8%	8%	9%	7%
2015	7%	-1%	11%	7%	-20%
2016	2%	-2%	4%	1%	-7%
2017	2%	-2%	5%	1%	-5%
2018	6%	3%	10%	8%	-3%
2019	-1%	-14%	13%	-13%	-15%
2020	10%	9%	10%	3%	13%
2021	5%	3%	6%	0%	6%
2022	0%	-16%	4%	-12%	-20%
2023	2%	-12%	7%	-8%	-15%
Pre-CS	6%	-2%	12%	10%	-22%
2011-2015	11%	8%	12%	10%	5%
2016-2019	2%	-4%	8%	-1%	-8%
2020-2023	4%	-4%	7%	-4%	-4%

Source: FISHEyE

Table 28 Mothership and catcher-processor profit margin estimates

Year	Mothership	Catcher-Processor
2009	7%	28%
2010	12%	51%
2011	12%	36%
2012	-4%	34%
2013	5%	46%
2014	5%	50%
2015	-14%	37%
2016	13%	41%
2017	25%	40%
2018	15%	40%
2019	14%	48%
2020	-9%	48%
2021	-9%	54%
2022	23%	46%
2023	-5%	10%
Pre-CS	9%	40%
2011–2015	1%	41%
2016–2019	17%	42%
2020–2023	0%	40%

Source: FISHEyE

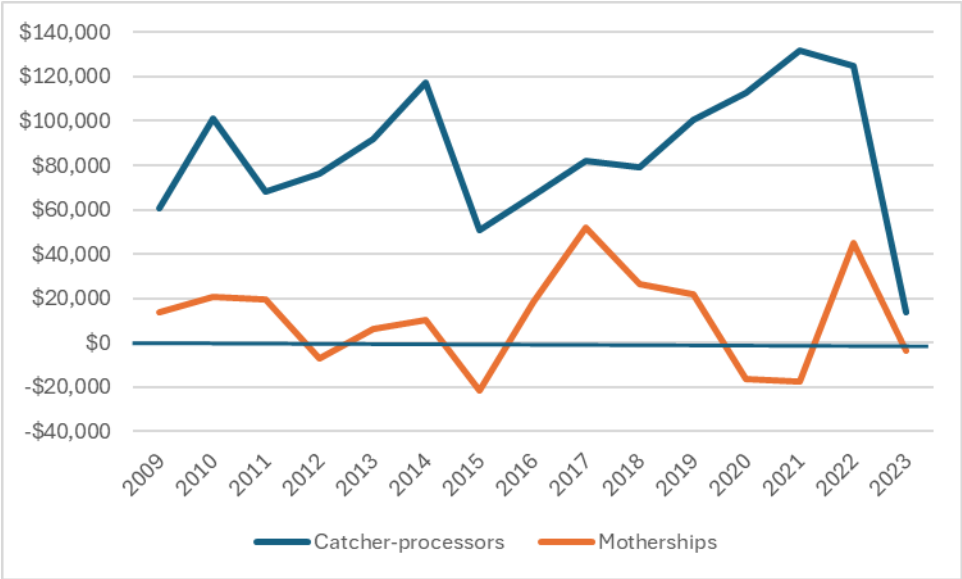
Catcher vessel average profit margin per day, by fishery, is shown in Figure 15. Fleet-wide profit margin per day is the TCNR per day as reported in FISHEyE data for each fishery. The Y-axis in Figure 15 is the dollar per day estimate retained as "profit". Whiting fisheries are shown in the right panel. Gear switchers are shown with a dotted line in the left panel and all other trawl gear groundfish fisheries are shown with solid lines. Whiting profit margins were more varied by fishery before the catch share program was implemented. They reported fisheries had about the same profit margin in 2011 at about $4,000 per day. After 2012 profit margin per day varied but was positive until 2023. That was the first year that both at-sea and shoreside whiting catcher vessels were estimated to have a negative profit margin. The profit margin per day for non-whiting catcher vessel fisheries peaked at about $3,000 per day for DTS trawl in 2016 through 2028, $5,400 per day for gear switchers in 2016, and $6,000 per day for non-whiting midwater trawl in 2021. DTS trawl decreased to -$2,000 per day in 2020. As of 2023 average profit margin per day increased to $2,000 for both DTS trawl and non-whiting midwater. The profit margin of those two groups in 2023 were about the same as the first year they are reported under the catch share program.

Figure 15. Catcher vessels' average profit margin ($) per day by fishery

Source: FISHEyE

Catcher-processor and mothership average profit margins per day are shown in Figure 16. The catcher-processor average profit margin per day ranged from about $60,000 to $130,000 per day for 2009–2022. It then declined dramatically in 2023 to less than $20,000. The motherships' average profit margin per day varied more during the period than the catcher-processors'. Their estimated profit margin per day was negative in 2012, 2015, 2020, 2021, and 2023. During 2017 and 2022, the value exceeded $40,000 per day. In all other years, it ranged between approximately $10,000 to $20,000 per day.

Figure 16. Mothership and catcher-processor average profit margin per day



Source: FISHEyE

2.3.5 Product Value

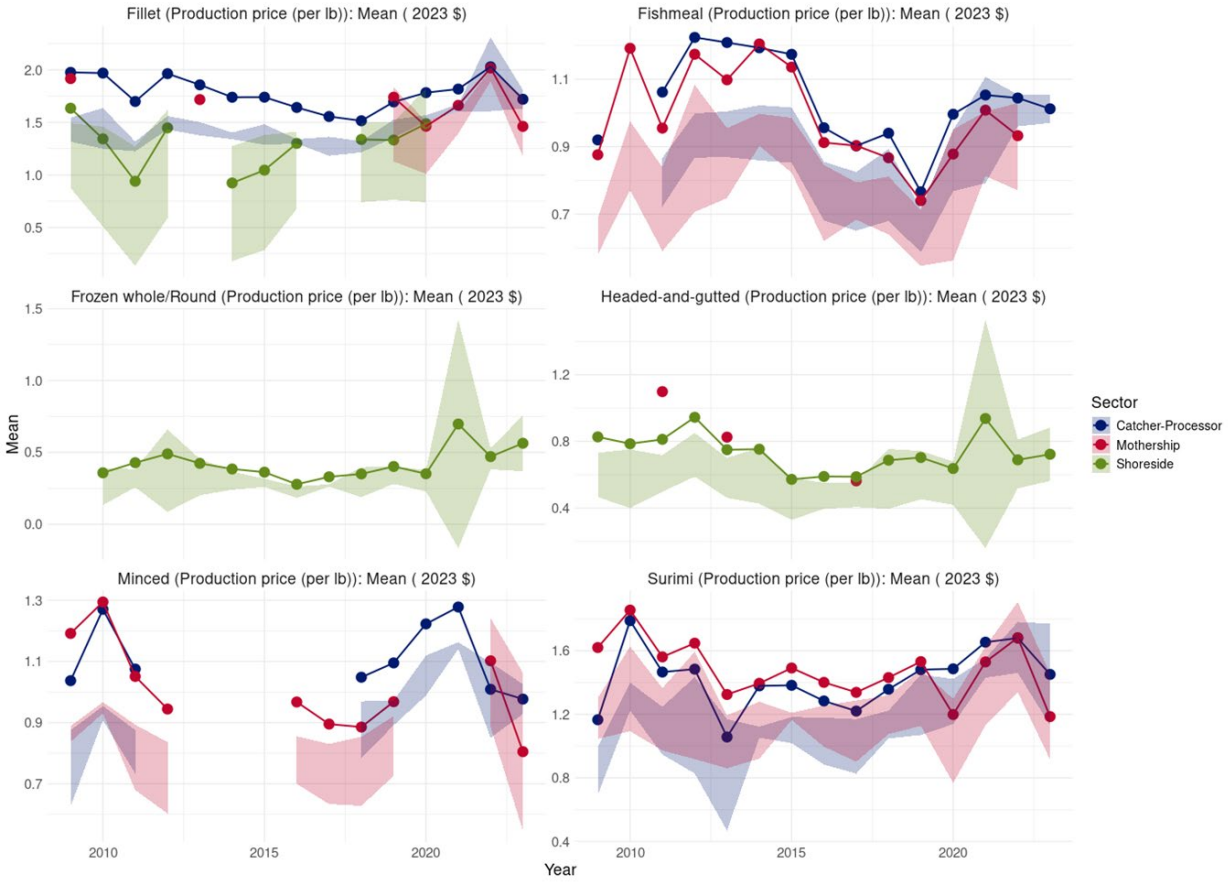
Key Takeaways:

- The total value of Pacific whiting products sold by first receivers/processors has declined in each of the last four years and the value of whiting products has declined over the previous three years as a share of total production value of shoreside processors.
- Both the mothership and catcher-processor sectors realized substantial declines in both Pacific whiting caught/purchased and the value derived from that Pacific whiting in 2023 compared to 2022.
- Outcomes in recent years across whiting sectors appear to be driven by changes in and access to markets for different seafood commodities and product types. The three whiting sectors tend to focus on different whiting product forms with shoreside processors producing frozen round and headed-and-gutted products primarily. Catcher-processors produce more labor-intensive products like fillets, surimi, and minced.

The previous review discusses how an expectation of the program was improvements in product recovery and quality as the Pacific whiting fishery (specifically mothership and shoreside sectors) took advantage of new flexibility and extended season lengths under the program. It found that there were some shifts, including increased frozen production by shorebased processors and an increased volume of non-surimi products by motherships. On average, production value per pound decreased somewhat for all whiting products in the first five years (PFMC and NMFS 2017).

Figure 17 shows the mean Pacific whiting product prices for the shorebased, catcher-processor and mothership sectors.[18] Shorebased production focused primarily on frozen round and headed-and-gutted products. The catcher-processor sector did not produce these product forms. Motherships only produced a headed-and-gutted product for three years during the period. The shorebased sector produced fillets some years, but not since 2020. When the shorebased sector did produce fillets, the price they were paid tended to be less than the catcher-processor sector. Motherships produced fillets sporadically before 2018 but have consistently produced some fillets since. The price is generally less than that received by the catcher-processor sector for fillets. The catcher-processor sector was the most consistent producer of fillets, and in most years received the highest price per pound. The price that catcher-processors received also tended to be less volatile than the other sectors. Surimi was produced by the mothership and catcher-processor sector every year. Motherships received a higher surimi price until 2018. After 2018, the catcher-processor sector's price was lower than or equal to the mothership sector's mean price.

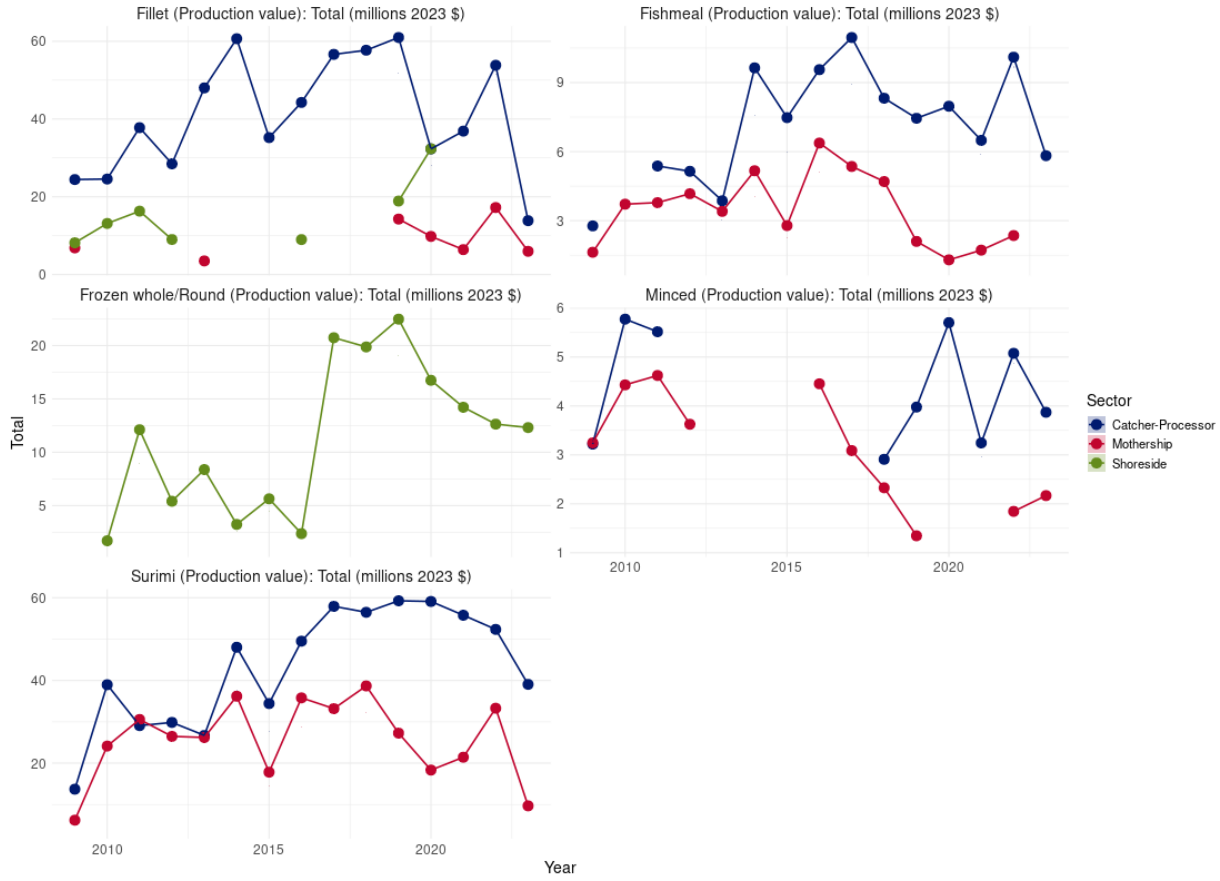
Figure 17. Pacific Whiting Product Prices by Sector



Source: FISHEyE

[18] This section provides information on Pacific whiting products since those are the only product forms reported in the FISHEyE data tool.

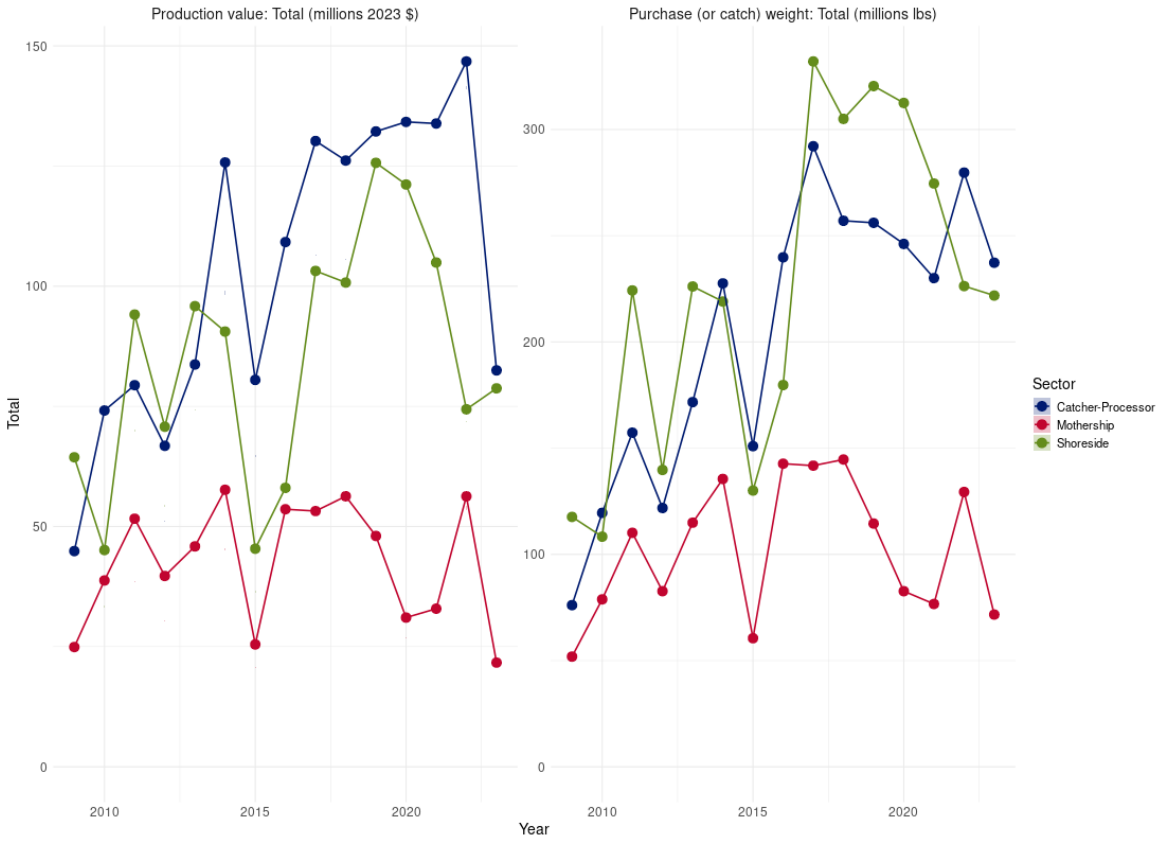
Figure 18. Pacific Whiting Total Product Value by Sector



Source: FISHEyE

Figure 19 is the Pacific whiting round weight used to make products and the total value of those products received by the shoreside, mothership and catcher-processor sector. The shoreside sector generated less production value per pound of whiting used as an input into the production process (round weight) than the other sectors. The difference is driven, in part, by the product forms produced by each sector. Shoreside processors tended to produce less labor-intensive product forms (headed-and-gutted or frozen whole) and these products sell for a lower price per pound than other products, even after considering product recovery weights. Figure 19 shows that frozen round prices were typically about $0.50 per pound and headed-and-gutted whiting sold for about $0.80 per pound, on average. Fillet prices were typically between $1.50 and $2.00 per pound and were primarily produced by the catcher-processor sector. However, the shoreside sector was the only sector that increased the total value derived from whiting in 2023, even with less whiting purchased. Both the mothership and catcher-processor sectors realized substantial declines in both whiting caught/purchased and the value derived from that whiting in 2023 compared to 2022.

Figure 19. Pacific whiting catch/purchase and production value by the shoreside, mothership, and catcher-processor sectors, 2009 through 2023



Source: FISHEyE

2.3.6 Quota Market Performance

Key Takeaways:

- The greatest number of cash sale transfers are for target species and constraining species.
- Quota lease price is higher than the ex-vessel price for some constraining species because they consider the total value of all catch from using that quota.
- The success of rebuilding plans has reduced the QP price of species that were constraining directed fishing harvests when the last review was conducted.
- The majority of transfers are for whiting, rockfish species, sablefish, and petrale sole. Few transfers were made for other flatfish species.

Imperfect markets, thin markets (markets without many trades), transfers that are not based on cash sales (barter), unstable markets, and limited/incorrect price data are all problems that can impact

the usefulness of QP and QS transfer data. Uncertainty of future economic conditions in the fishery in recent years may have impacted QS transfers. Buyers are concerned about overpaying for the quota and sellers are concerned about selling at a discount under recent market conditions.

This section provides information on the number and value of cash sale transfers of QP. Much of the QP transfer data presented in this section is derived from a recent report by Holland & Steiner (2024). More detailed information and explanation are provided in that report. A change in transfer price is one indicator that the participants' expected value that can be derived from using the quota has also changed. The following section focuses on QS transfers.

Table 29 shows that cash sales of QP were typically a relatively small proportion of the total QP transfers during a year. Cash sale transfers tended to increase through 2017–2018 and then declined. Single-species cash transfers in 2023 were less than in any other year. Multispecies transfers were slightly above average in 2023.

Table 30 shows the number of QP cash transfers by species and year. There were fewer than two transfers for most species. Species with the most transfers tended to be species like whiting, petrale sole, sablefish (north),[19] and widow rockfish, where a person had more capacity and demand for deliveries than their allocation. Other species with relatively large numbers of transfers were species whose allocation could limit the harvest of a person's target species. For example, canary rockfish, widow rockfish, and Pacific halibut (IBQ). Most other IFQ species are not harvested at levels approaching the species' allocation, so there is little need to purchase additional QP during the year.

Table 31 shows the QP price paid per pound by species from 2011 through 2023. Table 32 shows the ratio of QP price to ex-vessel price by species over the same years. Prices were highest for constraining species, such as yelloweye rockfish. Almost no yelloweye rockfish were landed and sold on the market—less than $500 worth of yelloweye rockfish were sold in any year and that number was often less than $100. However, the QP price was more than 100 times the reported ex-vessel price per pound. The limited supply and concern that the species could limit the catch of other species created demand at that high price. Cowcod (S of lat 40°10′N) and darkblotched rockfish were the only other species that sold for more than the average ex-vessel in 2023. In 2016, there were four species whose QP price was greater than the ex-vessel price. Yelloweye rockfish was not included in the count because it had no ex-vessel price reported that year. The decline in species whose QP price was greater than the ex-vessel price is in part due to the success of the rebuilding plans under the IFQ program.

[19] Sablefish south transfers declined substantially after 2016.

Table 29. Count of QP transfers by type, year and single versus multispecies

Year	Self-Trade	Barter	Cash and Barter	Cash Sale	Other
Single-species					
2011	410	221	22	281	395
2012	512	275	37	340	606
2013	641	262	48	384	663
2014	528	191	31	411	596
2015	599	206	39	473	419
2016	513	188	19	435	398
2017	518	243	44	501	422
2018	601	272	40	427	468
2019	565	264	43	420	488
2020	412	165	47	358	285
2021	385	150	46	331	224
2022	429	194	48	381	213
2023	366	156	35	275	172
Multispecies					
2011	394	64	11	96	196
2012	308	48	11	67	260
2013	327	35	12	63	400
2014	326	37	9	62	360
2015	467	53	11	87	341
2016	351	76	2	82	253
2017	387	110	12	89	235
2018	303	128	14	136	234
2019	289	115	18	66	112
2020	269	41	17	85	96
2021	259	67	14	86	96
2022	271	79	11	99	77
2023	222	69	5	99	59

Source: Holland & Steiner (2024) (Table 4)

Table 30. Number of QP cash transfers by species

Species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Arrowtooth flounder	<2	2	5	7	19	12	<2	<2	<2	<2	<2	<2	<2
Bocaccio rockfish (S)	3	<2	4	7	10	10	8	14	7	2	6	10	3
Canary rockfish	4	15	12	17	29	18	21	27	17	17	17	24	22
Chilipepper rockfish (S)	3	6	5	12	4	<2	<2	<2	6	5	3	6	8
Cowcod (S)	<2	<2	<2	<2	<2	6	4	4	4	9	<2	<2	4
Darkblotched rockfish	4	6	10	10	22	19	9	15	24	14	14	13	8
Dover sole	4	<2	2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
English sole	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Lingcod	2	4	<2	<2	<2	<2	<2	<2	<2	4	<2	<2	<2
Lingcod (N)	<2	<2	<2	<2	<2	4	27	16	6	4	<2	<2	<2
Lingcod (S)	<2	<2	<2	<2	3	<2	<2	<2	<2	3	<2	<2	<2
Longspine thornyhead (N)	5	12	14	18	7	4	3	<2	<2	<2	<2	<2	<2
Minor shelf rockfish (N)	<2	<2	<2	<2	<2	<2	8	11	16	17	18	10	11
Minor shelf rockfish (S)	<2	<2	5	2	<2	<2	<2	<2	<2	<2	<2	<2	3
Minor slope rockfish (N)	<2	4	3	2	4	7	2	5	9	3	12	16	9
Minor slope rockfish (S)	6	7	7	<2	7	<2	5	6	<2	<2	<2	<2	<2
Other flatfish	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Pacific cod	11	9	<2	3	5	14	<2	<2	<2	<2	<2	<2	<2
Pacific halibut (IBQ; N)	5	10	21	15	13	28	24	18	14	18	5	28	16
Pacific ocean perch (N)	3	<2	14	14	24	15	34	19	<2	<2	<2	<2	<2
Pacific whiting	26	64	53	26	<2	16	20	5	9	12	37	37	14
Petrale sole	36	20	50	58	65	62	81	54	76	53	37	67	52
Sablefish (N)	54	47	66	62	57	83	86	58	62	31	52	68	33
Sablefish (S)	58	31	8	22	51	3	3	<2	<2	2	2	<2	<2
Shortspine thornyhead (N)	2	9	10	9	7	17	12	5	<2	2	7	2	<2
Shortspine thornyhead (S)	3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Splitnose rockfish (S)	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Starry flounder	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Widow rockfish	6	9	10	34	52	26	3	43	44	41	20	33	25
Yelloweye rockfish	4	9	11	12	4	<2	11	<2	12	5	7	9	4
Yellowtail rockfish (N)	<2	8	6	21	16	9	24	24	45	52	16	19	18

Source: Holland & Steiner (2024) (Table 4)

Note: (S) =South and (N) = North

Table 31. QP Prices ($) 2011 through 2023

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Arrowtooth flounder	—	0.16	0.09	—	0.1	0.1	—	—	—		—	—	—
Bocaccio rockfish (S)	0.75	—	0.25	0.42	0.38	0.3	0.48	0.28	0.17	0.3	0.2	0.19	0.24
Canary rockfish	2.24	2.91	6.2	3.88	2.05	2.49	0.19	0.94	0.5	—	0.48	0.57	0.42
Chilipepper rockfish (S)	0.08	0.04	0.03	0.04	0.03	—	—	—	0.02	0.03	0.03	0.04	0.02
Cowcod (S)	—	—	—	—	—	2.57	5.69	4.39	7.46	6.02	—	—	2.74
Darkblotched rockfish	0.84	0.45	1.11	2.43	1.15	1.21	0.84	1.2	0.95	1.81	0.91	0.96	1.09
Dover sole	0.15	—	—	—	—	—	—	—	—	—	—	—	—
English sole	—	—	—	—	—	—	—	—	—	—	—	—	—
Lingcod	0.09	0.07	—	—	—	—	—	—	—	—	—	—	—
Lingcod (N)	—	—	—	—	—	0.01	0.01	0.03	0.01	0.01	—	—	—
Lingcod (S)	—	—	—	—	0.01	—	—	—	—	0.01	—	—	—
Longspine thornyhead (N)	0.09	0.11	0.11	0.14	0.07	0.04	0.04	—	—	—	—	—	—
Minor shelf rockfish (N)	—	—	—	—	—	—	0.03	0.04	0.06	0.07	0.24	0.28	0.24
Minor shelf rockfish (S)	—	—	0.02	0.02	—	—	—	—	—	—	—	—	0.34
Minor slope rockfish (N)	—	0.08	0.06	0.08	0.06	0.03	0.11	0.22	0.25	0.34	0.29	0.41	0.46
Minor slope rockfish (S)	0.06	0.03	0.06	—	0.03	—	0.03	0.02	—	—	—	—	—
Other flatfish	—	—	—	—	—	—	—	—	—	—	—	—	—
Pacific cod	0.09	0.03	—	0.04	0.02	—	—	—	—	—	—	—	—
Pacific halibut (IBQ; N)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pacific ocean perch (N)	0.28	—	1.58	2.3	1.14	1.18	1.51	2.42	—	—	—	—	—
Pacific whiting	0.18	0.28	0.33	0.27	—	0.14	0.13	0.13	0.11	0.16	0.12	0.2	0.24
Petrale sole	0.24	0.27	0.2	0.25	0.29	0.28	0.32	0.31	0.36	0.36	0.22	0.21	0.24
Sablefish (N)	0.38	0.52	0.5	0.46	0.49	0.45	0.52	0.64	0.48	0.53	0.27	0.44	0.44
Sablefish (S)	0.33	0.51	0.13	0.06	0.06	0.08	0.03	—	—	—	0.07	—	—
Shortspine thornyhead (N)	0.1	0.06	0.06	0.07	0.05	0.04	0.03	0.02	—	—	0.05	0.07	—
Shortspine thornyhead (S)	0.04	—	—	—	—	—	—	—	—	—	—	—	—
Splitnose rockfish (S)	—	—	—	—	—	—	—	—	—	—	—	—	—
Starry flounder	—	—	—	—	—	—	—	—	—	—	—	—	—
Widow rockfish	1.01	0.81	1.18	0.53	0.37	0.36	0.1	0.12	0.15	0.25	0.21	0.21	0.22
Yelloweye rockfish	60.43	46.07	52.32	62.08	35.11	—	21.88	—	34.86	40.92	75.31	46.89	102.29
Yellowtail rockfish (N)	—	0.02	0.06	0.04	0.02	0.02	0.1	0.11	0.16	0.33	0.29	0.2	0.26

Source: Holland & Steiner (2024)

Note: (S) =South and (N) = North

Table 32. Ratio of QP price to ex-vessel price

IFQ species	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Arrowtooth flounder	—	0.16	0.09	—	0.1	0.1	—	—	—		—	—	—
Bocaccio rockfish (S)	0.75	—	0.25	0.42	0.38	0.3	0.48	0.28	0.17	0.3	0.2	0.19	0.24
Canary rockfish	2.24	2.91	6.2	3.88	2.05	2.49	0.19	0.94	0.5	—	0.48	0.57	0.42
Chilipepper rockfish (S)	0.08	0.04	0.03	0.04	0.03	—	—	—	0.02	0.03	0.03	0.04	0.02
Cowcod (S)	—	—	—	—	—	2.57	5.69	4.39	7.46	6.02	—	—	2.74
Darkblotched rockfish	0.84	0.45	1.11	2.43	1.15	1.21	0.84	1.2	0.95	1.81	0.91	0.96	1.09
Dover sole	0.15	—	—	—	—	—	—	—	—	—	—	—	—
English sole	—	—	—	—	—	—	—	—	—	—	—	—	—
Lingcod	0.09	0.07	—	—	—	—	—	—	—	—	—	—	—
Lingcod (N)	—	—	—	—	—	0.01	0.01	0.03	0.01	0.01	—	—	—
Lingcod (S)	—	—	—	—	0.01	—	—	—	—	0.01	—	—	—
Longspine thornyhead (N)	0.09	0.11	0.11	0.14	0.07	0.04	0.04	—	—	—	—	—	—
Minor shelf rockfish (N)	—	—	—	—	—	—	0.03	0.04	0.06	0.07	0.24	0.28	0.24
Minor shelf rockfish (S)	—	—	0.02	0.02	—	—	—	—	—	—	—	—	0.34
Minor slope rockfish (N)	—	0.08	0.06	0.08	0.06	0.03	0.11	0.22	0.25	0.34	0.29	0.41	0.46
Minor slope rockfish (S)	0.06	0.03	0.06	—	0.03	—	0.03	0.02	—	—	—	—	—
Other flatfish	—	—	—	—	—	—	—	—	—	—	—	—	—
Pacific cod	0.09	0.03	—	0.04	0.02	—	—	—	—	—	—	—	—
Pacific halibut (IBQ; N)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Pacific ocean perch (N)	0.28	—	1.58	2.3	1.14	1.18	1.51	2.42	—	—	—	—	—
Pacific whiting	0.18	0.28	0.33	0.27	—	0.14	0.13	0.13	0.11	0.16	0.12	0.2	0.24
Petrale sole	0.24	0.27	0.2	0.25	0.29	0.28	0.32	0.31	0.36	0.36	0.22	0.21	0.24
Sablefish (N)	0.38	0.52	0.5	0.46	0.49	0.45	0.52	0.64	0.48	0.53	0.27	0.44	0.44
Sablefish (S)	0.33	0.51	0.13	0.06	0.06	0.08	0.03	—	—	—	0.07	—	—
Shortspine thornyhead (N)	0.1	0.06	0.06	0.07	0.05	0.04	0.03	0.02	—	—	0.05	0.07	—
Shortspine thornyhead (S)	0.04	—	—	—	—	—	—	—	—	—	—	—	—
Splitnose rockfish (S)	—	—	—	—	—	—	—	—	—	—	—	—	—
Starry flounder	—	—	—	—	—	—	—	—	—	—	—	—	—
Widow rockfish	1.01	0.81	1.18	0.53	0.37	0.36	0.1	0.12	0.15	0.25	0.21	0.21	0.22
Yelloweye rockfish	60.43	46.07	52.32	62.08	35.11	—	21.88	—	34.86	40.92	75.31	46.89	102.29
Yellowtail rockfish (N)	—	0.02	0.06	0.04	0.02	0.02	0.1	0.11	0.16	0.33	0.29	0.2	0.26

Source: Holland & Steiner (2024) (Table 8)

Note: (S) =South and (N) = North

2.3.6.1 Quota Share Sales

In theory, the QS price reflects the discounted present value of the expected future profits derived from that share of the fishery. Since 2015, when QS trading was permitted, there have been a total of 443 quota sales (counting each quota category as an individual sale, see Table 33). Of those sales, 24 were associated with a change in the name of the group that owned the quota and another 28 were trades between ownership groups with at least one common owner. Of the remaining trades, 77

companies purchased quota in at least one year and 72 companies sold quota in at least one year. These remaining trades are classified as "arms-length," i.e., trades between otherwise unrelated businesses. The number of arms-length QS sales increased for most species in 2018, which likely occurred due to the widow divestiture rule (see Section 1.6.1). Few QS sales occurred in 2020 (likely due to the COVID-19 pandemic) and there were no recorded arms-length QS sales in 2021.

Table 33. Total arms-length quota share sales by year and quota category.

IFQ Quota Shares	2015	2016	2017	2018	2019	2020	2022	2023
Arrowtooth flounder	4	2	10	16	5	0	5	4
Bocaccio rockfish South of 40˚10' N.	2	0	8	8	4	0	3	2
Canary rockfish	4	2	11	14	5	0	6	4
Chilipepper rockfish South of 40˚10' N.	5	2	12	14	4	0	5	6
Cowcod South of 40˚10' N.	2	0	9	5	3	0	1	0
Darkblotched rockfish	5	1	12	15	4	0	7	5
Dover sole	7	1	11	14	6	0	6	5
English sole	4	2	10	12	3	0	7	4
Lingcod North of 40˚10' N.	4	2	10	17	4	5	8	6
Lingcod South of 40˚10' N.	4	2	10	15	4	0	4	6
Longspine thornyheads North of 34˚27' N.	7	1	13	11	5	0	4	5
Minor shelf rockfish North of 40˚10' N.	4	2	10	15	8	0	7	5
Minor shelf rockfish South of 40˚10' N.	4	2	10	15	4	0	6	4
Minor slope rockfish North of 40?10' N.	4	2	11	15	7	0	10	5
Minor slope rockfish South of 40˚10' N.	5	2	10	15	6	0	2	6
Other flatfish	6	2	10	12	4	0	6	4
Pacific cod	4	2	10	13	4	0	4	3
Pacific halibut (IBQ) North of 40˚10' N.	10	2	6	14	6	1	4	4
Pacific ocean perch North of 40˚10' N.	4	1	10	12	4	0	9	3
Pacific whiting	4	2	10	12	5	0	9	10
Petrale sole	7	2	11	16	12	0	5	6
Sablefish North of 36˚ N.	7	6	11	14	5	0	4	3
Sablefish South of 36˚ N.	6	1	7	10	3	0	2	5
Shortspine thornyheads North of 34˚27' N.	6	2	11	16	6	0	3	6
Shortspine thornyheads South of 34˚27' N.	9	2	11	11	4	0	2	6
Splitnose rockfish South of 40˚10' N.	4	2	10	12	4	0	5	5
Starry flounder	6	2	9	12	4	0	3	3
Yelloweye rockfish	5	2	10	11	4	0	6	3
Yellowtail rockfish North of 40˚10' N.	4	2	10	16	4	0	8	4
Widow rockfish	0	0	0	26	5	1	11	5

Source: Holland & Steiner (2024)

2.4 Accumulation Limits and Excessive Shares

Key Takeaways:

- The number of individuals within 90% of the aggregate non-whiting QS control limit decreased since the last review.
- The number of QS holders over 90% of the species-level QS control limit for any species has decreased since the last review from 30 in 2016 to 10 in 2025.
- Overall, annual vessel QP limit trends are similar to the previous review, though the number of vessels at 90% of the limit for petrale and widow rockfish have increased over time.
- The trends in the number of vessels attaining 90% utilization of the vessel limit by species show annual variation, ranging from 0 to 8 vessels.
- Petrale sole, sablefish north, bocaccio rockfish south, chilipepper rockfish south, and widow rockfish were the only species where as many as three vessels reached 90% attainment of the vessel cap in any year.

The design of the catch share program included limits on quota pounds (QP) and QS to prevent excessive quota concentration (PFMC and NMFS 2010), an objective of the program. MSA Section 303A addresses the issue of "excessive shares". Excessive shares in this context refers to a situation where a single entity, whether an individual or a corporation, holds or acquires too large a portion of the total limited access privileges in a fishery. The catch share program included measures to prevent excessive consolidation of the fishery and the associated potential negative impacts on smaller operators and coastal communities by instituting accumulation limits on QS/IBQ and QP. These limits are expressed as a percentage of the total allocation for a stock/complex or for non-whiting species in total for the Shorebased IFQ Program. Any entity that qualified for an initial allocation exceeding these limits was allowed to receive its entire allocation but was required to divest the excess by 2016. If shares exceeding the limits were not divested, entities were notified that they had 90 days to divest to under the limit, or the quota would be revoked and redistributed among the remaining qualified fishermen. After the widow rockfish stock was determined to be rebuilt, QS was allocated, and the daily use limit was removed, any QS permit owner who exceeded the control limit as a result of the reallocation would have until November 30, 2017, to divest of their excess holdings (proposed rule NOAA-NMFS-2016-0037-0001).

The QS and IBQ accumulation limits table at 50 CFR 660.140(d)(4)(i)(C) defines the control limits. Under these accumulation limits, a person may not own or control an amount of QS or IBQ for any species that exceeds the Shorebased IFQ Program accumulation limit. The table also shows the aggregate control limit for non-whiting QS holdings, which is set at 2.7%. Based on 2025 QS ownership information, only four people hold or control more than 1.8% of the QS, a decrease from 2016 (PFMC and NMFS 2017). Their exact percentages are not disclosed due to confidentiality limitations. The breakdown of 2025 aggregate QS holdings by quartile shows that 25% of QS holders

hold less than 0.034% of the aggregate quota share limit, 50%, hold less than 0.14%, and 75% of QS holders hold less than 0.40%. To date, the Council has not recommended changing the aggregate limit, although it was recommended from the 2017 review (see Section 1.6) and remains on the *current groundfish workload list*.

Table 34 shows the number of QS holders that held at least 50% or 90% of the species-level QS control limit as of August 2025. A total of 10 QS holders held at least 90% of one species' QS control limit, a decrease from the previous review, where 30 individuals held at least 90% of any species at the end of 2016 (PFMC and NMFS 2017). In 2025, there were no more than four QS holders that held 90% of an individual species' control limit (lingcod north and Pacific ocean perch north). Five species had two QS holders holding at least 90% of the control limit. Seventeen other species had less than three persons holding at least 90% of the control limit for that species. There were substantially more QS holders (33) who hold 50% of a species' control limit. Lingcod (north and south) and Dover sole had the most QS holders at that level, 17 and 16, respectively. Pacific ocean perch north, petrale sole, and sablefish north were the only other species that had at least 10 QS holders holding that percentage of the QS.

Table 34. Number of QS holders holding 50% or 90% of the species control limit (August 2025)

Species	50% of control limit	90% of control limit
Canary rockfish	3	c
Chilipepper rockfish South of 40°10' N.	c	c
Darkblotched rockfish	4	c
Dover sole	16	c
English sole	c	
Lingcod North of 40°10' N.	17	4
Lingcod South of 40°10' N.	17	c
Longspine thornyheads North of 34°27' N.	c	
Minor shelf rockfish North of 40°10' N.	c	c
Minor shelf rockfish South of 40°10' N.	c	
Minor slope rockfish North of 40°10' N.	3	c
Minor slope rockfish South of 40°10' N.	4	c
Pacific cod	c	c
Pacific halibut (IBQ) North of 40°10' N.	5	c
Pacific ocean perch North of 40°10' N.	10	4
Pacific whiting	c	c
Petrale sole	10	c
Sablefish North of 36° N.	10	c
Shortspine thornyhead	c	
Splitnose rockfish South of 40°10' N.	c	
Starry flounder	3	c
Widow rockfish	3	c
Yelloweye rockfish	4	c
Yellowtail rockfish North of 40°10' N.	3	c
Distinct Count of QS Holders Over Percentage	33	10

Note: Values marked with "c" have been withheld for confidentiality.

Source: Permit Database

Table 35 shows the percentage of QS held at the species level by quartile. A QS holder with no quota for a species was excluded from the quartile calculation for that species. The percentages are relatively low for all species (less than 0.5%), even at the 75th percentile, because of the large number of QS holders (274) and the difference between the QS holders with the largest holdings and those at the 75th percentile.

Table 35. Species level QS holdings by quartile

Species	25th Percentile	50th Percentile	75th Percentile
Arrowtooth flounder	0.03%	0.17%	0.35%
Bocaccio rockfish South of 40°10' N.	0.01%	0.03%	0.17%
Canary rockfish	0.04%	0.14%	0.38%
Chilipepper rockfish South of 40°10' N.	0.01%	0.05%	0.19%
Cowcod South of 40°10' N.	0.01%	0.03%	0.15%
Darkblotched rockfish	0.03%	0.14%	0.45%
Dover sole	0.03%	0.15%	0.41%
English sole	0.03%	0.16%	0.41%
Lingcod North of 40°10' N.	0.03%	0.18%	0.44%
Lingcod South of 40°10' N.	0.03%	0.17%	0.42%
Longspine thornyheads North of 34°27' N.	0.04%	0.15%	0.42%
Minor shelf rockfish North of 40°10' N.	0.04%	0.17%	0.45%
Minor shelf rockfish South of 40°10' N.	0.01%	0.07%	0.28%
Minor slope rockfish North of 40°10' N.	0.03%	0.14%	0.46%
Minor slope rockfish South of 40°10' N.	0.02%	0.09%	0.28%
Other flatfish	0.02%	0.13%	0.40%
Pacific cod	0.04%	0.14%	0.30%
Pacific halibut (IBQ) North of 40°10' N.	0.04%	0.16%	0.37%
Pacific ocean perch North of 40°10' N.	0.02%	0.09%	0.40%
Pacific whiting	0.01%	0.03%	0.28%
Petrale sole	0.04%	0.15%	0.45%
Sablefish North of 36° N.	0.05%	0.18%	0.45%
Sablefish South of 36° N.	0.02%	0.10%	0.19%
Shortspine thornyhead	0.04%	0.15%	0.42%
Splitnose rockfish South of 40°10' N.	0.01%	0.07%	0.18%
Starry flounder	0.01%	0.06%	0.23%
Widow rockfish	0.05%	0.12%	0.36%
Yelloweye rockfish	0.02%	0.08%	0.41%
Yellowtail rockfish North of 40°10' N.	0.05%	0.13%	0.44%
Arrowtooth flounder	0.03%	0.17%	0.35%

Source: Permit database

To fish quota allocated to a QS account, the owner must assign the QPs to a vessel account. The QPs that a vessel may harvest are also subject to accumulation limits. These limits are defined at 50 CFR 660.140(e)(4)(i). IFQ species or species group vessel accounts may not have QP or IBQ pounds more than the annual QP vessel limit in any year, with limited exceptions defined at 50 CFR 660.140(e)(5)(iii). The annual QP vessel limit is calculated as all QPs transferred in minus all QPs transferred out of the vessel account.

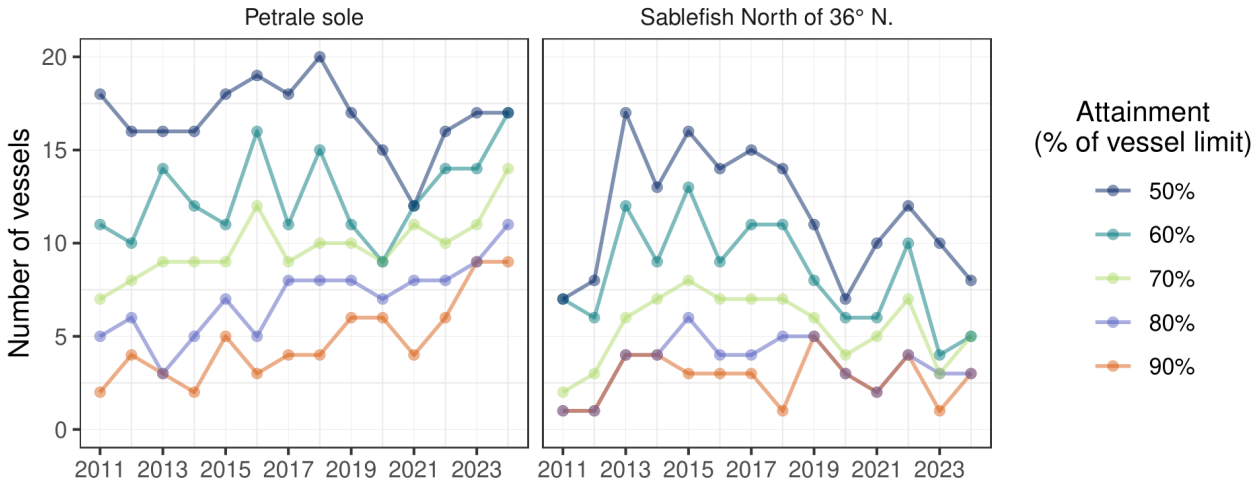
Figure 20, Figure 21, and Figure 22 provide species-level information on the percentage of the vessel limit utilized by individual vessels annually since the catch share program was implemented. Vessels that were at or above the 90% utilization rate are approaching the limit for that species and are potentially most affected by the limit. Overall, the trends in the number of vessels attaining 90% utilization of the vessel limit by species show some variation. Still, they are similar before and after the last program review. Vessels that exceed the vessel QP limit in a year may have their participation in the catch share fishery restricted in future years.

Petrale sole and sablefish north were the only species where five or more vessels attained 90% of the vessel limit during a year since the start of the program. As many as eight vessels attained 90% of the petrale sole vessel limit in 2023. In 2019 and 2020 six vessels utilized more than 90% of the petrale sole vessel limit. The number declined to four in 2021. Sablefish North had the most number of vessels (five) attain 90% of the vessel limit in 2019 only.

Widow rockfish had as many as four vessels attain 90% of the vessel limit (2020) and three vessels in 2016, 2018, and 2022. Bocaccio rockfish south, and chilipepper rockfish south had three vessels attain 90% of the vessel limit in 2024. Most years for these species, there were no vessels that attained 90% of the limit, and in the years that they did, it was only one vessel in 2015 and 2018 for bocaccio rockfish and 2020 through 2022 for chilipepper rockfish.

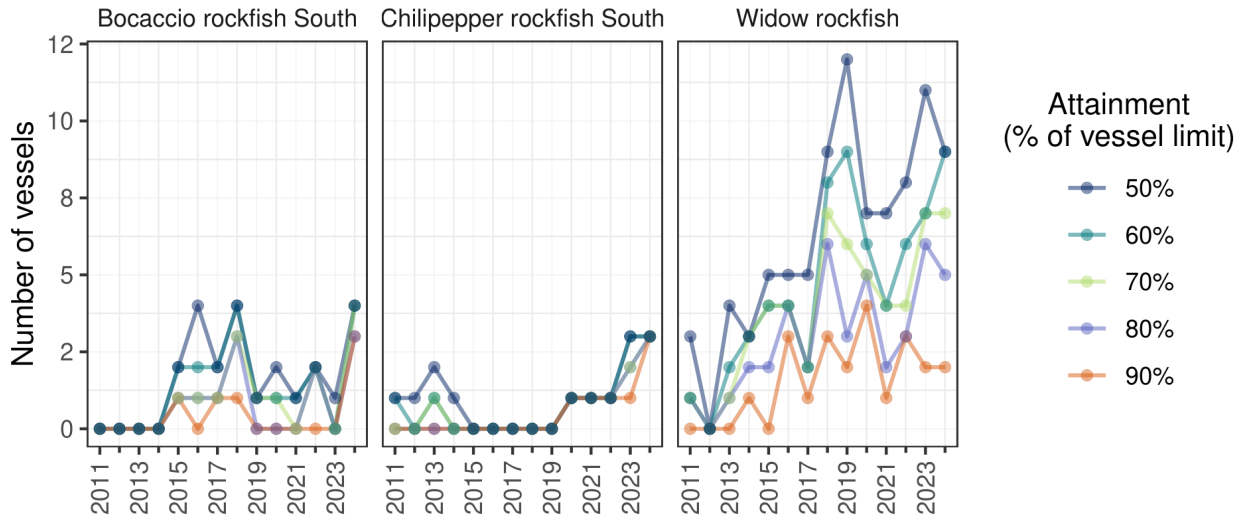
Figure 21 shows the eight other species or species complexes, excluding the five species discussed earlier, that had at least one vessel attain 90% of the vessel limit in at least one year. Trends in the number of vessels attaining 50% of the vessel limit varies by year. Only the minor slope rockfish south complex had as many as 8 vessels attain 50% of the vessel limit. In 2024, the number declined to 5. Darkblotched rockfish was the only other species with 3 vessels attaining 50% of the limit in 2024. Yellowtail rockfish north has seen an increase in the number of vessels attaining 50% of the limit since 2017 with the re-emergence of the midwater fishery. Eight vessels attained 50% in both 2018 and 2022.

Figure 20. Species that had five or more vessels attain 90% of the program's vessel limit in at least one year



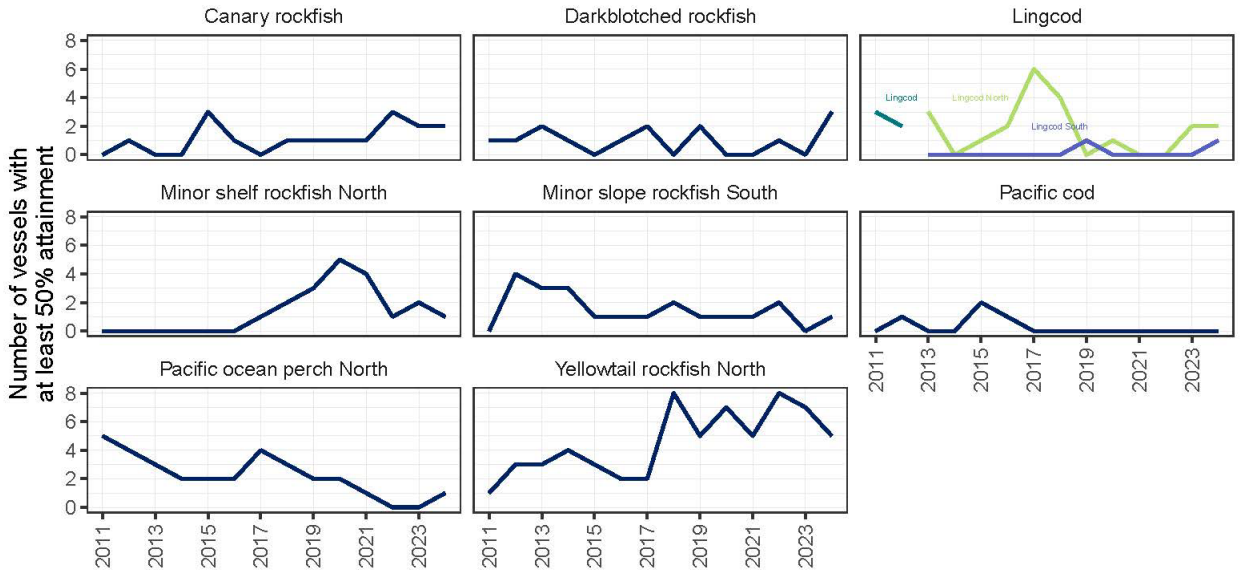
Source: Personal communication Dan Holland and Erin Steiner (March 15, 2025)

Figure 21. Species that had at least three vessels attain 90% of the vessel cap (excluding petrale and sablefish north).



Source: Personal communication Dan Holland and Erin Steiner (March 15, 2025)

Figure 22. Species that had at least one vessel attain 90% of the program's vessel limit in one year



Source: Personal communication Dan Holland and Erin Steiner (March 15, 2025)

Given that the vessel limit trends are similar to when they were analyzed under the 5-year review (PFMC, 2017 p. xxiv)), the conclusions drawn in that analysis are unchanged. That report suggested that the data indicate:

> …that annual vessel-use quota pound limits do not significantly and directly contribute to low attainment (3.1.3(a)). However, these analyses do not assess whether vessel limits lead to conservative fishing practices to avoid constraining species that result in decreased attainment, prevent the development of boutique target fisheries, or discourage harvesters from investing in larger scale operations. Fear of an unanticipated high bycatch event, or "lightning strike," may change behavior and decrease attainment rates because the consequences are so high. For example, if a lightning strike were to occur, vessel limits may force that vessel out of the groundfish fishery for many years.

2.5 Individual Economic Outcomes

In addition to maximizing net benefits from the fishery, the catch share program has several other specific economic goals. This section addresses Amendment 20 goals to provide for a viable, profitable, and efficient groundfish fishery, to create individual economic stability, and to increase operational flexibility.

Data collected through the EDC Program are used throughout this section to describe economic outcomes across vessels, processors, and quota share owners in the catch share program. For all

sectors, two measures of net revenue are presented: Variable cost net revenue (VCNR; total revenue minus variable costs), which is an indicator of annual operating profits, and total cost net revenue (TCNR; total revenue minus variable and fixed costs), which is an indicator of accounting (cash flow) profitability. Because TCNR is affected by large, infrequent fixed cost expenditures, such as new engines, it is best interpreted as a multiyear average as an indicator of long-term profitability (PFMC & NMFS, 2017).

As recommended by the SSC in their review of the first catch share review (Agenda Item F.6.c Supplemental SSC Report, November 2016), these net revenue measures should be interpreted as an upper bound of actual profits for catcher vessels, because quota costs cannot be allocated across IFQ fisheries and because there are some costs not collected by the EDC Program, such as costs associated with on-shore office space and storage. Since the last review, a new survey was implemented to account for quota lease costs and revenues impacts on these outcomes, and these survey results, which can be used to further understand economic outcomes, are described below. Results for QS owners are discussed in Section 2.5.5.

2.5.1 Catcher Vessels

Key takeaways:

- Catcher vessels can be classified as either whiting vessels or non-whiting vessels based on whether they targeted Pacific whiting on any trip in a year. The proportion of catcher vessels classified as whiting catcher vessels that participate in non-whiting catch share activities has changed over time, in part due to the increased viability of a non-whiting midwater trawl fishery. In 2016, 7 whiting vessels participated in any non-whiting catch share activity (25%), in 2023 17 did (55%).

- Relatively high catch limits compared to the pre-catch share period continue to support higher revenue and indicators of profitability for whiting catcher vessels on average over the catch share period.

- Indicators of operating and cash flow profitability for the median non-whiting catcher vessel remain higher on average than in the pre-catch share period, despite declines in both indicators in the last four years.

- Declines in ex-vessel prices and revenue have decreased profitability for all catcher vessels between 2020 and 2023. Compared to 2016–2019, median whiting vessel TCNR declined 63% and median VCNR declined 38%. During the same period, median non-whiting vessel TCNR declined 60% and median VCNR declined 41%.

- Across all the catch share fishing activities that catcher vessels can participate in, DTS trawl is the only catcher vessel fishing activity where overall VCNR is lower than the pre-catch

share average, declining from $125,305 to $81,994. The number of vessels participating in the DTS trawl fishery has also declined from 51 in 2015 to 35 in 2023.

- While VCNR while gear-switching increased between 2016–2019 compared to 2011–2015 (from 113,794 to 141,684), the number of gear-switching vessels has declined overall from a high of 25 in 2011 to 8 in 2021. In 2022 and 2023, 11 vessels used non-trawl gear to prosecute the fishery.
- Median non-whiting, non-DTS trawl VCNR increased from $13,237 to $62,250 on average, and has increased over time. The number of vessels participating in this activity has remained relatively consistent, ranging between 42 and 50.
- Increased viability of a non-whiting midwater trawl fishery has led to increased participation and revenue from this activity starting in 2017. Of vessels participating in this activity, 64% are classified as whiting vessels.

2.5.1.1 Catcher vessel outcomes by vessel type

There is huge variation in the fishing vessels that fish in the catch share program. Vessel sizes range from less than 50 feet to more than 100 feet. Vessels fish in state and federal fisheries off the West Coast and some vessels also fish in Alaska fisheries. In order to account for these complexities and for analytical purposes, catcher vessels in the catch share program are characterized as 'whiting' or 'non-whiting' based on whether or not the vessel targeted whiting (see *Sector and Vessel/Processor Type definitions*). Even though catcher vessels may target both whiting and non-whiting species (Figure 23), these mutually exclusive vessel types are helpful to distinguish economic trends for distinctly different vessel operations. As described in the previous review:

> Catcher vessels in the catch share program generally participate in a variety of activities in a single year and their choices of which fisheries to participate in vary from year to year. Thus, they are difficult to categorize. The biggest distinction, however, is whether a catcher vessel fishes for Pacific whiting. Pacific whiting is caught at much larger volumes, the vessels that target it are generally larger, and annual catch limits for Pacific whiting can vary substantially from year to year, all of which affect vessels' economic performance (PFMC and NMFS 2017, page 20)

Under this definition, in a given year, if a vessel that took at least one trip where the majority of revenue came from Pacific whiting, it is classified as a whiting vessel, even if it also targeted non-whiting species on other trips in the same year.

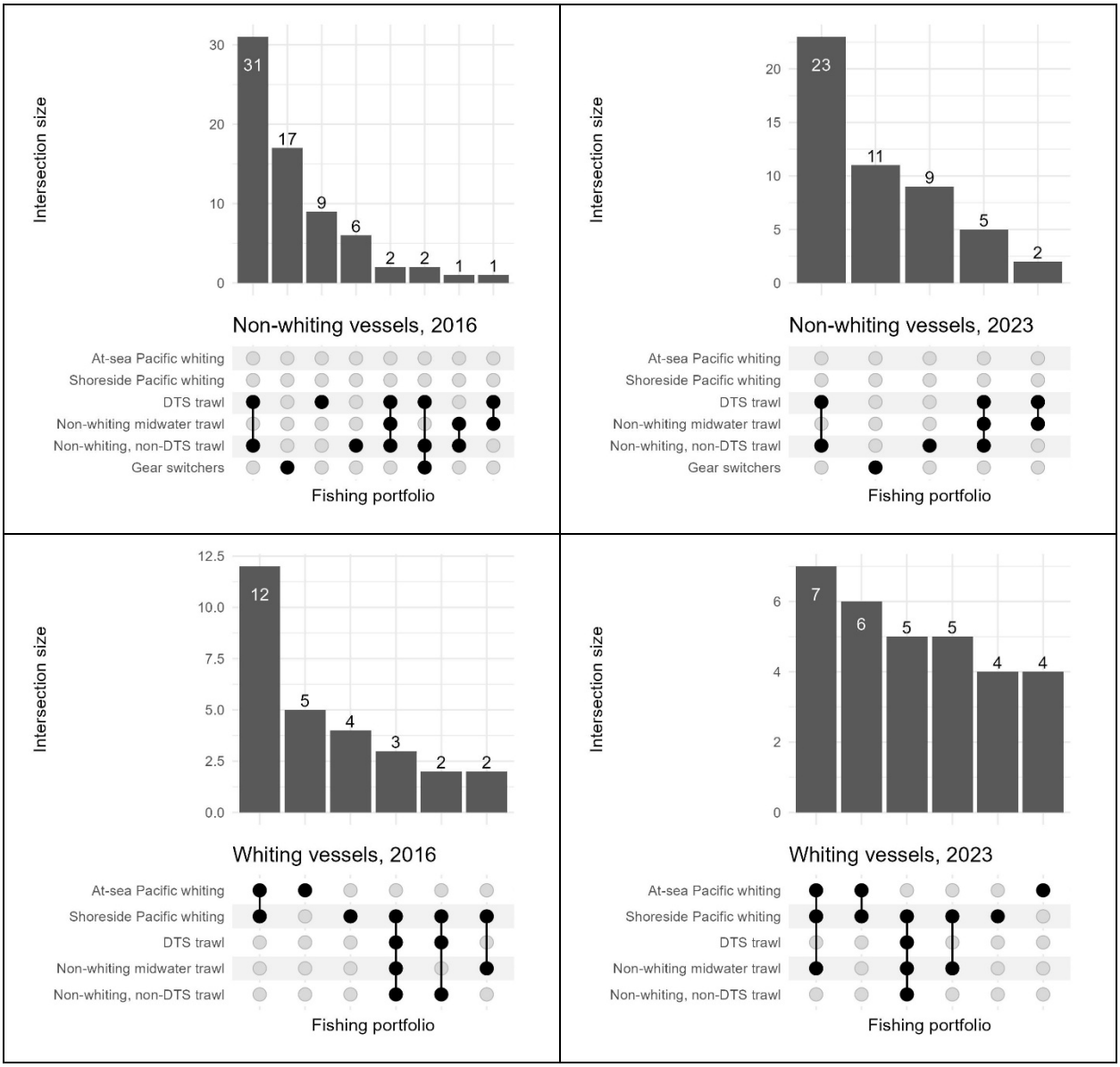
The portfolio of fisheries that catcher vessels participate in, both catch share and non-catch share, supports understanding of the vessel type definitions and the interpretation of associated economic outcomes presented in this section. Figure 23 shows the combinations of catch share fishery activities that non-whiting catcher vessels (top two plots) and whiting catcher vessels (bottom two plots)

participated in in 2016 (lefthand plots) and 2023 (righthand plots).[20] As shown in the plots, to be classified as a non-whiting vessel, the vessel cannot have participated in either the at-sea (MS-CV) or shoreside whiting fishery. Non-whiting catcher vessels participate in different combinations of the DTS trawl, non-DTS trawl, non-whiting midwater trawl, and gear-switching activities. In contrast, whiting catcher vessels can participate in any catch share activity.

The proportion of catcher vessels classified as whiting catcher vessels that participate in non-whiting catch share activities has changed over time, in part due to the increased viability of a non-whiting midwater trawl fishery. In 2016, 7 whiting vessels participated in any non-whiting catch share activity (25%); in 2023 17 did (55%). The number participating in the non-whiting midwater trawl fishery has increased even more since while all 17 of the whiting vessels in 2023 participated in the non-whiting midwater trawl fishery, only 5 of the 7 vessels in 2016 did. While the number of non-whiting catcher vessels participating in the non-whiting midwater trawl fishery has also increased (from 5 to 7), it is not part of the dominant portfolio, which remains those who participate in both the DTS and non-DTS trawl fisheries (23 vessels in 2023). It can also be noted that the second most common non-whiting catcher vessel portfolio type in both 2016 and 2023 is gear-switching, but the number has decreased from 17 to 11.

[20] Note that the portfolios described here focus on catch share fisheries only. Catcher vessels also participate in a variety of non-catch share fisheries, including state-managed fisheries and fisheries in Alaska. These portfolios are explored in Section 2.7.8.

Figure 23. Catcher Vessel Activity Portfolios by Vessel Type 2016 & 2023



Note: Fishing portfolios within the catch share program by vessel type (non-whiting vessels and whiting vessels). This figure excludes all non-CS activities, including Dungeness crab, pink shrimp, LEFG, and Alaska-related activities.

Source: EDC data, personal communication with Erin Steiner on 8/11/2025

Whiting vessel outcomes

Under rationalization, it was expected that profits for both non-whiting and whiting catcher vessels would increase. For whiting vessels, gross revenues were expected to double due to anticipated consolidation (Lian et al., 2009; PFMC & NMFS, 2010) and while specific predictions about profitability impacts for whiting vessels were not made, profitability was expected to increase for a variety of reasons, including elimination of the race to fish, fleet consolidation, and increased flexibility in the timing of harvest.

The previous review found that during the first five years of the catch share program the average variable cost and total cost net revenue for whiting vessels increased, despite anomalous ocean conditions in 2015, which constrained catches in that year. However, these increases were also coincident with increasing catch limits and catch of whiting by all the whiting sectors. In updating this analysis through 2023, both VCNR and TCNR remain substantially higher than average compared to the pre-catch share period, corresponding with even higher average annual allocations and catch for Pacific whiting than existed in the first five years of the program (Figure 24). VCNR (an indicator of operating profits) for the median whiting vessel has more than doubled from an average of $229,796 in the pre-catch share period to $533,522 in the catch share period (2011–2023). Median vessel TCNR (indicator of cash flow profitability) has increased by an even greater margin, from $57,783 to $275,741. However, since 2020, both of those metrics have declined, coincident with declining ex-vessel prices (Figure 14) and average revenue per vessel, day at sea, and metric ton landed (Table 36). When comparing 2016–2019 to 2020–2023, median TCNR declined 63% from an annual average of $424,164 to $155,412 and median VCNR declined 38% from an annual average of $609,397 to $375,960 (Table 35). Despite declines, between 2020 and 2023 average revenue per vessel and day remain above the pre-catch share average, however, average revenue per metric ton landed remained lower ($222/mt compared to $298/mt), corresponding with lower ex-vessel prices for Pacific whiting, especially in 2020 and 2023, where ex-vessel prices dipped below the catch share period mean of $0.11 per pound to $0.07 and $0.08, respectively (Table 23). Notably, the number of whiting catcher vessels has also increased since the last review, from an average of 29 between 2011 and 2015 to 32 between 2020 and 2023.

Non-whiting vessel outcomes

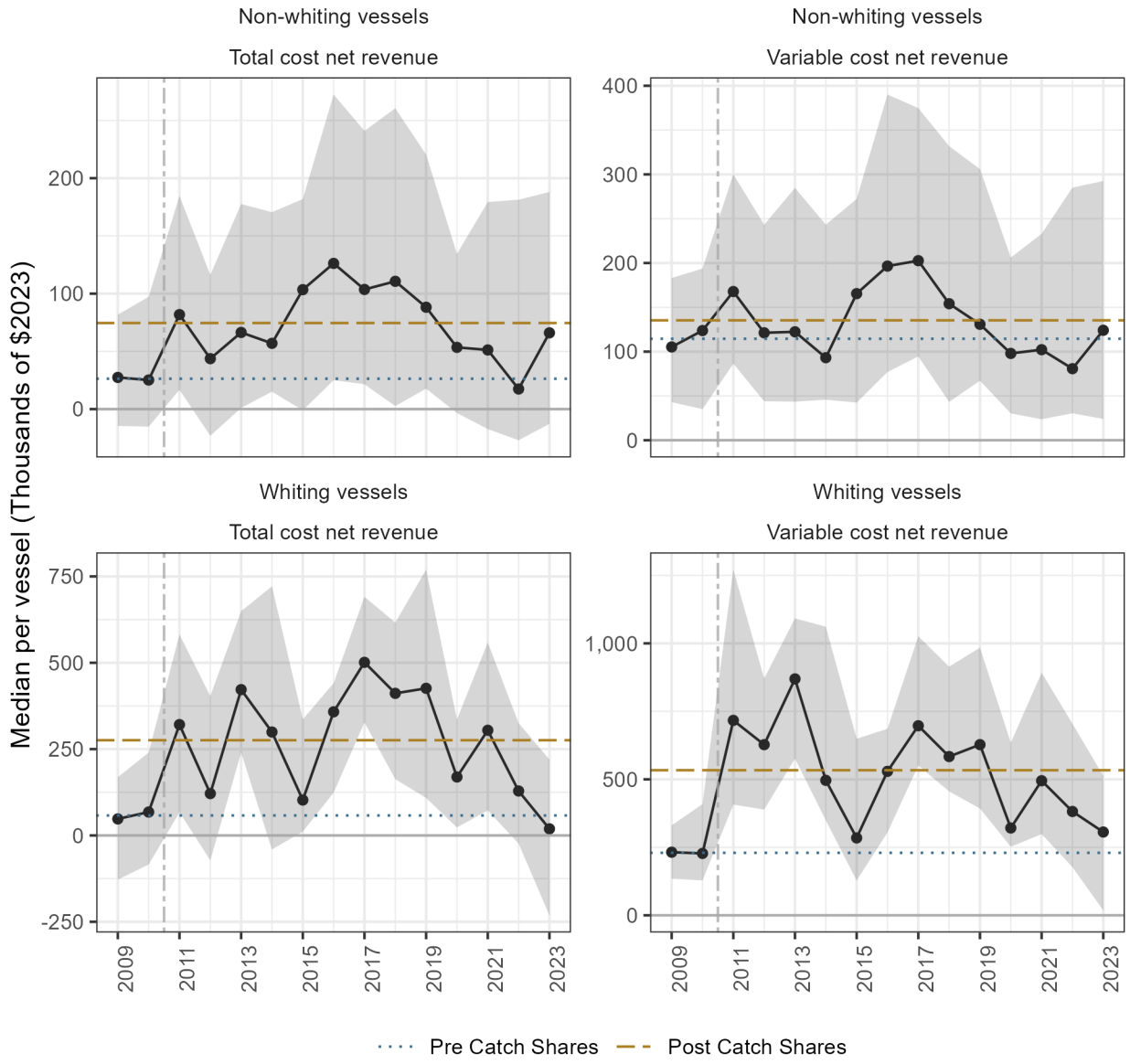
For non-whiting vessels, vessel profits were expected to increase overall under the catch share program, even with increased governance-related costs (monitoring and cost recovery), due to the effects of consolidation and increases in efficiency stemming from decreases in the cost of harvesting, reduced interactions with constraining species, and increased catches (Lian et al., 2009). The previous review found that both indicators of profitability, VCNR and TCNR, had increased for the median vessel in the first five years of the program (PFMC & NMFS, 2017). Specifically, it found that median vessel TCNR doubled between 2011 and 2015, compared to the pre-catch share period, due in part to consolidation of the fleet (PFMC & NMFS, 2010).

After updating this analysis with data from 2016 to 2023, we find that despite continued consolidation, overall median vessel VCNR is similar to the 2011–2015 average and is 18% higher than the pre-catch share average, indicating overall similar improvements in operating profitability as in the first five years ($135,304 between 2011 and 2023 compared to $133,389 for 2011–2015, Table 34). However, on average over the last four years, median vessel VCNR dropped 41% to $101,243, below the pre-catch share average of $114,515. This is in stark contrast to the trend between 2016 and 2019 when median VCNR was at time series highs ($171,009). Changes in revenue have largely driven these changes over time. Median revenue increased on average by $94,345

between 2011–2015 and 2016–2019, compared to variable costs which increased by a smaller margin, at $46,353. In contrast, between 2020 and 2023, median revenue decreased by $141,011 and variable costs decreased by $47,849 compared to the prior four years (Table 38).

Median vessel TCNR shows a similar trend over time, with highs between 2016 and 2019 and a 60% decrease between 2020 and 2023, indicating fluctuating cash flow profitability; however, the overall catch share average ($74,560) remains higher than the pre-catch share average ($26,309), even in the 2020–2023 period ($47,047). However, it is important to note that the distribution of TCNR outcomes, as shown by the interquartile range (displayed by a grey ribbon surrounding the median, Figure 24) has gotten larger since implementation and was particularly large between 2016 and 2019. This means that for vessels at the bottom and top of the distribution, their economic outcomes are increasingly different than from vessels in the middle (or median, as described previously). In particular, for vessels in the 25th percentile (or the bottom 25% of vessels, in terms of TCNR), TCNR has fluctuated between near zero and negative values, and despite increasing between 2016 and 2019 to $16,746, between 2020 and 2023, TCNR dropped to -$15,079, indicating that at least a quarter of vessels may have operated at a loss. It is also important to re-iterate that TCNR does not include all costs, including quota costs (further explored in Section 2.5.5), so the proportion of vessels operating at a loss may have been higher. In contrast, vessels in the 75th percentile may have had substantially higher TCNR than the median vessel. Of note, the 75th percentile VCNR and TCNR both rebounded more between 2020 and 2023. For the 75th percentile, 2020–2023 average TCNR exceeded 2011–2015 average levels, while the 50th and 25th percentile averages remained lower in the same periods (Table 36).

Figure 24. Average Whiting and Non-Whiting Catcher Vessel Net Revenue Trends



Note: Median per vessel variable cost net revenue (top panels) and total cost net revenue (bottom panels) for non-whiting and whiting vessels. All values are reported as 2023 dollars. Data were found by querying the FISHEyE catcher vessel database using the terms: "Catcher Vessels", "Economic: Variable cost net revenue, Total cost net revenue", "Statistic: Median per vessel", "Fisheries: All catch share fisheries combined", "Vessel type: Non-whiting vessels, Whiting vessels", "Years: 2009 to 2023"and "GDP deflation year: 2023".

Source: FISHEyE

Table 36. Non-Whiting Catcher Vessel Net Revenue

Year	Median VCNR per vessel ($)	VCNR 25th Percentile ($)	VCNR 75th Percentile ($)	Median TCNR per vessel ($)	TCNR 25th Percentile ($)	TCNR 75th Percentile ($)	Number of vessels
Pre-CS	114,515	39,049	188,355	26,309	-14,879	89,521	93
CS	133,949	50,205	288,460	73,519	-55	191,612	67
2011–2015	133,040	52,411	268,478	70,473	1,774	163,147	76
2016–2019	169,494	70,542	350,666	107,181	14,852	248,591	69
2020–2023	99,541	27,111	251,232	43,666	-17,205	170,216	53

Note: All values represent averages across the period. VCNR and TCNR are reported as the median per vessel. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported in 2023 dollars.

Source: FISHEyE

Table 37. Whiting Catcher Vessel Net Revenue

Year	Median VCNR per vessel ($)	VCNR 25th Percentile ($)	VCNR 75th Percentile ($)	Median TCNR per vessel ($)	TCNR 25th Percentile ($)	TCNR 75th Percentile ($)	Number of vessels
Pre-CS	229,796	131,580	369,706	57,783	-106,022	204,114	41
CS	533,453	330,900	868,092	275,269	59,124	510,921	30
2011–2015	598,872	370,050	988,781	253,270	41,263	538,347	29
2016–2019	609,381	426,295	902,241	423,525	181,161	627,785	30
2020–2023	375,752	186,567	683,081	154,514	-40,585	359,774	32

Note: All values represent averages across the period. VCNR and TCNR are reported as the median per vessel. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 38. Catcher Vessel Whiting and Non-Whiting Revenue Metrics

Vessel Type	Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Non-whiting vessels	Revenue per vessel	Median	313,796	350,337	335,666	430,011	289,000
		25th Percentile	139,918	172,562	171,696	204,425	141,782
		75th Percentile	481,281	648,719	632,651	733,847	583,678
	Revenue per vessel per day	Median	4,568	9,252	9,045	10,383	8,380
		25th Percentile	2,795	6,322	5,989	7,265	5,796
		75th Percentile	6,961	12,438	11,701	14,372	11,424
	Revenue per vessel per metric ton caught	Median	1,637	1,777	2,077	1,834	1,346
		25th Percentile	1,383	1,498	1,755	1,584	1,093
		75th Percentile	1,925	2,893	3,941	2,838	1,637
Whiting vessels	Revenue per vessel	Median	649,064	1,330,513	1,412,396	1,410,982	1,147,690
		25th Percentile	407,274	891,912	936,581	1,112,011	615,975
		75th Percentile	849,304	1,965,200	2,048,317	2,032,656	1,793,847
	Revenue per vessel per day	Median	10,213	14,832	17,994	13,940	11,773
		25th Percentile	6,826	11,607	13,426	11,739	9,202
		75th Percentile	16,443	18,923	23,036	17,964	14,742
	Revenue per vessel per metric ton caught	Median	298	259	313	229	222
		25th Percentile	229	237	289	207	202
		75th Percentile	484	293	367	250	243

Note: All values represent averages across the period. The columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 39. Catcher Vessel Whiting and Non-Whiting Variable Cost Metrics

Vessel Type	Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Non-whiting vessels	Variable cost per vessel	Median	198,411	227,640	213,838	260,191	212,342
		25th Percentile	100,296	117,527	106,988	141,645	106,581
		75th Percentile	310,552	384,099	375,435	413,073	365,955
	Variable cost per vessel/day	Median	2,954	5,670	5,550	6,158	5,332
		25th Percentile	1,942	4,138	3,788	4,603	4,110
		75th Percentile	4,137	7,296	7,142	8,224	6,560
	Variable cost per vessel/metric ton caught	Median	1,045	1,132	1,302	1,147	905
		25th Percentile	839	922	1,081	923	722
		75th Percentile	1,358	1,964	2,561	1,961	1,221
Whiting vessels	Variable cost per vessel	Median	392,967	807,613	819,670	812,207	787,948
		25th Percentile	237,874	497,399	493,065	604,001	396,215
		75th Percentile	490,742	1,164,037	1,170,227	1,155,153	1,165,183
	Variable cost per vessel/day	Median	6,605	8,505	9,624	8,137	7,474
		25th Percentile	4,081	6,752	7,637	6,360	6,037
		75th Percentile	8,607	10,881	12,665	9,948	9,585
	Variable cost per vessel/metric ton caught	Median	169	154	181	130	143
		25th Percentile	127	128	149	106	123
		75th Percentile	307	195	237	158	178

Note: All values represent averages across the period. The columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 40. Catcher Vessel Activities Revenue Metrics

Metric	Vessel Type	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Revenue per Vessel	DTS trawl	Median	327,658	235,624	317,155	254,270	115,065
		25th Percentile	128,865	122,894	177,512	126,637	50,878
		75th Percentile	483,044	423,729	558,837	471,984	206,589
	Gear switchers	Median		268,472	238,381	348,945	225,613
		25th Percentile		103,190	105,101	103,345	100,646
		75th Percentile		508,195	488,758	627,675	413,011
	Non-whiting midwater trawl	Median	-	204,465	91,903	299,121	222,372
		25th Percentile	-	79,756	38,369	115,441	85,457
		75th Percentile	-	356,594	229,839	452,437	387,507
	Non-whiting, non-DTS trawl	Median	47,525	170,816	142,827	189,789	186,831
		25th Percentile	17,989	77,581	66,728	87,603	81,124
		75th Percentile	97,903	380,616	340,555	408,661	402,646
Revenue per Vessel per Day	DTS trawl	Median	6,227	9,912	9,986	11,212	8,518
		25th Percentile	3,921	7,300	7,444	8,131	6,290
		75th Percentile	8,339	12,661	12,154	14,591	11,364
	Gear switchers	Median		9,619	8,403	12,660	8,099
		25th Percentile		5,290	4,792	7,334	3,868
		75th Percentile		14,095	12,959	17,364	12,245
	Non-whiting midwater trawl	Median	-	13,145	9,722	16,037	13,676
		25th Percentile	-	7,315	5,057	8,426	8,460
		75th Percentile	-	20,992	15,257	25,860	21,859
	Non-whiting, non-DTS trawl	Median	3,509	9,153	8,513	10,092	9,013
		25th Percentile	2,158	6,435	6,091	7,240	6,060
		75th Percentile	5,643	12,344	11,562	13,671	11,996
Revenue per Vessel per metric ton caught	DTS trawl	Median	1,601	1,578	1,800	1,656	1,222
		25th Percentile	1,328	1,389	1,594	1,481	1,042
		75th Percentile	1,904	1,815	2,077	1,901	1,400
	Gear switchers	Median		5,942	7,363	6,642	3,467
		25th Percentile		4,907	5,946	5,607	2,908
		75th Percentile		6,630	8,085	7,474	3,967
	Non-whiting midwater trawl	Median	-	911	1,316	837	579
		25th Percentile	-	790	1,214	680	477
		75th Percentile	-	1,021	1,412	968	682
	Non-whiting, non-DTS trawl	Median	1,676	1,847	2,141	1,885	1,443
		25th Percentile	1,275	1,610	1,796	1,708	1,280
		75th Percentile	2,098	2,133	2,528	2,140	1,632

Note: All values represent averages across the period. The columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

2.5.1.2 Outcomes by catcher vessel fishing activity

In addition to looking at outcomes across catcher vessels by type, this report also examines outcomes by the various catch share fishery activities that catcher vessels participate in (see *Catcher Vessel Activity Types* for definitions) to better contextualize trends at the vessel level and compare relative profitability trends.

The previous review also examined outcomes for catcher vessels based on the various activities that they participate in, spanning activities that target Pacific whiting (at-sea, i.e., MSCVs, and shoreside) and those that target non-whiting species. However, the number of non-whiting activities was limited to non-whiting trawl and fixed gear fisheries (referred to here as 'gear switchers'). In this report, we are also able to report outcomes for the non-whiting midwater trawl fishery as well as the DTS and non-DTS trawl fisheries. Because of these changes, comparisons to conclusions in the previous review may not be possible, but data for the entire pre-catch share and catch share period are provided and trends over the entire time series are discussed.

The gear-switching provision was intended to allow each vessel to determine its most profitable fishing strategy and to take advantage of the fixed gear price premium or target sablefish without concerns for trawl-caught constraining species quota. Analysis for the first catch share review found that despite the price premium, DTS trawling was more profitable per pound of sablefish quota. However, despite this and the relatively low number of vessels utilizing the gear switching provision, in 2015 it was found that 32% of the northern sablefish quota was caught by gear-switchers. During the gear switching action, the analytical document (PFMC, 2024a) discussed whether gear-switchers were willing to pay more for a pound of sablefish quota and therefore might be increasing the costs associated with quota leasing for trawl vessels. On average, vessel and trip profits per pound (VCNR) of sablefish for DTS trawl tend to be higher than for gear-switched vessels and trips but for a portion of DTS trawl vessels and trips the profits are lower than for gear-switching vessels and trips. This indicates that there is a wide range of profits per pound of sablefish quota within the trawl sector and therefore reducing the participation of gear-switchers in the quota market would be unlikely to impact the average quota price for sablefish. The trips on which trawl profits per pound of sablefish are lower than for gear switching tend to be those in which there is a higher portion of sablefish in the catch (and therefore less revenue from co-occurring species). Finally, years of high sablefish prices increase the proportion of the gear switched trips that are more profitable than DTS trips. Here, a comparison of trends in VCNR (an indicator of operating profits) for vessels while participating in each activity finds that while VCNR has increased for gear-switching (particularly in 2016–2019, where VCNR increased from 113,794 to 141,684), DTS trawling VCNR has declined, particularly after 2017. Overall, DTS trawling is the only catcher vessel fishing activity where average catch share VCNR is lower than the pre-catch share average, declining from $125,305 to $81,994. VCNR was its lowest in the time series between 2020 and 2023, at $33,912. The number of vessels participating in the DTS trawl fishery has declined significantly over time, with the largest change occurring after implementation from 108 in 2009 to 63 in 2011 and more slowly since, from 51 in

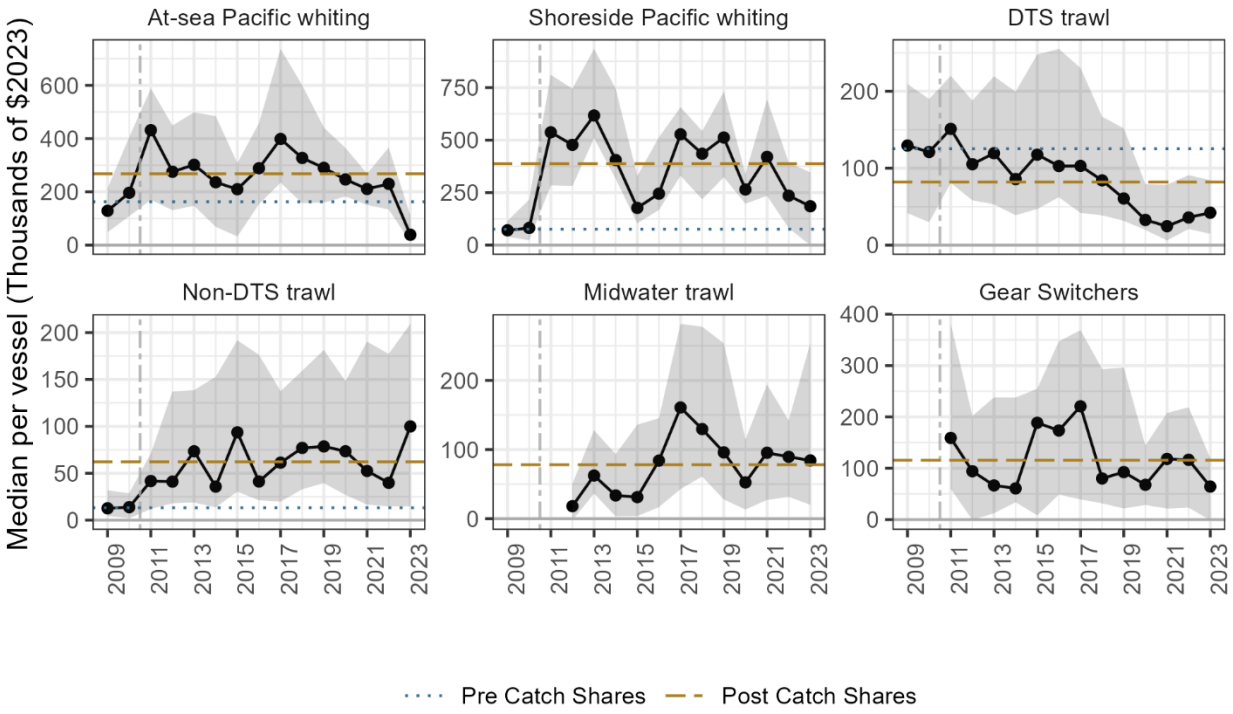
2015 to 35 in 2023. The number of gear-switching vessels has also declined overall from a high of 25 in 2011 to 8 in 2021. In 2022 and 2023, 11 vessels participated as gear switchers to prosecute the fishery.

As noted previously, all other CV activities have seen VCNR increases over the catch share period relative to the pre-catch share period. Median non-whiting, non-DTS trawl VCNR increased from $13,237 to $62,250 on average, and has increased over time. Despite seeing decreases in median VCNR corresponding with decreased median revenue between 2020 and 2022, average VCNR between 2020 and 2023 peaked at $66,398, higher than the 2011–2015 and the 2016–2019 averages. Notably, the number of vessels participating in the non-whiting, non-DTS trawl vessels has remained relatively consistent, fluctuating between 42 and 50 vessels between 2011 and 2023.

Due to increased catch limits for several midwater rockfish species such as widow rockfish, non-whiting midwater trawling has emerged since the last review. Since 2018, on average 24 vessels have used midwater gear to target non-whiting species, compared to 9 vessels between 2012 and 2017. 64% of the vessels that participated in this fishing activity were classified as whiting vessels as both strategies use midwater gear. While participation in the non-whiting midwater trawl fishery has increased, median VCNR has fluctuated, peaking in 2017 at $160,585 but declining to $80,343 on average between 2020 and 2023.

Mirroring the trend for whiting catcher vessels, VCNR and TCNR for both at-sea (i.e., MS-CVs) and shoreside Pacific whiting activities have increased substantially over the catch share period, following increases in Pacific whiting catch limits. Also following the overall whiting CV trend, both profitability indicators declined over the 2020–2023 periods. However, outcomes in 2023 were particularly poor for vessels who participated in the at-sea whiting fishery, with the lowest observed median VCNR in the time series at $39,063, compared to the 2020–2023 average of $181,658, due to low revenue. In addition, participation in these other catcher vessel activities has remained consistent, or increased.

Figure 25. Variable Cost Net Revenue for Catcher Vessel Activities



Note: At-sea Pacific whiting is vessels that deliver to motherships. Midwater trawl is non-whiting midwater trawl (also called midwater rockfish. Dashed vertical line denotes the beginning of the catch share program. All values are reported as 2023 dollars. Data were found by querying the FISHEyE catcher vessel database using the terms: "Catcher Vessels", "Economic: Variable cost net revenue, Total cost net revenue", "Statistic: Median per vessel", "Fisheries: "DTS trawl with trawl endorsement, Non-whiting midwater trawl, Non-whiting, non-DTS trawl with trawl endorsement, and Groundfish fixed gear with trawl endorsement" "Vessel type: All vessels", "Years: 2009 to 2023" and "GDP deflation year: 2023".

Source: FISHEyE

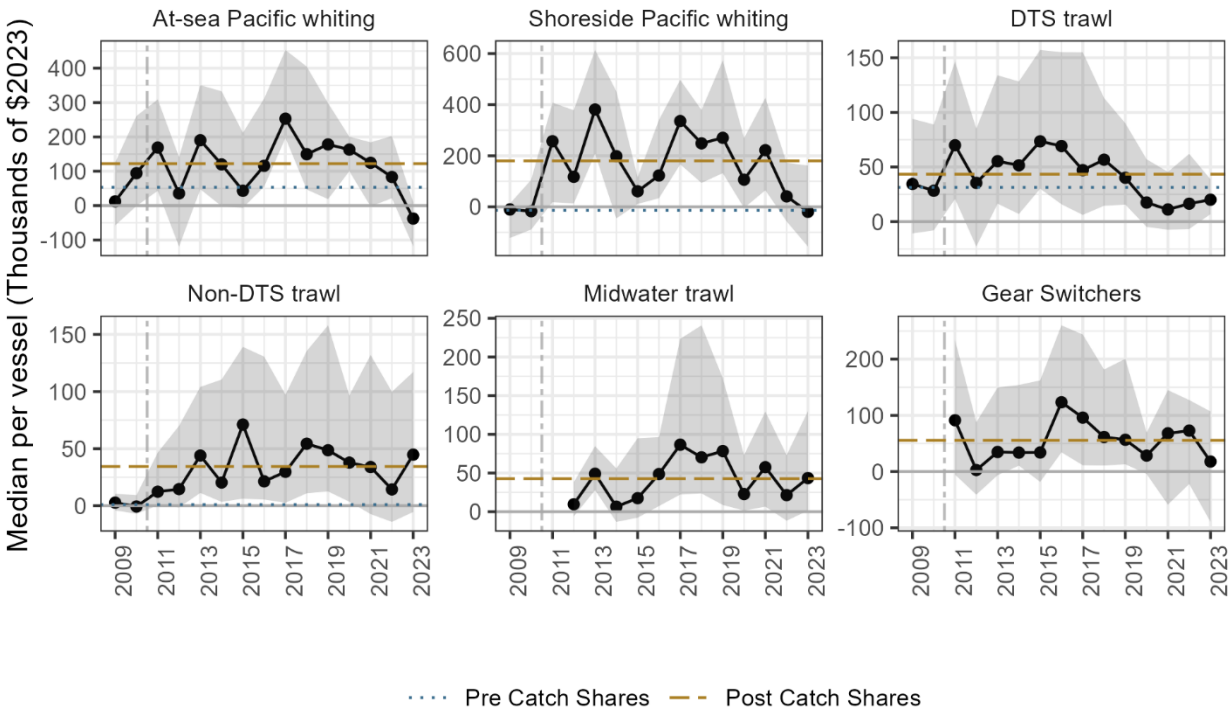
Table 41. Catcher Vessel Activity Variable Cost Net Revenue

Activity	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
DTS trawl	Median	125,305	81,994	115,914	87,678	33,912
	25th Percentile	35,834	39,674	55,749	43,733	15,522
	75th Percentile	199,659	170,148	214,922	201,009	83,319
Non-DTS trawl	Median	13,237	62,250	57,115	64,522	66,398
	25th Percentile	3,213	21,533	18,620	28,402	18,305
	75th Percentile	30,191	159,271	138,278	163,581	181,202
Non-Whiting Midwater trawl	Median	-	78,058	36,305	117,527	80,343
	25th Percentile	-	23,579	10,435	37,200	23,102
	75th Percentile	-	172,449	101,832	239,441	176,074
Gear Switchers	Median	-	115,543	113,794	141,684	91,587
	25th Percentile	-	25,209	22,807	35,363	18,058
	75th Percentile	-	254,419	262,629	326,180	172,394
Shoreside Pacific whiting	Median	76,112	387,517	442,695	429,821	276,239
	25th Percentile	31,839	234,639	299,169	260,175	128,441
	75th Percentile	165,847	597,958	712,425	610,379	442,453
At-sea Pacific whiting	Median	162,875	268,180	290,983	326,200	181,658
	25th Percentile	78,848	133,722	110,407	176,580	120,007
	75th Percentile	309,517	436,300	465,333	558,807	277,501

Note: At-sea Pacific whiting is vessels that deliver to motherships. VCNR is reported as the median per vessel. All values represent averages across the period. The columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Figure 26. Total Cost Net Revenue for Catcher Vessel Activities



Note: At-sea Pacific whiting is vessels that deliver to motherships. Midwater trawl is non-whiting midwater trawl (also called midwater rockfish). Dashed vertical line denotes the beginning of the catch share program. All values are reported as 2023 dollars. Data were found by querying the FISHEyE catcher vessel database using the terms: "Catcher Vessels", "Economic: Variable cost net revenue, Total cost net revenue", "Statistic: Median per vessel", "Fisheries: "DTS trawl with trawl endorsement, Non-whiting midwater trawl, Non-whiting, non-DTS trawl with trawl endorsement, and Groundfish fixed gear with trawl endorsement" "Vessel type: All vessels", "Years: 2009 to 2023" and "GDP deflation year: 2023".

Source: FISHEyE

Table 42. Catcher Vessel Activity Total Cost Net Revenue

Activity	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
DTS trawl	Median	31,388	43,402	57,164	53,312	16,291
	25th Percentile	-9,325	7,114	10,365	13,108	-2,944
	75th Percentile	91,477	105,167	130,162	128,266	50,825
Non-DTS trawl	Median	1,054	34,393	32,473	38,505	32,682
	25th Percentile	-5,492	2,192	3,979	7,930	-5,779
	75th Percentile	9,881	110,507	94,002	130,297	111,349
Non-Whiting Midwater trawl	Median	-	42,586	20,594	70,919	36,244
	25th Percentile	-	5,005	188	15,430	-604
	75th Percentile	-	117,650	68,312	183,264	101,374
Gear Switchers	Median	-	55,502	39,357	84,388	46,797
	25th Percentile	-	-12,663	-12,046	17,460	-43,557
	75th Percentile	-	163,211	157,488	221,520	112,058
Shoreside Pacific whiting	Median	-13,810	180,096	202,917	244,325	87,340
	25th Percentile	-105,442	36,877	41,056	106,558	-38,029
	75th Percentile	58,998	368,214	393,503	447,476	257,340
At-sea Pacific whiting*	Median	53,388	122,113	111,508	174,178	83,305
	25th Percentile	-29,307	21,803	-7,242	79,683	229
	75th Percentile	193,077	262,230	269,049	366,885	149,050

*Note: *At-sea Pacific whiting is vessels that deliver to motherships. TCNR is reported as the median per vessel. All values represent averages across the period. The columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.*

Source: FISHEyE

Table 43. Catcher Vessel Activity Participation, Effort, and Landed Weight

Metric	Vessel Type	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Number of Vessels	DTS trawl with trawl endorsement	Total	103	49	56	50	39
	Groundfish fixed gear with trawl endorsement	Total	8	16	19	17	10
	Non-whiting midwater trawl	Total	-	16	8	17	25
	Non-whiting, non-DTS trawl with trawl endorsement	Total	74	44	43	47	44
Days at Sea	DTS trawl with trawl endorsement	Median	52	24	33	24	13
		25th Percentile	24	13	19	12	7
		75th Percentile	73	41	56	41	23
	Gear Switching	Median	-	29	28	27	31
		25th Percentile	-	16	17	13	18
		75th Percentile	-	42	41	36	50
	Non-whiting midwater trawl	Median	-	15	11	18	16
		25th Percentile	-	7	7	9	7
		75th Percentile	-	25	18	27	29
	Non-whiting, non-DTS trawl with trawl endorsement	Median	11	20	19	19	22
		25th Percentile	5	10	8	9	12
		75th Percentile	27	43	42	40	47
Landed Weight	DTS trawl with trawl endorsement	Median	436,056	312,015	373,323	333,168	214,229
		25th Percentile	175,091	156,221	209,531	157,808	87,996
		75th Percentile	651,949	561,965	653,576	624,338	385,078
	Gear Switching	Median	-	118,329	80,674	119,684	164,042
		25th Percentile	-	56,414	36,846	43,401	93,887
		75th Percentile	-	194,828	137,348	199,785	261,720
	Non-whiting midwater trawl	Median	-	668,072	184,590	941,400	878,228
		25th Percentile	-	244,210	70,095	326,197	336,339
		75th Percentile	-	1,115,139	393,285	1,435,283	1,516,850
	Non-whiting, non-DTS trawl with trawl endorsement	Median	70,290	216,184	143,213	228,626	294,956
		25th Percentile	22,822	100,901	66,637	114,776	129,856
		75th Percentile	154,620	475,368	395,047	457,974	593,161

Note: All values represent averages across the period. The columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

2.5.2 Motherships

Key takeaways:

- Conclusions from the previous review regarding the average economic performance of motherships generally hold between 2011 and 2023. While VCNR is higher than the pre-catch share average, TCNR remains lower.
- Despite revenue per metric ton of purchases and production generally increasing in the 2020–2023 period (Table 46), revenue per vessel declined almost 45% for the median vessel, owing to declines in the average number of days at sea, particularly in 2020 and 2021.

The first review found that in the first five years of the program, mothership sector revenue increased by 39%, leading to increases in VCNR, coincident with higher average allocations of Pacific whiting. However, similar to the other at-sea sectors, it found that median VCNR and TCNR per metric ton was lower in the catch share period. It also found that anomalous ocean conditions and impacts on participation decisions between the West Coast and Alaska strongly affected outcomes in 2015. However, it also concluded that due to common ownership between at least some MS-CVs and motherships, earnings from the catcher vessel sector may be shared by motherships, thus VCNR and TCNR alone may not be the most precise indicators of profitability for motherships.

Updating this analysis finds that the conclusions of the first review generally hold. While median VCNR between 2011 and 2023 on average remains higher than the pre-CS period, allocations remained high, and even increased (Table 44, Figure 5). Similar to the past review, median TCNR across the entire catch share period for the MS sector also remains lower on average than the pre-CS period, though it has increased relative to the 2011–2015 average (from -437,716 to 320,688). Similar to other sectors, both indicators of profitability declined between 2020 and 2023. Median VCNR was over $1.3 million lower on average between 2020 and 2023 compared to the prior four years. Despite revenue per metric ton of purchases and production generally increasing in the 2020–2023 period (Table 46), revenue per vessel declined almost 45% for the median vessel, owing to declines in the average number of days at sea, particularly in 2020 and 2021.

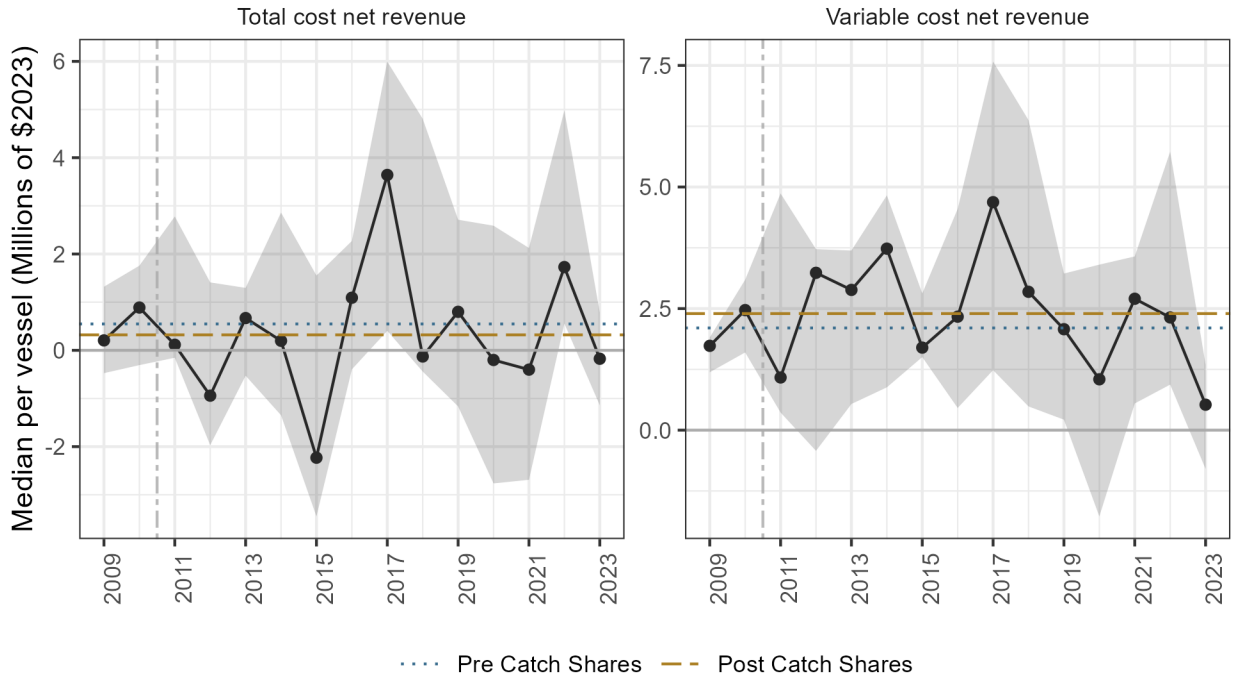
Table 44. Mothership Vessel Economic Outcomes and Participation

Year	Median VCNR per vessel ($)	VCNR 25th Percentile ($)	VCNR 75th Percentile ($)	Median TCNR per vessel ($)	TCNR 25th Percentile ($)	TCNR 75th Percentile ($)	Average Number of vessels
Pre-CS	2,101,440	1,394,934	2,499,077	547,327	-390,278	1,538,778	6.0
CS	2,397,315	320,990	4,283,653	320,688	-1,159,708	2,780,825	4.9
2011–2015	2,526,552	571,893	3,983,887	-437,716	-1,489,030	1,979,426	4.6
2016–2019	2,985,735	599,081	5,430,561	1,351,349	-398,709	3,945,795	5.3
2020–2023	1,647,348	-270,729	3,511,454	238,031	-1,509,055	2,617,604	5.0

Note: All values represent annual averages over the time period. VCNR and TCNR are reported as the median per vessel. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Figure 27. Mothership Total and Variable Cost Net Revenue



Note: Dashed vertical line denotes the beginning of the catch share program. All values are reported as 2023 dollars. Data were found by querying the FISHEyE catcher vessel database using the terms: "Mothership Vessels", "Economic: Variable cost net revenue, Total cost net revenue", "Statistic: Median per vessel", "Years: 2009 to 2023" and "GDP deflation year: 2023."

Source: FISHEyE

Table 45. Total Mothership Purchase Weight, Days at Sea, and Participation

Period	Purchase Weight (Thousands of mt)	Median Days at Sea	Average Number of Vessels
Pre-CS	32.7	24.8	6.0
CS	49.3	51.3	4.9
2011–2015	46.3	56.6	4.6
2016–2019	61.6	58	5.3
2020–2023	40.9	37.9	5.0

Note: Revenue is reported as the median per vessel. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 46. Mothership Revenue Metrics

Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Revenue per vessel	Median	5,427,560	8,618,413	9,178,977	10,643,677	5,892,445
	25th percentile	3,852,710	4,173,278	4,860,592	4,144,871	3,342,544
	75th percentile	6,209,880	13,234,683	13,669,873	16,215,626	9,709,752
Revenue per vessel per day	Median	213,128	176,208	174,657	172,994	181,359
	25th percentile	181,320	121,598	122,307	121,085	121,224
	75th percentile	258,960	200,602	200,390	196,722	204,749
Revenue per vessel per metric ton purchased	Median	1,085	863	921	793	862
	25th percentile	930	760	839	732	689
	75th percentile	1,182	980	1,058	894	969
Revenue per vessel per metric ton produced	Median	3,294	3,059	3,053	2,973	3,155
	25th percentile	2,667	2,291	2,156	2,357	2,393
	75th percentile	3,925	3,308	3,278	3,170	3,482

Note: All values represent averages across the period. The right five columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 47. Mothership Variable Cost Metrics

Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Variable cost per vessel	Median	3,219,027	6,243,128	6,082,410	7,704,871	4,982,283
	25th Percentile	2,228,338	3,503,653	4,211,805	3,417,476	2,704,640
	75th Percentile	4,362,588	9,189,012	9,993,595	10,498,924	6,873,371
Variable cost per vessel/day	Median	128,221	125,156	128,912	119,316	126,301
	25th Percentile	97,311	96,583	94,303	95,228	100,789
	75th Percentile	163,796	149,709	152,454	138,867	157,120
Variable cost per vessel/metric ton purchased	Median	654	657	711	597	649
	25th Percentile	578	582	662	549	515
	75th Percentile	706	808	893	686	825
Variable cost per vessel/metric ton produced	Median	2,037	2,158	2,199	2,000	2,265
	25th Percentile	1,810	1,801	1,863	1,769	1,756
	75th Percentile	2,178	2,661	2,522	2,500	2,995

Note: All values represent averages across the period. The right five columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

2.5.3 Catcher-Processors

Key takeaways:

- Average revenue, VCNR, and TCNR per vessel have increased since the last review, following increases in Pacific whiting catch limits, catch, and revenue.

- Both indicators of profitability declined dramatically in 2023, due to sharp decreases in catch, as well as average revenue per vessel and per metric ton caught, reflecting declines in production prices and total production value for surimi and fillets.

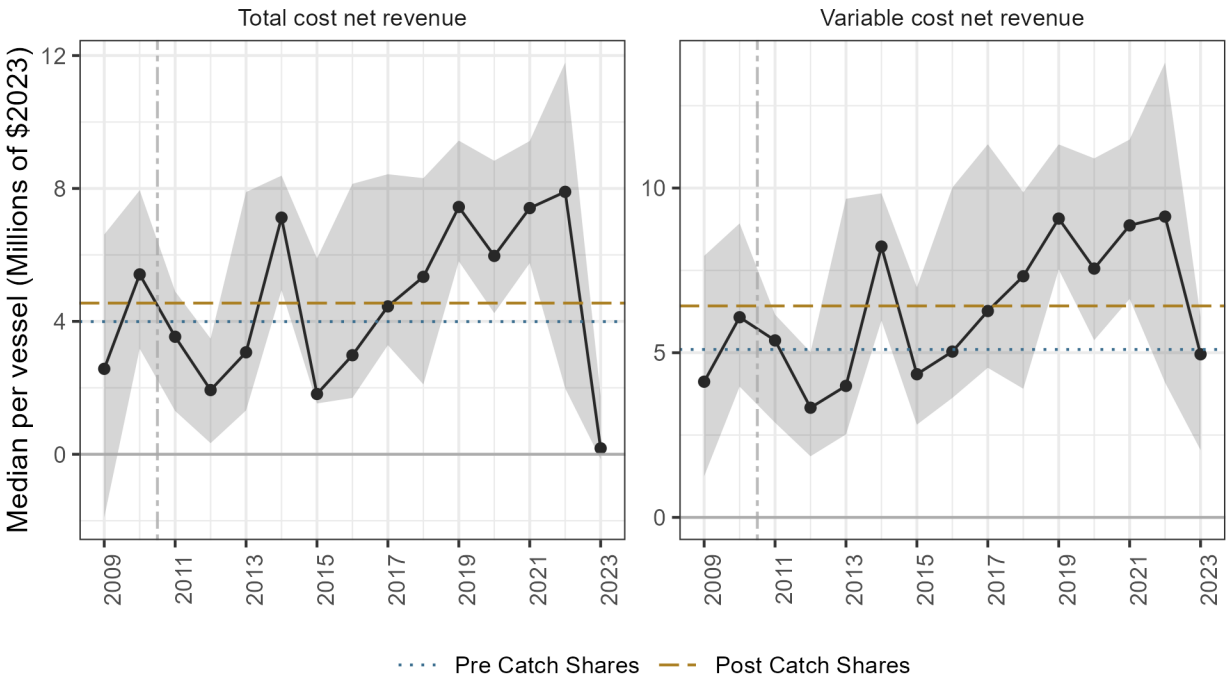
Catcher-processors were not expected to experience changes under the catch share program because they had been operating under a cooperative since 1997, and the catch share program only formalized this arrangement (PFMC & NMFS, 2017). While the previous review saw general increases in revenue over the first five years, with the exception of the anomalous year in 2015. However, similar to other Pacific whiting sectors, these increases followed increases in Pacific whiting catch limits (PFMC & NMFS, 2017). However, despite increased revenue, the previous review found that VCNR and TCNR declined on average from the pre-catch share period.

Since 2015, revenue, VCNR, and TCNR have generally increased (Figure 28), following even higher catch limits and total catch by the sector (Figure 5). Exceptions include both 2020 and 2023. In 2020, VCNR declined as a result of decreased catch and revenue (median revenue decreased by 20%). In addition, variable costs did not decrease as much as revenue (by 10%), in part because some costs increased between 2019 and 2020, notably observer costs, even though average days at sea per vessel declined between years.[21] This increase may in part be due to COVID-19 outbreaks, which required a 14-day quarantine before returning to fishing, that likely led to increased costs (West Coast July 2020 Snapshot).

In 2023, median VCNR plummeted 44% from $9 million to $5 million per vessel, following a 48% drop in median revenue. While median revenue per day at sea and per metric ton produced declined from 2022 levels, median revenue per metric ton caught was the lowest in the time series at $625, declining 47% from $1,180 in 2022, reflecting declines in production prices for most product types, but particularly for surimi and fillets (see Section 2.3.5, Figure 17), the highest value product types (Figure 18).

[21] Data available on FISHEyE

Figure 28. Catcher-Processor Total and Variable Cost Net Revenue



Note: Dashed vertical line denotes the beginning of the catch share program. All values are reported as 2023 dollars Data were found by querying the FISHEyE catcher vessel database using the terms: "Catcher-Processor Vessels", "Economic: Variable cost net revenue, Total cost net revenue", "Statistic: Median per vessel", "Years: 2009 to 2023" and "GDP deflation year: 2023."

Source: FISHEyE

Table 48. Catcher-Processor Economic Outcomes and Participation

Year	Median VCNR per vessel ($)	VCNR 25th Percentile ($)	VCNR 75th Percentile ($)	Median TCNR per vessel ($)	TCNR 25th Percentile ($)	TCNR 75th Percentile ($)	Average Number of vessels
CS	4,550,125	2,628,818	7,436,072	6,420,555	4,139,034	9,420,371	9.2
Pre-CS	3,992,748	639,765	7,278,173	5,098,285	2,611,626	8,432,796	5.5
2011–2015	3,495,255	1,886,406	6,110,364	5,053,036	3,209,865	7,534,477	9.0
2016–2019	5,054,096	3,224,030	8,579,024	6,923,823	4,901,496	10,633,309	9.0
2020–2023	5,364,740	2,961,622	7,950,255	7,626,686	4,538,034	10,564,801	9.5

Note: All values represent averages across the period. VCNR and TCNR are reported as the median per vessel. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 49. Catcher-Processor Fixed and Variable Costs

Year	Median Fixed Cost ($)	Fixed Cost 25th Percentile ($)	Fixed Cost 75th Percentile ($)	Median Variable Cost ($)	Variable Cost 25th Percentile ($)	Variable Cost 75th Percentile ($)
Pre-CS	1,133,292	1,007,183	2,450,991	3,124,593	2,188,341	6,062,211
CS	1,636,353	1,246,724	2,319,231	5,255,978	4,249,361	6,252,115
2011–2015	1,385,827	998,098	1,777,423	4,374,933	3,196,610	4,953,733
2016–2019	1,827,508	1,415,479	2,465,201	6,031,701	5,326,551	7,281,764
2020–2023	1,758,356	1,388,752	2,850,523	5,581,561	4,488,108	6,845,445

Note: All values represent averages across the period. Fixed and Variable costs are reported as the median per vessel. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 50. Catcher-Processor Revenue and Effort

Year	Median Per Vessel Revenue ($)	Revenue 25th Percentile ($)	Revenue 75th Percentile ($)	Total Catch Weight (Thousands of mt)	Median Days at Sea
Pre-CS	8,144,466	4,943,723	14,495,006	44.4	17.0
CS	11,917,844	8,700,411	15,017,777	100.1	14.4
2011–2015	9,671,600	6,846,994	11,983,426	75.2	13.3
2016–2019	13,138,857	10,261,273	17,819,415	118.5	19.3
2020–2023	13,504,634	9,456,320	16,009,079	112.6	10.7

Note: All values represent averages across the period. Revenue is reported as the median per vessel. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 51. Catcher-Processor Revenue Metrics

Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Revenue per vessel	Median	8,144,466	11,917,844	9,671,600	13,138,857	13,504,634
	25th percentile	4,943,723	8,700,411	6,846,994	10,261,273	9,456,320
	75th percentile	14,495,006	15,017,777	11,983,426	17,819,415	16,009,079
Revenue per vessel per day	Median	210,246	211,812	210,580	195,602	229,563
	25th percentile	183,066	166,756	157,687	162,638	182,211
	75th percentile	221,981	239,149	230,264	230,132	259,273
Revenue per vessel per metric ton produced	Median	3,561	3,285	3,359	3,037	3,438
	25th percentile	3,442	3,124	3,099	2,930	3,349
	75th percentile	3,757	3,386	3,476	3,115	3,544
Revenue per vessel per metric ton caught	Median	1,311	1,101	1,175	1,052	1,058
	25th percentile	1,247	1,003	1,049	969	981
	75th percentile	1,346	1,227	1,254	1,129	1,292

Note: All values represent averages across the period. Revenue is reported as the median per vessel. The right five columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 52. Catcher-Processor Variable Cost Metrics

Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Variable cost per vessel	Median	3,124,593	5,255,978	4,374,933	6,031,701	5,581,561
	25th Percentile	2,188,341	4,249,361	3,196,610	5,326,551	4,488,108
	75th Percentile	6,062,211	6,252,115	4,953,733	7,281,764	6,845,445
Variable cost per vessel/day	Median	90,564	91,427	88,381	89,213	97,449
	25th Percentile	74,195	76,340	76,600	74,763	77,593
	75th Percentile	98,684	102,553	101,359	96,145	110,454
Variable cost per vessel /metric ton produced	Median	1,517	1,445	1,496	1,307	1,518
	25th Percentile	1,411	1,246	1,290	1,225	1,212
	75th Percentile	1,729	1,690	1,696	1,513	1,859
Variable cost per vessel /metric ton caught	Median	572	503	530	456	516
	25th Percentile	502	418	459	429	358
	75th Percentile	613	565	584	510	596

Note: All values represent averages across the period. The right five columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

2.5.4 Shorebased Processors

Key takeaways:

- While median non-whiting shorebased processor TCNR has increased slightly on average over the catch share period, the 75th and 25th percentiles have decreased.
- Between 2021 and 2023, both median VCNR and median TCNR decreased dramatically for whiting shorebased processors to $160,057 and -$1.2 million.

Under rationalization, it was expected that outcomes for the shorebased processing sector would be less predictable than others due to a number of factors (PFMC & NMFS, 2017). For whiting processors, it was anticipated that their supply would be more stable throughout the year even if there was some reduction in the capacity needed to process landings. Consistent with expectations, the previous review found that overall revenue increased, but average revenue per processor increased even more due to the drop in the number of processors.

For the non-whiting processors, rationalization was expected to increase revenues by increasing harvest volume and reducing average production costs. In the first review, it was found that non-whiting processors experienced increases in revenue but an even greater increase in expenses as a proportion of revenue, leading to negative changes in net revenue (PFMC & NMFS, 2017). It was also found that the season lengthened due to the catch share program and while there was not an increase in wholesale prices, there were indications that there was increased bargaining power for harvesters due to their increased flexibility in timing (Guldin & Anderson, 2018). First receivers and shorebased

processors depend greatly on the timing of landings and retail prices of the species that they process. In the last review, whiting processor net revenue had increased slightly compared to the pre-catch share period and non-whiting processor net revenue had declined when compared to the pre-catch share period (PFMC & NMFS, 2017).

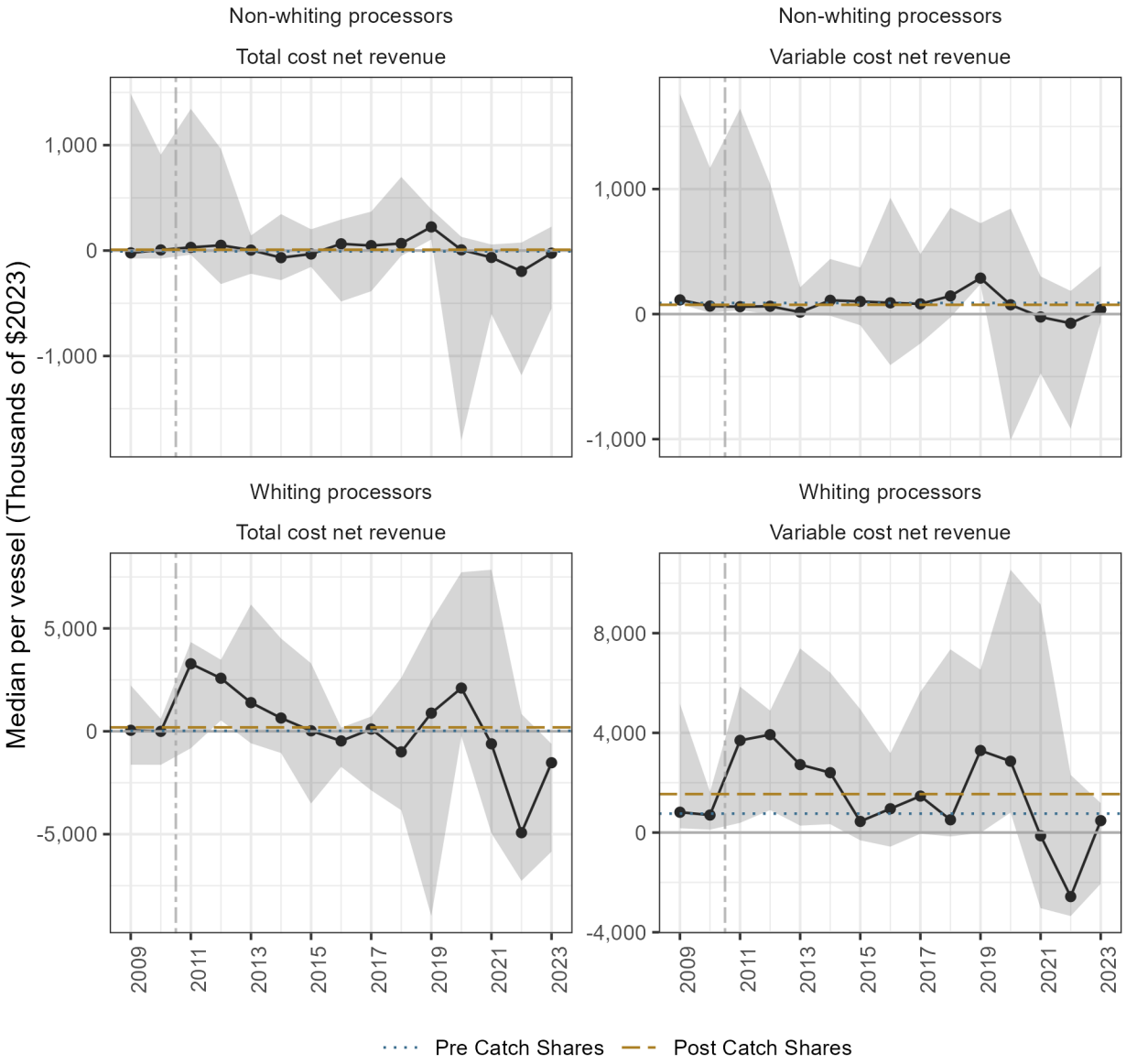
While on average the median TCNR per processor is higher than the pre-catch share period for non-whiting processors, (increasing from -$7,892 to $8,220), in any year median non-whiting processors' TCNR is close to zero, with large variability across processors at the 25th and 75th percentiles (Figure 29, Table 53, and Table 54). In particular, in the pre-catch share period, the difference between the median processor and 75th percentile was large, where, as noted previously, the bottom 50% of processors may have been operating at a loss (negative TCNR), while the top 25% of processors had a TCNR of $1.4 million or greater. However, over time the difference between the median processor and 75th percentile has shrunk and the difference between the median processor and 25th percentile has grown, indicating that the bottom 25% of processors have TCNRs much lower than the median. This is particularly true since 2020 where the 2020–2023 average 25th percentile TCNR was -$1.03 million and VCNR was -$615,308. However, due to the relatively small number of processors (between 7 and 10, Table 54),[22] changes in how individual companies are assigning costs and earnings to their operations complicates the ability to identify specific trends in net revenue.

Similar to whiting catcher vessels, whiting shorebased processors also saw average increases in VCNR and TCNR over the catch share period; however, there has been considerable variability both across years and across processors. Between 2021 and 2023, both VCNR and TCNR decreased dramatically for whiting shorebased processors. Median VCNR decreased from an average of $1.6 million between 2016 and 2019 to $160,057 between 2020 and 2023, driven by reductions in revenue with relatively constant variable costs. Over the same period, median TCNR dropped from an average of -$199,448 to -$1.2 million.

In contrast to non-whiting processors, the difference between the median processor and 75th percentile has generally increased (with the exception of 2019), indicating the top 25% of processors are faring substantially better than the median and 25th percentile. Between 2020 and 2023, median VCNR was $160,057 and median TCNR was -$1.2 million, on average. However, the 75th percentile VCNR was $5.8 million and 75th percentile TCNR was $3.9 million, which is influenced by particularly high 75th percentiles in 2020 and 2021 (Table 53, Figure 29).

[22] Note that in contrast to vessel participation, here the number of shorebased processors represents the number of companies, not unique plants (See Steiner 2021 for more information)

Figure 29. Shorebased Processor Total Cost Net Revenue



Note: Dashed vertical line denotes the beginning of the catch share program. All values are reported as 2023 dollars. Data were found by querying the FISHEyE catcher vessel database using the terms: "Shorebased Processors", "Economic: Total cost net revenue", "Statistic: Median per processor". In "Production activities: Groundfish production", "Processor type: Whiting processors," "Years: 2009 to 2023" and "GDP deflation year: 2023."

Source: FISHEyE

Table 53. Shorebased Whiting Processors Total and Variable Cost Net Revenue

Year	Median VCNR per processor ($)	VCNR 25th Percentile ($)	VCNR 75th Percentile ($)	Median TCNR per processor ($)	TCNR 25th Percentile ($)	TCNR 75th Percentile ($)	Average number of processors
Pre-CS	758,822	145,140	3,394,046	23,343	-1,625,729	1,417,219	12
CS	1,542,858	-524,244	5,798,230	190,510	-3,162,844	3,572,337	8
2011–2015	2,639,213	319,098	5,897,930	1,583,662	-1,086,239	4,354,822	8
2016–2019	1,555,216	-194,575	5,676,664	-119,448	-4,350,311	2,217,124	8
2020–2023	160,057	-1,908,092	5,795,169	-1,240,974	-4,571,133	3,949,445	7

Note: VCNR and TCNR are reported as the median per vessel. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars. Note that in contrast to vessel participation, here the number of shorebased processors represents the number of companies, not unique plants (See Steiner 2021 for more information).

Source: FISHEyE

Table 54. Shorebased Non-whiting Processors Total and Variable Cost Net Revenue

Year	Median VCNR per processor ($)	VCNR 25th Percentile ($)	VCNR 75th Percentile ($)	Median TCNR per processor ($)	TCNR 25th Percentile ($)	TCNR 75th Percentile ($)	Average number of processors
Pre-CS	88,603	46,015	1,464,586	-7,892	-75,144	1,197,263	8
CS	74,269	-227,754	646,652	8,220	-458,080	403,162	8
2011–2015	69,619	-14,360	741,797	-3,016	-202,264	599,422	10
2016–2019	150,966	-106,944	746,598	100,612	-203,314	438,436	7
2020–2023	3,384	-615,308	427,776	-70,129	-1,032,617	122,565	8

Note: VCNR and TCNR are reported as the median per vessel. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars. Note that in contrast to vessel participation, here the number of shorebased processors represents the number of companies, not unique plants (See Steiner 2021 for more information).

Source: FISHEyE

Table 55. Whiting Processor Fixed and Variable Costs

Year	Median Fixed Cost ($)	Fixed Cost 25th Percentile ($)	Fixed Cost 75th Percentile ($)	Median Variable Cost ($)	Variable Cost 25th Percentile ($)	Variable Cost 75th Percentile ($)
CS	1,559,817	847,490	2,628,906	16,198,206	7,173,364	24,384,946
Pre-CS	694,394	212,376	1,931,491	3,655,195	1,513,641	14,266,559
2011–2015	1,254,992	486,983	2,189,077	13,423,746	4,405,549	20,502,290
2016–2019	1,631,402	870,766	3,152,062	18,756,942	7,563,288	25,299,146
2020–2023	1,869,263	1,274,847	2,655,537	17,107,544	10,243,210	28,324,065

Note: Fixed and Variable costs are reported as the median per processor. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 56. Whiting Shorebased Processor Revenue

Year	Median per Processor Revenue ($)	Revenue 25th Percentile ($)	Revenue 75th Percentile ($)	Average number of processors
CS	17,838,195	7,816,985	29,002,800	8
Pre-CS	4,470,767	1,928,640	16,177,333	12
2011–2015	14,747,595	5,212,737	26,702,532	8
2016–2019	20,770,567	7,870,005	31,867,840	8
2020–2023	18,769,074	11,019,273	29,013,096	7

Note: Revenue is reported as the median per processor. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars. Note that in contrast to vessel participation, here the number of shorebased processors represents the number of companies, not unique plants (See Steiner 2021 for more information).

Source: FISHEyE

Table 57. Non-Whiting Processor Fixed and Variable Costs

Year	Median Fixed Cost ($)	Fixed Cost 25th Percentile ($)	Fixed Cost 75th Percentile ($)	Median Variable Cost ($)	Variable Cost 25th Percentile ($)	Variable Cost 75th Percentile ($)
CS	119,503	37,999	306,233	3,396,973	876,954	7,391,594
Pre-CS	201,962	91,177	277,401	3,163,749	920,951	4,358,279
2011–2015	143,993	35,251	268,687	2,676,922	799,133	7,016,881
2016–2019	94,851	43,627	244,235	4,198,289	1,224,924	8,721,508
2020–2023	113,543	35,808	415,164	3,495,721	626,261	6,530,072

Note: Fixed and Variable costs are reported as the median per processor. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Table 58. Non-Whiting Shorebased Processor Revenue

Year	Median per Processor Revenue ($)	Revenue 25th Percentile ($)	Revenue 75th Percentile ($)	Average number of Processors
CS	3,200,385	988,473	7,847,885	8
Pre-CS	3,462,162	954,825	6,793,073	8
2011–2015	2,189,269	869,757	7,722,753	10
2016–2019	4,226,913	1,345,487	9,241,525	7
2020–2023	3,437,750	779,854	6,610,661	8

Note: Revenue is reported as the median per processor. All values represent averages across the period. The bottom four rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars. Note that in contrast to vessel participation, here the number of shorebased processors represents the number of companies, not unique plants (See Steiner 2021 for more information)

Source: FISHEyE

Table 59. Processor Variable Cost Metrics

Processor Type	Metric	Statistic	Pre-CS	CS	2011–2015	2016–2019	2020–2023
Non-whiting processors	Variable cost per processor	Median	3,163,749	3,323,277	2,676,922	4,198,289	3,256,207
		25th Percentile	920,951	876,954	799,133	1,224,924	626,261
		75th Percentile	4,358,279	7,116,810	6,838,552	8,281,917	6,299,524
	Variable cost per processor/metric ton produced	Median	8,456	9,160	9,534	10,050	7,803
		25th Percentile	6,566	6,216	6,235	7,935	4,474
		75th Percentile	11,026	11,730	11,709	13,469	10,016
Whiting processors	Variable cost per processor	Median	3,655,195	15,825,088	13,423,746	18,105,846	16,546,007
		25th Percentile	1,494,507	7,173,364	4,405,549	7,563,288	10,243,210
		75th Percentile	14,160,603	23,740,967	19,226,557	24,813,501	28,311,445
	Variable cost per processor/metric ton produced	Median	2,592	1,780	1,893	1,755	1,662
		25th Percentile	1,095	995	1,108	908	939
		75th Percentile	4,323	2,505	2,751	2,345	2,358

Note: All values represent averages across the period. The right five columns are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

2.5.5 QS Owners

Key Takeaways:

- The number of quota holders has declined since the last program review, but increased relative to the initial allocation.
- At the state level relative to the total, the percentage of quota owners has remained relatively stable from 2011 through 2025.
- The Quota Share Owner Survey, implemented after the last program review, provides data on QP leases.
- QP lease revenue ranged from $3.3 million (2023) to $5.6 million (2019).
- The majority of QP lease revenue is paid to inactive QS holders each year (between 57% and 64%).
- VCNR is less when quota leases are included in the calculation.

This section considers the change in the number of quota owners issued QP. Quota owners are grouped by community and state (Table 60). Information about the annual percentage of quota held by community residents using these same groupings is provided in Section 2.7.4.

Due to transfer limits imposed by the catch share program, the total number of quota owners was stable from 2011 through 2014. After those limitations expired, the number of quota owners increased through 2018 and has declined each year since. Comparing quota owner counts in 2011 to 2025, the total number increased by 15 (11%).

Table 60. Number of quota owners that were allocated QP by community and year

Community	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Alaska Total	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**1**	**1**
Washington Total	**33**	**33**	**33**	**33**	**34**	**40**	**41**	**41**	**43**	**42**	**42**	**42**	**42**	**38**	**37**
Bellingham	1	1	1	1	1	2	2	2	3	3	3	3	3	1	1
Other Puget Sound	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3
Seattle Metro	14	14	14	14	15	20	21	21	22	22	22	22	22	21	22
Westport Area	4	4	4	4	4	4	4	4	4	4	4	4	4	3	3
Ilwaco Area	4	4	4	4	4	4	4	4	4	3	3	3	3	3	3
Other Washington	6	6	6	6	6	6	6	6	6	6	6	6	6	7	5
Oregon Total	**75**	**75**	**75**	**75**	**79**	**84**	**87**	**88**	**79**	**80**	**80**	**79**	**80**	**82**	**82**
Astoria Area	20	20	20	20	20	20	21	21	21	21	21	20	20	21	20
Portland Metro	5	5	5	5	5	7	7	7	6	6	6	6	7	7	7
Garibaldi	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2
Newport Area	25	25	25	25	29	31	31	32	28	30	30	30	30	31	33
Coos Bay Area	16	16	16	16	16	16	17	17	13	13	13	13	13	13	13
Brookings	3	3	3	3	3	4	4	4	4	3	3	3	3	3	3
Other Oregon	3	3	3	3	3	3	4	4	4	4	4	4	4	4	4
California Total	**28**	**29**	**28**	**28**	**30**	**36**	**38**	**39**	**36**	**34**	**34**	**34**	**32**	**33**	**33**
Crescent City/Eureka Area	8	8	8	8	8	8	8	8	7	6	6	6	6	6	6
Fort Bragg Area	7	7	7	7	8	10	10	11	9	9	9	9	9	9	9
San Francisco/Half Moon Bay	6	7	6	6	6	6	7	7	6	6	6	6	5	5	5
Monterey	4	4	4	4	4	5	6	6	6	5	5	5	5	6	6
Morro Bay Area					1	3	3	3	3	3	3	3	3	3	3
Other California	3	3	3	3	3	4	4	4	5	5	5	5	4	4	4
Total	**138**	**139**	**138**	**138**	**145**	**162**	**168**	**170**	**160**	**158**	**158**	**157**	**156**	**154**	**153**

Source: Personal communication Dan Holland

By state, the number of quota holders largely mirrored the overall trend. Oregon typically had about twice the number of quota owners as either Washington or California. Alaska quota owners declined from two to one.

At the community level, the Seattle metropolitan statistical area was home to the majority of Washington quota owners (51% in 2017 and 59% in 2025). Only the "Other Washington" group had more than 10% of the Washington total in either 2017 or 2025 (15% in 2017 and 14% in 2025). The number of Oregon quota owners was most concentrated in the Newport area (36% in 2017 and 40% in 2025), Astoria area (24% in both 2017 and 2025), and Coos Bay area (20% in 2017 and 16% in 2025). All other Oregon community groups had 9% or less of the state total in 2017 and 2025.

California quota owners were more equally distributed by community. The Fort Bragg area had the most quota owners (26% in 2017 and 27% in 2025), but five of the six communities listed had 11% or more of the total in 2017 and 2025. Only the Morro Bay area had fewer than 10% of the total both years.

2.5.5.1 QP Lease Earnings and Net Revenue

During the first catch share program review, the Community Advisory Board identified a data gap related to quota share owners. Specifically, it was pointed out that there were no data available to determine whether Quota Share Owners were "active participants" in the fishery and what share of quota lease earnings were accruing to "inactive participants". A related concern was that net revenue calculations did not include the cost of leasing quota. In response, the NWFSC implemented the Quota Share Owner Survey, collecting two pieces of data: quota lease earnings and participation activities of quota owners. These data are now available from 2019 through 2023 and are incorporated into this program review. The collection of these data, combined with the EDC cost and earnings data and quota transactions and ownership interest data from the WCR allows for detailed analysis of quota leasing in the fishery. The following analyses leverage the new data obtained from the quota share owner survey (Connelly et al., 2022) as well as the new ownership relationships developed in Steiner & Connelly (2024).

Ownership by participation type

To address the topic of distribution of quota lease earnings by participant type, six mutually exclusive categories were developed (Connelly et al., 2022). Those categories are reflected in the tables and figures presented in this section. Participants were classified as "Active" if they were a vessel operator or crew member who fished on the West Coast or an employee of a fish dealer or fish processor. They were classified as "Capital Owner" if they were an owner of a fishing vessel, fish dealer, or processor.

Quota that was not owned by individuals when the survey was conducted is designated as an "Other Entity". This category includes trusts, estates, not-for-profit companies, government, and publicly held corporations. A small subset of QS holders has an unknown designation. This is the result of owners of vessels that received quota lease earnings but do not own quota shares and QS owners who did not submit a quota share owner survey because the quota share permit was not renewed.

The combination of the catcher vessel cost and earnings survey and quota share owner survey shows that between $1.9 and $3.5 million (57% and 64%) of quota lease earnings were paid to individuals who are classified as inactive from 2019 through 2023 (Table 61). There is no clear trend in the quota lease earnings paid to inactive participants, either in dollar amounts or percentage of the total over the period.

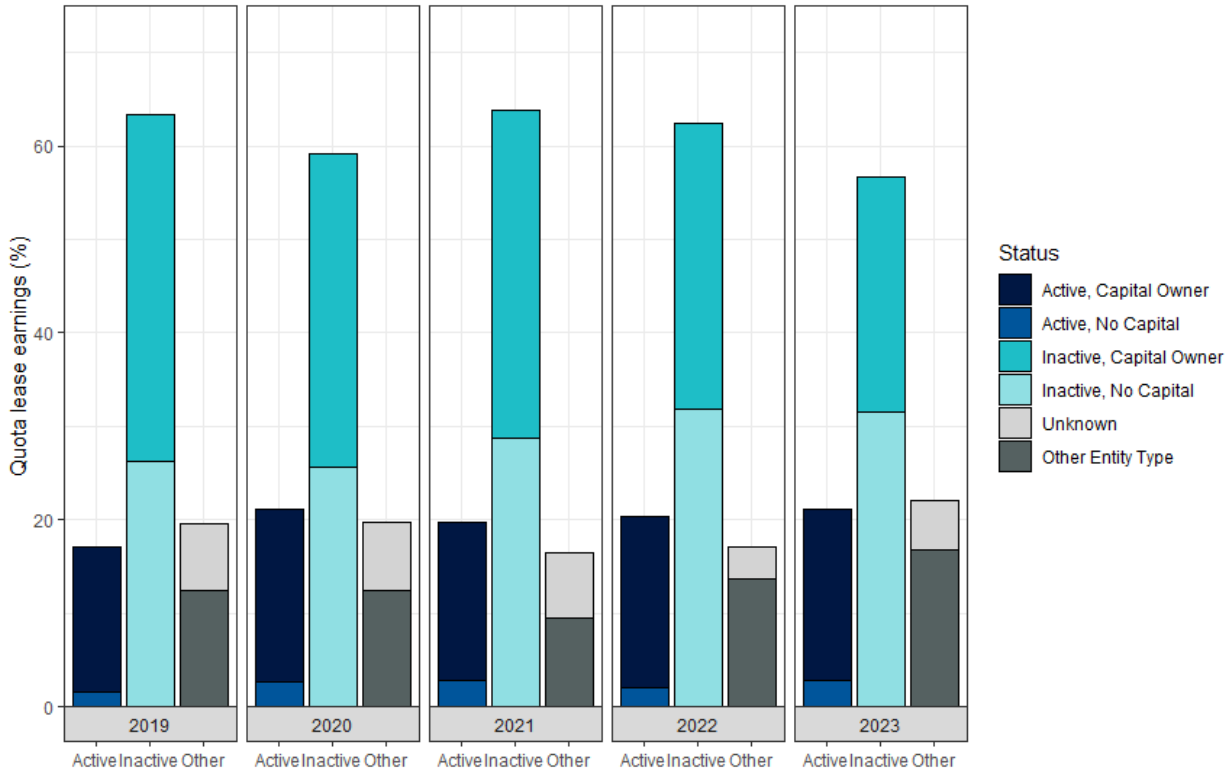
A concern often expressed regarding LAPPs is the QP that are leased by inactive quota holders instead of selling the QS and exiting the fishery. The data presented in this section indicate that the majority of the lease earnings accrue to inactive QS holders. However, one reason that may be occurring is that inactive QS holders would be expected to lease all of their holdings. In contrast, active participants may be more likely to lease only a portion of their QP to "balance" their quota portfolio.

Table 61. Total quota lease earnings ($) by ownership type

	2019	2020	2021	2022	2023
Total Number of Entities	184	161	157	162	139
Active, Capital Owner	$863,265	$661,409	$684,070	$786,822	$610,688
Active, No Capital	$88,437	$95,697	$116,540	$87,411	$92,324
Inactive, Capital Owner	$2,058,435	$1,202,850	$1,419,917	$1,313,666	$835,308
Inactive, No Capital	$1,463,886	$923,787	$1,167,396	$1,360,593	$1,042,705
Unknown	$398,927	$263,876	$283,759	$144,208	$174,030
Other Entity Type	$689,248	$445,568	$382,809	$587,906	$558,413
Total	**$5,562,197**	**$3,593,187**	**$4,054,492**	**$4,280,607**	**$3,313,468**
Percent Inactive Lease Earnings	63%	59%	64%	62%	57%

Source: Personal communication Erin Steiner ,Connelly et al., 2022)

Figure 30. Distribution of quota lease earnings (%) across participant status between 2019 and 2023.



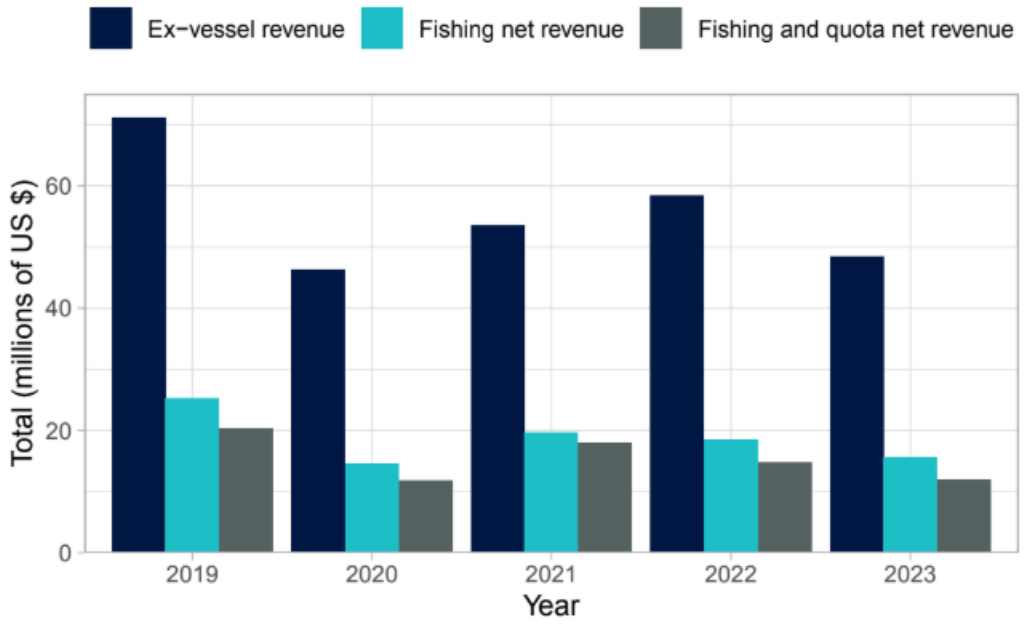
Source: Quota share owner survey, personal communication Erin Steiner, Connelly et al 2022

Net revenue, incorporating quota lease costs and earnings

An analysis incorporating lease costs and earnings into the net revenue calculations could not be conducted during the previous catch share program review because only quota lease earnings recorded by catcher vessels were captured prior to the implementation of the Quota Share Owner Survey component of the EDC program. This excluded persons who only owned QS and did not operate a vessel in the fishery.

A primary concern about quota earnings during the first review of the catch share program was the impact of quota lease payments on the profitability of active fishing businesses. In 2024, the NWFSC published a tech memo analyzing how the impacts of the definition of fishing business impacts the effects of quota on profitability (Steiner & Connelly, 2024). Figure 31 compares ex-vessel revenue, VCNR (indicator of operating profits excluding quota pound sales, and net revenue including quota pound sales. VCNR including quota pound sales, includes both the costs associated with leasing quota as well as any lease earnings received by fishing companies. A fishing company is defined as any company that operated within the IFQ program. Vessels that only fish in the MS/CV were not included in this analysis. It shows that VCNR is always lower when quota pound sales are included. This is due to lease revenue captured by entities that do not actively fish and, therefore, are not assigned to a fishing operation.

Figure 31. The change in total VCNR including and excluding quota sales, 2019 through 2023



Note: Fishing net revenue is variable cost net revenue (VCNR) as reported in the previous sections and fishing and quota net revenue is VCNR with quota costs and revenue included.

Source: Steiner & Connelly, 2024

2.5.6 Costs of Governance

Key takeaways:

- Median daily monitoring costs (observers and EM) vary across sectors. For motherships and catcher-processors, who carry two observers, costs have generally increased over time and peaked in 2020.
- For catcher vessels, whiting catcher vessels see the lowest median monitoring costs ($141 to $255 per day), due to their increased use of EM.
- Since the subsidy for monitoring costs expired in 2015, the median non-whiting catcher vessel paid between $612 and $722 per day for monitoring.
- Across the various activities that catcher vessels participate in, the median daily costs of monitoring were highest for catcher vessels while participating in the DTS trawl and non-DTS trawl fisheries—on average $541 and $516 per day, respectively, between 2020 and 2023.
- Declining revenue per day has caused monitoring costs as a percentage of revenue to generally increase over time. Monitoring costs as a proportion of revenue have been less than 1% for all sectors except for non-whiting catcher vessels, which overall have paid between 4.5% and 6.7% of their revenue towards monitoring and averaged 5% between 2016 and 2023.
- The agency-specific incremental costs associated with the IFQ component of the catch share program exceeded the 3% cost recovery cap in all years except for 2019–2021.

The implementation of the West Coast Groundfish Trawl Catch Share Program created new governance-related costs, primarily stemming from the requirement for full at-sea and shoreside monitoring, but also associated with cost recovery (described in Section 1.4.9). With respect to monitoring, three management objectives directly relate to this requirement: (1) Provide a mechanism for total catch accounting, (2) Promote practices that reduce bycatch and discard mortality and minimize ecological impacts, and (3) Provide for a viable, profitable, and efficient groundfish fishery. The monitoring program relates to these objectives by observer coverage accounting for total catch (objective 1), monitoring expecting to reduce bycatch and discard mortality (objective 2), and costs of the monitoring program being shouldered by the industry and related to the viability, profitability, and efficiency of the fishery (objective 3).

Monitoring and cost recovery fees include direct and indirect costs to the industry and have been identified as places where costs may be able to be reduced to improve economic outcomes. Specifically, in 2024, contractors were hired by the PFMC to explore governance-related industry costs and options to reduce these costs. The two primary costs that were explored in this work

include monitoring costs and costs of the Economic Data Collection (EDC) program. These costs include both direct industry costs, and program costs recovered through the cost recovery program and are summarized below. More information is available in the Phase Two Trawl Costs of Management Report (PFMC, 2024c). Options to reduce the costs outlined here related to monitoring, the EDC program, and possible trade-offs are discussed briefly and explored in more depth in the same report.

2.5.6.1 Monitoring Costs

Trawl Catch Share Program participants bear both direct costs for contracting observers and electronic monitoring services as well as indirect costs through the cost recovery fees paid for incremental costs of administering the program. This section reviews the former. Industry direct monitoring costs involve costs for both human observers, shoreside catch monitors, and/or electronic monitoring.

To assist with the sudden increase in observer costs at the onset of the program, NMFS subsidized the program for catcher vessels and shorebased first receivers in the first five years of the program. For catcher vessels, the subsidy declined from $330 per day in 2011 to $0 in 2016. For shorebased first receivers, it decreased from a maximum of $328 per day ($41 per hour) in 2011 to $0 in 2016 (Warlick et al., 2018).

The daily seaday rate for an observer ranged from $585 to $700 per day in 2024 (based on interviews conducted for 2024b).[23] In general, the annual operating cost of EM after all necessary equipment has been purchased, is expected to be less expensive than human monitors. In the development of the West Coast Groundfish EM program, it was estimated that the total annual cost of EM was estimated to be about $667,000 (including equipment, video review, program management, and maintenance) or about 34% of the cost of human observers, whose cost was estimated to be about $1,989,000 from the same time period (PFMC, 2024c). EM seaday rates were also estimated by activity, ranging from $142/day for midwater trawl to $390/day for fixed gear and $342/day for bottom trawl (see Table 7 in PFMC2024c) for more details).

The average realized daily cost of monitoring across sectors and vessel types, however, can vary greatly and depends on whether EM is used, the observer provider and fee structure, trip length, travel costs (if charged), and type of vessel. Motherships and catcher-processors are required to maintain two observers, leading to higher daily costs in these sectors (Figure 32). Based on EDC data, the average daily cost for the median catcher-processor in 2023 was $616 and $643 for the median mothership vessel (Table 62). Average daily monitoring costs for whiting catcher vessels, however, are much lower than non-whiting catcher vessels due to the use of EM (at $87.5 per day for the median vessel in 2023, Figure 32). Under the EM EFP, vessels participating in the program did not

[23] At the time the Trawl Costs of Management report was finalized, at least one provider had increased their seaday rate to $700/day, effective August 16, 2024 (PFMC 2024c)

pay for EM equipment or video review. Behind motherships and catcher-processors, non-whiting catcher vessels on average pay the highest rate for monitoring at $548 per day in 2023 (Table 62).

Figure 32. Median Daily Monitoring Costs Across Sectors

Note: In FISHEyE any vessel that targeted whiting is categorized as a whiting vessel. Any vessel that participated in at least one non-whiting groundfish trawl fishery and did not target whiting is a non-whiting vessel. Catcher vessel non-whiting, whiting, and fixed gear w/ trawl endorsement monitoring costs were found by querying the FISHEyE catcher vessel cost database using the terms: "cost category: Observers/EM", "Statistic: median per vessel", "Fisheries: All catch share fisheries combined" and "Vessel type: Non-whiting vessels and whiting vessels". Fixed gear w/ trawl endorsement monitoring costs were found by querying the FISHEyE catcher vessel cost database using the terms: "cost category: Observers/EM", "Statistic: median per vessel", "Fisheries: fixed gear with trawl endorsement" and "Vessel type: Non-whiting vessels". Mothership and catcher-processor vessel monitoring costs were found by querying "cost category: Observers" and "Statistic: median per vessel".

Source: FISHEyE

Table 62. Median Daily Monitoring Cost by Sector

	Catcher-processor vessels		Mothership vessels		Non-whiting catcher vessels		Whiting catcher vessels	
Period	Median Cost	Number of Vessels	Median Cost	Number of Vessels	Median Cost	Number of Vessels	Median Cost	Number of Vessels
Pre-CS	668.9	5.5	715.2	6.0	-	93.0	0.0	41.0
CS	730.8	9.2	709.2	4.9	435.3	66.7	123.0	30.0
2011–2015	589.0	9.0	593.7	4.6	256.7	76.0	175.2	29.0
2016–2019	764.1	9.0	791.5	5.3	585.4	68.8	98.5	29.8
2020–2023	874.8	9.5	771.2	5.0	508.3	53.0	82.2	31.5

Note: All values represent averages across the period. All values are in real $2023. "-" indicates not calculated for the year. For Catcher Vessel Whiting and Catcher Vessel Non-whiting monitoring costs represent mixed observer and EM costs. The mothership and catcher-processor fleet monitoring costs represent observer costs. All costs reported in 2023$. (FISHEyE).

Source: FISHEyE

Across catcher vessels, monitoring costs are variable for vessels while participating in various vessel activities, most notably for vessel activities where EM is used more frequently, such as shoreside or at-sea (MS-CV) whiting, non-whiting midwater trawl, and gear switching activity types (see Figure 6 in PFMC (2024b) for the count of vessels using EM by activity type). Between 2020 and 2023, catcher vessels participating in activities with lower rates of EM adoption had higher average monitoring costs, most notably the DTS trawl or non-DTS bottom trawl activity types ($541/day and $516/day, respectively, Table 63). By comparison, while participating in the at-sea Pacific whiting fishery catcher vessels have had the lowest average daily monitoring costs (ranging from $67 for shoreside and $83 for at-sea), followed by midwater trawl ($118) and gear switchers ($235).

Table 63. Average Monitoring Cost by Catcher Vessel Activity 2020–2023

Catcher Vessel Activity	Average Median Monitoring Cost per Vessel/day ($2023)	Avg. Median Standard Deviation ($2023)	Average Median 25th Percentile ($2023)	Average Median 75th Percentile ($2023)	Average Annual Fleetwide Cost ($2023)	Average Number of Vessels
At-sea Pacific whiting	83	93	46	230	125,400	17.3
Shoreside Pacific whiting	67	64	46	134	188,938	26.5
DTS trawl	541	259	246	660	295,401	39.3
Non-whiting midwater trawl	118	131	53	461	151,396	24.8
Non-whiting, non-DTS trawl	516	258	259	653	640,905	43.8
Gear Switching	235	235	81	385	92,137	10.0

Note: Values represent averages of median-level observer and EM costs for each year between 2020 and 2023. Monitoring costs represent both observer and EM costs, depending on the number and nature of vessels using different monitoring tools.

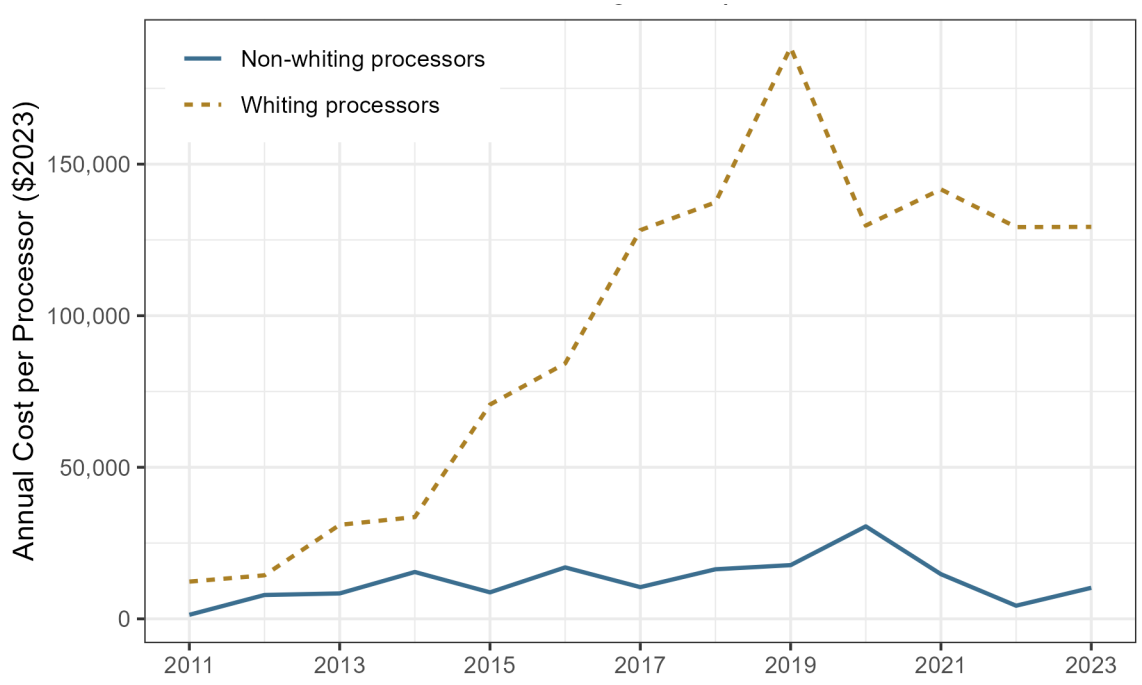
Source: FISHEyE

For sectors that deliver to shorebased dealers or processors, the current monitoring program requires that all offloads be monitored and that fish ticket landing weights be verified by a certified catch monitor. This duty is typically fulfilled by the person monitoring the at-sea portion of the trip for those vessels utilizing observers. Because of this and the similar duties and required knowledge of the fishery, observer providers hire people who are trained to provide both at-sea and shoreside duties and may deploy them to serve both roles, or, in the cases where EM is used, just as the shoreside monitor. Unsurprisingly, because the workforce is composed of the same individuals for both duties, based on interviews with observer providers for the 2024 Trawl Costs of Management report (PFMC, 2024c), the wage rate for both positions is the same and is mirrored in the fee charged to vessels. However, the fee structure differs across observer providers, ranging from the same daily rate as the seaday rate, to an hourly rate ($90 in 2024, PFMC, 2024c), and travel costs may be extra—particularly for more remote ports. The largest driver in savings for EM systems over observers is the number of days fished. Vessels fishing more sea days are able to spread the fixed costs of EM installation and maintenance to create lower average seaday rates (Regulatory Amendment to the

Pacific Coast Groundfish Fishery Management Plan to Implement an Electronic Monitoring Program for the Pacific Whiting Fishery, 2019).

Unlike fishing where harvesters report information about how many days they are operating in a fishery, there is no equivalent "days at sea" for shoreside processors and therefore monitoring cost data are summarized annually per processor (Table 64). Whiting shoreside processors' annual shoreside monitoring costs are higher than the non-whiting processors and have risen steadily until 2019, due to the higher volume of catch in the fishery and increased duties of shoreside monitors for observing offloads from EM trips. The costs for both types of processors dropped in 2020, which follows a decrease in revenue.

Figure 33. Shoreside Processor Monitoring Cost by Type



Note: In FISHEyE any vessel that targeted whiting is categorized as a whiting vessel. Any vessel that participated in at least one non-whiting groundfish trawl fishery and did not target whiting is a non-whiting vessel. Whiting and non-whiting processor monitoring costs were found by querying the FISHEyE processor cost database using the terms: "cost category: Shoreside monitoring", "Statistic: median per processor", "Production activities: Groundfish production" and "Processor type: Non-whiting processors and whiting processors".

Source: FISHEyE

Table 64. Shoreside Processor Median Monitoring Cost per Processor

	Non-whiting processors				Whiting processors			
Year	Number of Processors	Cost	25th Percentile	75th Quartile	Number of Processors	Cost	25th Percentile	75th Quartile
CS	7	12,741	3,479	28,768	8	91,744	40,867	128,778
2011–2015	8	8,264	2,537	14,242	8	22,812	5,778	36,410
2016–2019	8	13,132	4,102	33,246	8	105,138	42,891	156,995
2020–2023	7	16,826	3,799	38,818	7	147,283	73,932	192,928

Source: FISHEyE

Overall, while there are a number of drivers for the costs within the fishery and across years, recent costs may be most affected by difficulties in retention and recruitment of human observers as well as the implementation of the electronic monitoring program. In interviews conducted for PFMC (2024b), observer providers and other contacts described a shifting and unpredictable landscape of observer costs due to high turnover rates and the difficulty of hiring and maintaining observers, particularly in more remote southern port areas, as well as changes to the EM program, which influence providers' expectations about service levels and therefore, seaday rates charged to vessels. Providers discussed a tradeoff whereby increased EM adoption can reduce the pool of observers needed and thereby reduce flexibility, redundancy, and the amount of work to support stable employment. It also increases the need for shorebased catch monitors, which are not necessarily full-time jobs in some port areas, which can increase turnover. Finally, reductions in the total number of days at sea in the fishery furthermore exacerbate these challenges. Between 2020 and 2023, the total number of sea days taken by non-whiting vessels decreased by 25% compared to 2015–2019 (from 3,212 to 2,412 days at sea per year). When PFMC (2024) was written, the two observer providers discussed the challenges of providing services profitably on the West Coast. One year later as the current report was being written, one provider had stopped providing services.

There are also concerns about how EM costs will increase under the EM program. The recent regulatory amendment for EM explored options for reducing EM monitoring costs by reducing EM review rates and exploring options for third-party video review, among other changes (NMFS, 2023). The regulatory amendment reduced video review rates for the non-whiting bottom trawl and fixed gear fleets to 10% but maintained 100% review rates for the midwater rockfish and whiting fleets. The formal EM program requires video review costs to be borne by industry (since video review costs were previously covered under the EFP), and vessels could either choose PSMFC or a third-party company to provide these services. However, these costs have yet to be borne by industry, since a grant provided to the PSMFC covered costs for third-party review in the first year of the formal EM program. If industry were paying for the program, it was estimated it would cost $74 per seaday for midwater trawl, $165 for bottom trawl and $161 for fixed gear for video review from PSMFC (NMFS, 2023); however, according to interviews with PSMFC representatives for this report, these cost rates could change based on the experiences in the first year under the regulatory program and result in new video review rates for some fleets.

2.5.6.2 Economic Data Collection Costs

As described in the previous review, to meet the MSA requirement to "include provisions for regular monitoring and review by the Council [...] including determining progress in meeting the goals of the program" and because of many of the expected changes and goals/objectives of the catch share program were economic in nature, the Council implemented the collection of mandatory economic data and directed the NMFS Northwest Fisheries Science Center to collect baseline data in 2009 and 2010 and annually thereafter. The EDC program costs, therefore, relate primarily to the ability to evaluate the changes under the program including how goals and objectives of the program have been met.

Trawl Catch Share Program participants bear both direct costs for the EDC program through the cost of time to prepare and submit surveys as well as indirect costs through the cost recovery fees paid for incremental costs of administering the program, covered. This section focuses on direct costs. Average direct cost per respondent to complete the EDC forms ranged from $52.42 to $744.40 across vessel types and quota share owners (Table 65).

Table 65. Estimated direct industry costs to submit EDC surveys for the 2022 fishing year

Information Collection	Annual Responses	Burden Hours/ Response	Total Annual Burden Hours	Hourly Wage Rate of Respondent	Average Cost per Respondent	Total Annual Wage Burden Costs
Mothership	6	8	48	$37.22	$297.76	$1,787
Catcher Vessel	127	8	1,016	$67.62	$540.96	$68,702
Catcher-Processor	10	8	80	$37.22	$297.76	$2,978
First Receivers/ Shorebased Processors	47	20	940	$37.22	$744.40	$34,987
Quota Share Owner	152	1	152	$52.42	$52.42	$7,968
Totals	**342**	**n/a**	**2,236**	**n/a**	**n/a**	**$116,422**

Note: assessment of reporting costs is completed every three years

Source: Schedule A of OMB Control Number 0648-0618

2.5.6.3 Cost Recovery

The cost recovery fee is calculated and levied by sector as either the annual ratio of direct program costs (DPC) to total gross ex-vessel value or as 3% of total gross ex-vessel value that year, whichever is lower (NMFS, 2024c). The cost recovery fee covers specific costs incurred for work conducted by the West Coast Region, including the Groundfish, Permits and Monitoring, and Operations and Policy branches, NOAA's Office of Law Enforcement, the Pacific States Marine Fisheries Commission, and the Northwest Fisheries Science Center.

Since the start of the program, the ratio of direct program costs has exceeded the 3% benchmark for the shorebased IFQ program in all but two years (2019 and 2021) in which participants paid 2.9% and 2.5% in recovery fees, respectively (Table 65). Both motherships and catcher-processors have

not reached the 3% recovery threshold through 2023 and had periods of three (2017–2019) and four (2015 and 2017–2019) years, respectively where those sectors were determined to have overpaid due to the decision of Glacier Fish Co. LLC v. Pritzker, 832 F.3d 1113 (9th Cir. 2016), which prompted NMFS to recalculate the recovery fee.[24] A breakdown of the Program costs for FY 2024 across the branches and offices for all sectors can be found in Table 67. Total recoverable costs over time and by sector are presented in Table 66.

Table 66. Annual Cost Recovery Fee Percentages, Direct Program Costs, and Estimated Fees 2014–2024

	Shorebased IFQ Program			Mothership			Catcher-Processor		
Year	Cost recovery fee %	Adjusted DPC (millions)	Estimated cost recovery fee (millions)	Cost recovery fee %	Adjusted DPC (millions)	Estimated cost recovery fee (millions)	Cost recovery fee %	Adjusted DPC (millions)	Estimated cost recovery fee (millions)
2024	3.00%	$1.93	$1.63	1.82%	$0.28	$0.28	0.09%	$0.03	$0.03
2023	3.00%	$1.70	$1.45	1.68%	$0.13	$0.13	0.15%	$0.03	$0.03
2022	3.00%	$1.69	$1.20	1.73%	$0.13	$0.13	0.16%	$0.04	$0.04
2021	2.50%	$1.48	$1.48	1.29%	$0.14	$0.14	0.19%	$0.04	$0.04
2020	3.00%	$1.81	$1.64	0.29%	$0.03	$0.03	0.08%	$0.02	$0.02
2019	2.90%	$1.75	$1.75	0.00%	-$0.07	$0.00	0.00%	-$0.07	$0.00
2018	3.00%	$2.02	$1.39	0.00%	-$0.13	$0.00	0.00%	-$0.11	$0.00
2017	3.00%	$2.02	$1.25	0.00%	-$0.26	$0.00	0.00%	-$0.19	$0.00
2016	3.00%	$2.34	$1.56	2.46%	$0.37	$0.37	0.67%	$0.17	$0.17
2015	3.00%	$2.03	$1.55	1.20%	$0.18	$0.18	0.00%	-$0.02	$0.00
2014	3.00%	$1.88	$1.45	2.40%	$0.27	$0.27	1.05%	$0.18	$0.18

Note: Data for each year comes from the corresponding trawl rationalization program cost recovery annual report. Therefore, the estimated cost recovery fee does not represent the actual fees collected in that year since it is based on prior year fishery values. Cost recovery fees were not collected prior to 2014.

Source: Annual cost recovery reports for the Pacific Coast Groundfish Trawl Rationalization Program

Table 67. Pacific Coast Groundfish Trawl Rationalization Program Costs, FY 2024

	IFQ		CP		MS	
West Coast Region	**$**	**%**	**$**	**%**	**$**	**%**
Groundfish	$68,693.15	3.6	$17,999.81	62.3	$25,751.29	9.6
Permits & Monitoring	$38,975.58	2.0	$472.40	1.6	$8,720.56	3.3
Scientific Data Management Grant	$170,936.50	9.0	$43.57	0.2	$30,358.35	11.4
Pacific State Marine Fisheries Commission Grant	$854,779.35	44.8	$0.00	0.0	$53,713.00	20.1
Total	$1,133,384.58	59.4	$18,515.78	64.1	$118,543.20	44.4
Northwest Fisheries Science Center						
Fisheries Observation Science	$578,573.72	30.3	$0.00	0.0	$135,757.30	50.8

[24] The U.S. Court of Appeals for the Ninth Circuit issued its opinion in Glacier Fish Co. LLC v. Pritzker, 832 F.3d 1113 (9th Cir. 2016) on August 10, 2016, which involved a challenge to NMFS' authority to recover cost recovery fees from members of the CP Program and the reasonableness of NMFS' calculation of the CP Program's 2014 fee percentage. The court held that the calculation of the 2014 CP Program fee was inconsistent with NMFS' cost recovery regulations and the court remanded to NMFS to re-determine the 2014 fee.

Economics & Social Science Research	$121,830.08	6.4	$7,811.51	27.0	$9,297.07	3.5
Total	$700,403.80	36.7	$7,811.51	27.0	$145,054.37	54.3
Office of Law Enforcement (OLE)	$73,459.76	3.9	$2,576.55	8.9	$3,592.82	1.3
Total costs	**$1,907,248.14**	**100.0**	**$28,903.84**	**100.0**	**$267,190.39**	**100.0**

Source: Annual cost recovery reports for Pacific Coast Groundfish Trawl Rationalization Program.

Table 68. Recoverable agency expenditures

Year	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
IFQ	1.93	1.70	1.69	1.48	1.81	1.75	2.02	2.02	2.34	2.03	1.88
MS	0.28	0.13	0.13	0.14	0.03	-	-	-	0.37	0.18	0.27
CP	0.03	0.03	0.04	0.04	0.02	-	-	-	0.17	-	0.18
Total	2.24	1.86	1.85	1.66	1.86	1.61	1.77	1.57	2.88	2.19	2.33

Note: All values are in millions of nominal dollars. Years without a value are years where the adjusted DPC was negative, and a fee was not collected.

Source: Annual cost recovery reports for the Pacific Coast Groundfish Trawl Rationalization Program

2.5.6.4 Governance Costs Relative to Revenue

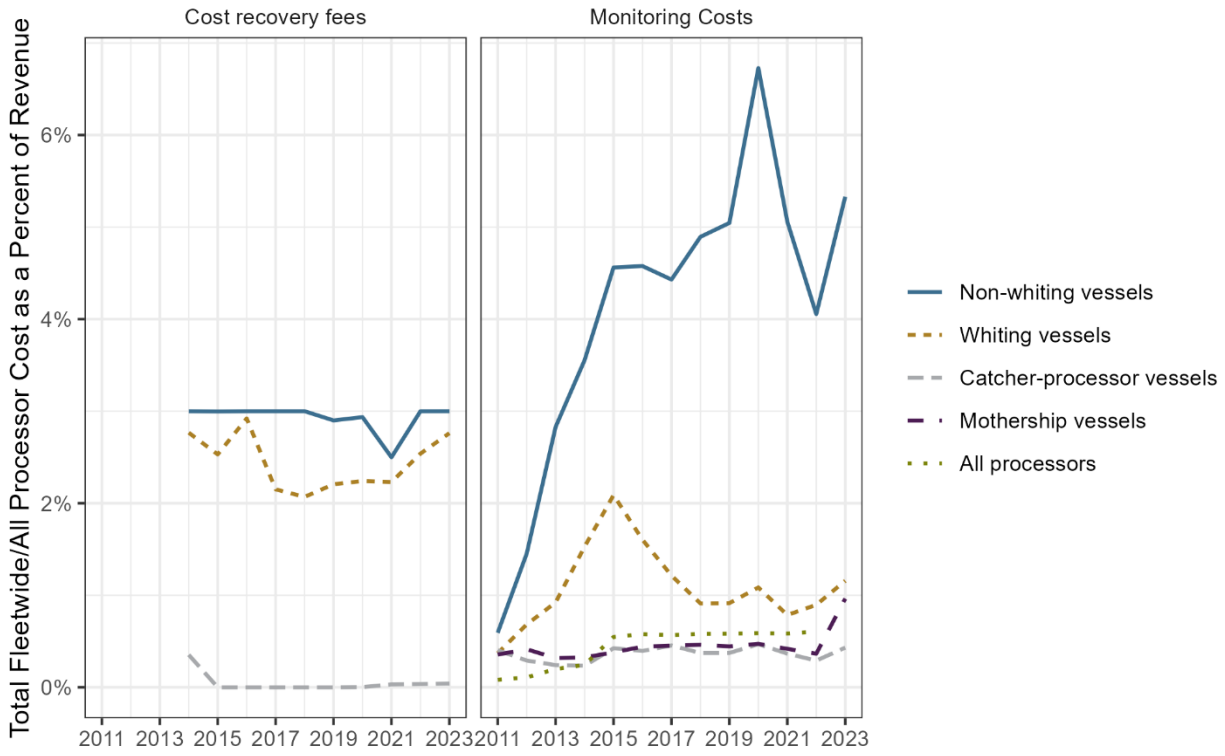
Total monitoring cost and cost recovery fees together as a percentage of total revenue vary across sectors and fleets (Figure 34). Together, non-whiting catcher vessels pay the highest proportion of their revenue towards monitoring and cost recovery, with cost recovery fee percentages hovering around the 3% cap in most years (Table 66 in the previous section) and since the subsidy for observer coverage expired in 2015, these vessels have paid between 4.5% and 6.7% of their gross revenue towards monitoring and averaged 5% (2016–2023). Monitoring costs as a percent of revenue peaked in 2020 due to reduced fleetwide revenue (Figure 34) even though daily monitoring costs in that year were similar to previous years (Figure 32). Even though daily monitoring costs for non-whiting vessels were lower between 2021–2023, only 2022 saw a decline in the proportion of revenue paid towards monitoring costs, due to the highest fleetwide revenue in that year in the 2020–2023 period (Table 25).

Cost recovery fees as a percent of revenue for whiting catcher vessels represent the total cost recovery fees paid by whiting vessels for fishing in the shoreside (IFQ) and at-sea (mothership) fisheries so as a result cannot be directly compared to the rates in Table 66 above. Catcher vessels are responsible for paying cost recovery fees for the mothership sector, which is why there are no cost recovery fees reported for mothership vessels in Figure 34. Due to the adoption of EM primarily by the whiting catcher vessel fleet, monitoring costs as a proportion of revenue have declined since 2015, averaging 1% (2016–2023). Under the EM EFP, vessels participating in the program did not pay for EM equipment or video review.[25] For shoreside processors, catcher-processors, and

[25] Additionally, even as EM was formally approved for use for whiting and fixed gear operations in 2019, vessels continued to not pay for video review, as standards were being developed (particularly for other gear types and fisheries) and as congressional appropriations were available to cover these costs (*2019-13324 (84 FR 31146)*) .

motherships, monitoring costs have generally represented less than 0.5% of revenue in any year. However, as noted previously, with the adoption of EM, shoreside monitoring costs have increased for whiting processors because they bear the whole cost of a shoreside monitor whereas before the costs were split with the catcher vessel because the same individual also acted as an observer and shoreside monitoring duties increased as a result of the EM program (namely to record prohibited and protected species catch, PFMC (2024b)). This caused monitoring costs as a percent of revenue to increase from less than 0.1% of revenue in 2011–2013 to 0.5% in almost every year since 2015. Despite the costs for human monitors generally increasing over time, due to their relatively high revenue, motherships and catcher-processors have experienced little change in the proportion of revenue they paid towards monitoring (0.5% and 0.4%, respectively) and also pay a relatively low cost recovery percentage in this time series (Table 66), leading to low cost of governance costs as a percentage of revenue, particularly compared to non-whiting catcher vessels.[26]

Figure 34.Total Cost Recovery and Monitoring Costs as a Percent of Revenue



Note: MS cost recovery fees are not shown because the whiting CV fleet is responsible for these costs. "All processors" includes all shorebased processors (either whiting or non-whiting processors). In FISHEyE any vessel that targeted whiting is categorized as a whiting vessel. Any vessel that participated in at least one non-whiting groundfish trawl fishery and did not target whiting is a non-whiting vessel. Catcher vessel non-whiting, whiting, and fixed gear w/ trawl endorsement monitoring costs were found by querying the FISHEyE catcher vessel cost database using the terms: "cost category: Observers/EM", "Statistic: median per vessel", "Fisheries: All catch share fisheries combined" and "Vessel type: Non-whiting vessels and whiting vessels". Fixed gear w/ trawl endorsement monitoring costs were found by querying the FISHEyE catcher vessel cost database using the terms: "cost category:

[26] Note that MS cost recovery fee percentages are available in Table 66 but are not shown in Figure 34 because whiting CVs technically pay these fees for the at-sea portion of their activities.

Observers/EM", "Statistic: median per vessel", "Fisheries: fixed gear with trawl endorsement" and "Vessel type: Non-whiting vessels". Mothership and catcher-processor vessel monitoring costs were found by querying "cost category: Observers" and "Statistic: fleetwide/all processor total".

Source: FISHEyE

2.5.6.5 Summary of Options to Reduce Costs

PFMC (2024c) explores several potential options and the possible cost savings and other tradeoffs associated with changes to the monitoring program and the Economic Data Collection (EDC) program. Potential trade-offs highlighted in the report with respect to reducing monitoring coverage requirements included: reduced compliance and enforceability, increased biological impacts, negative administrative impacts, and loss of information and data for management. If at-sea monitoring were reduced, industry cost savings could support the economic viability of the non-whiting trawl fleet, but decrease the ability to achieve the Council's goal of full catch accounting. If shoreside monitoring was reduced, there would be slightly less adverse impacts, but potential cost savings are relatively low compared to at-sea monitoring. For the EDC program, the main options are to alter the method of data collection including reducing the frequency of the census, sampling in a stratified manner, or census active participants. Each of these options would result in a loss of data but could also reduce costs.

2.6 Concentration of Value

Key Takeaways:

- Revenue inequality fluctuated over time for whiting catcher vessels, generally decreasing between 2011 and 2019 and increasing between 2020 and 2023.
- For non-whiting catcher vessels, revenue inequality has increased as the number of active vessels continues to decline.
- Revenue inequality did not change for whiting shorebased processors, but increased for non-whiting processors after 2019.
- The mothership vessels had more revenue inequality and the catcher-processor vessels had less revenue inequality under the catch share program.

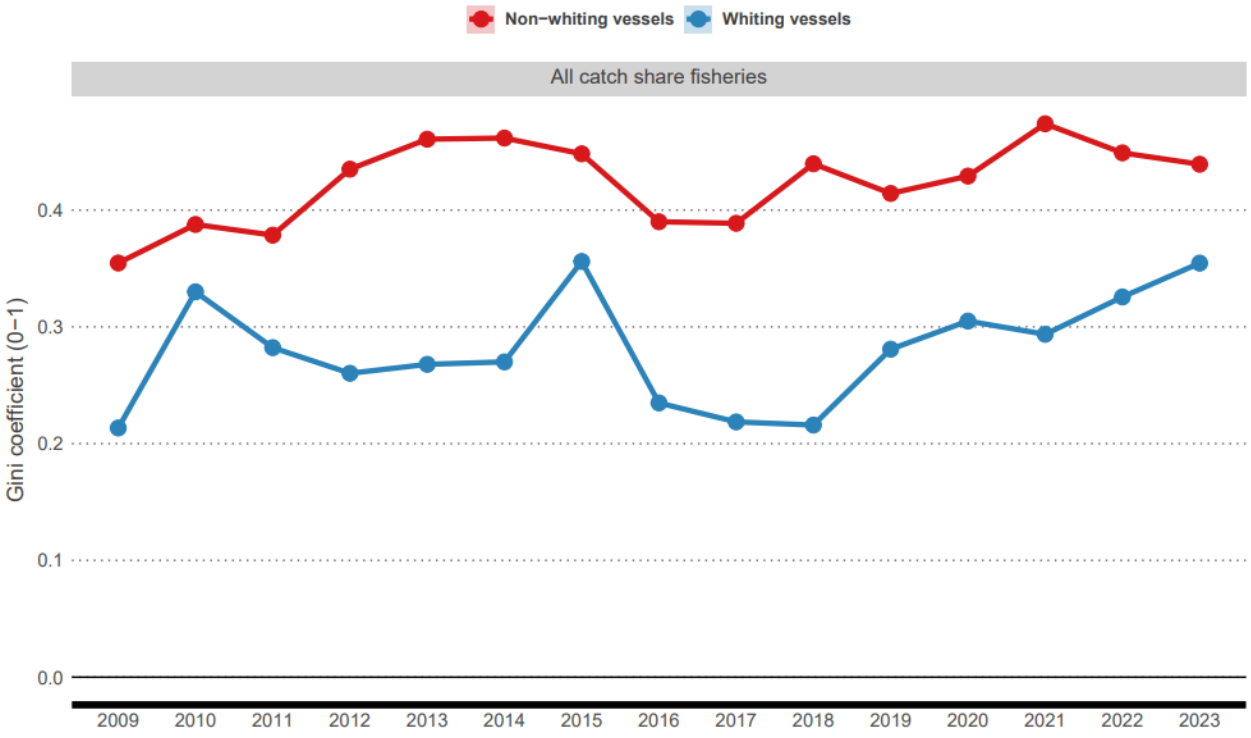
One of the program's objectives was to avoid excessive quota concentration (MSA requirement) and have equitable impacts (Objective 12) on participants. Section 2.4 focused on accumulation limits and considered excessive quota concentration in terms of the number of QS holders that are approaching the limits imposed under the program. This section focuses on revenue inequality generated in the fishery by various fishery sectors considered in FISHEyE data, as measured by Gini coefficients. The Gini coefficient provides a measure of revenue inequality, ranging from zero (perfect equality, where everyone receives an equal share of the revenue generated by the fishery) to one (perfect inequality, where one recipient receives all the revenue generated). A higher Gini coefficient

over time indicates that revenue inequality is increasing. For catcher vessels, ex-vessel revenue from fish tickets is used to estimate the Gini coefficient. For processors (shorebased, motherships, and catcher-processors), the revenue that is reported on the EDC forms is used.[27]

For catcher vessels by catcher vessel type (whether the vessel targeted whiting on any trip in a given year), outcomes have varied. For whiting catcher vessels, revenue inequality has fluctuated over time, decreasing from 2011–2015 and 2016–2019 on average, and increasing on average 2019–2023 (Table 69). However, on average, whiting catcher vessel revenue inequality is similar to the pre-catch share average value over all catch share years 2011 to 2023 (0.27 compared to 0.28), despite consolidation in the number of participating vessels (from 41 to 30, on average, Table 37).

For non-whiting catcher vessels, where the number of active vessels has decreased overall since the catch share program was implemented (28%, Table 36), revenue inequality has also increased, but not by as much (16%). Overall, revenue inequality has increased from a Gini coefficient value of 0.37 to 0.43, and reached its highest value, on average, between 2020 and 2023 at 0.45.

Figure 35. Gini Coefficients for Catcher Vessels by Type



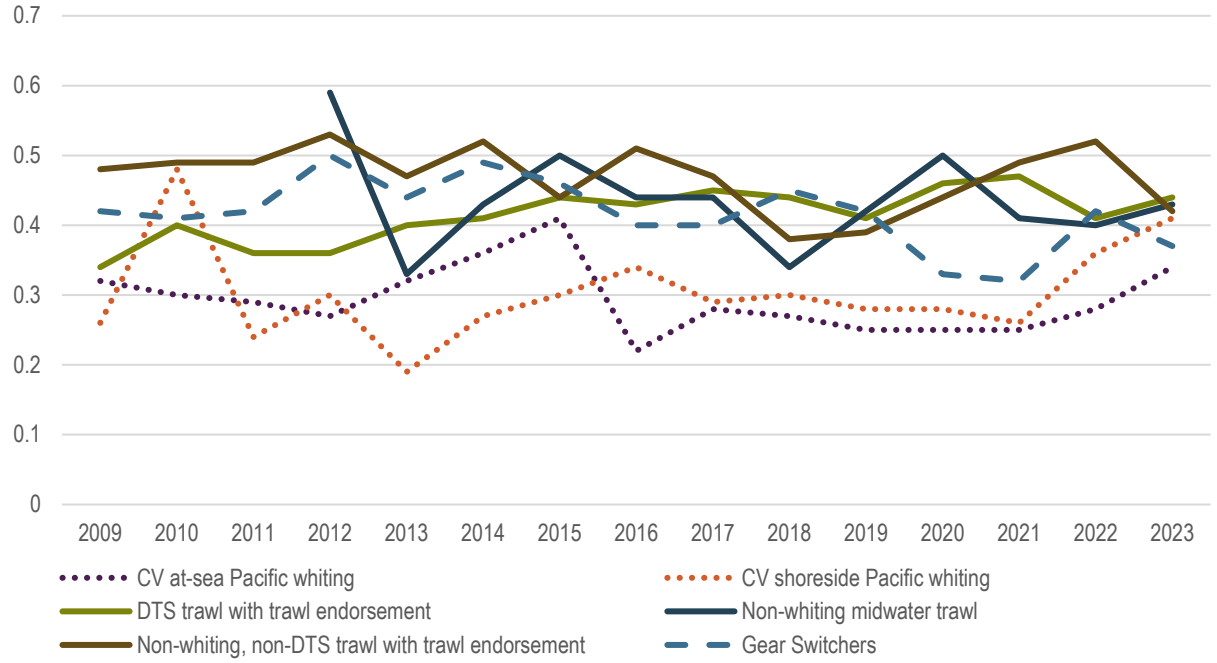
[27] It is worth noting that ideally, for catcher vessels this analysis would be at the ownership entity level, since multiple catcher vessels may be owned and operated by the same company or individual.

Table 69. Gini Coefficients for Catcher Vessels by Period

Period	Non-Whiting CV	Whiting CV
Pre-CS	0.37	0.27
CS	0.43	0.28
2011–2015	0.44	0.29
2016–2019	0.41	0.24
2020–2023	0.45	0.32

Figure 36 shows the Gini coefficients by year and fishery activity for the catcher vessel sector (noting these are not mutually exclusive since vessels may participate in many activities throughout the year). All Pacific whiting catcher vessel activities were less concentrated, in terms of the Gini coefficient, after the catch share program was implemented. The number of participants in the fisheries is presented in Section 2.5. The DTS trawl fishery has become more concentrated regarding fishery value since the last program review. The non-whiting midwater trawl activity appeared in the data in 2012. Value was more concentrated in that fishery from 2012 through 2015 because of the limited participation in the fishery during those years due to key midwater stocks being overfished (5 to 12 CVs) and has been declining since 2015 as participation increased (26 CVs in 2022). That trend reflects the increased entry and effort in that fishery when key midwater stocks began to rebuild in 2016 and 2017. The non-whiting, non-DTS trawl with trawl endorsement grouping experienced a slight decline in its Gini coefficient after the catch share program was implemented, and a greater decline since the last program review, indicating a less concentrated value generated by the fishery among participants. Gear switchers had about the same Gini coefficient at the beginning of the catch share program as they had, on average, over its duration, but, generally, declined after 2014.

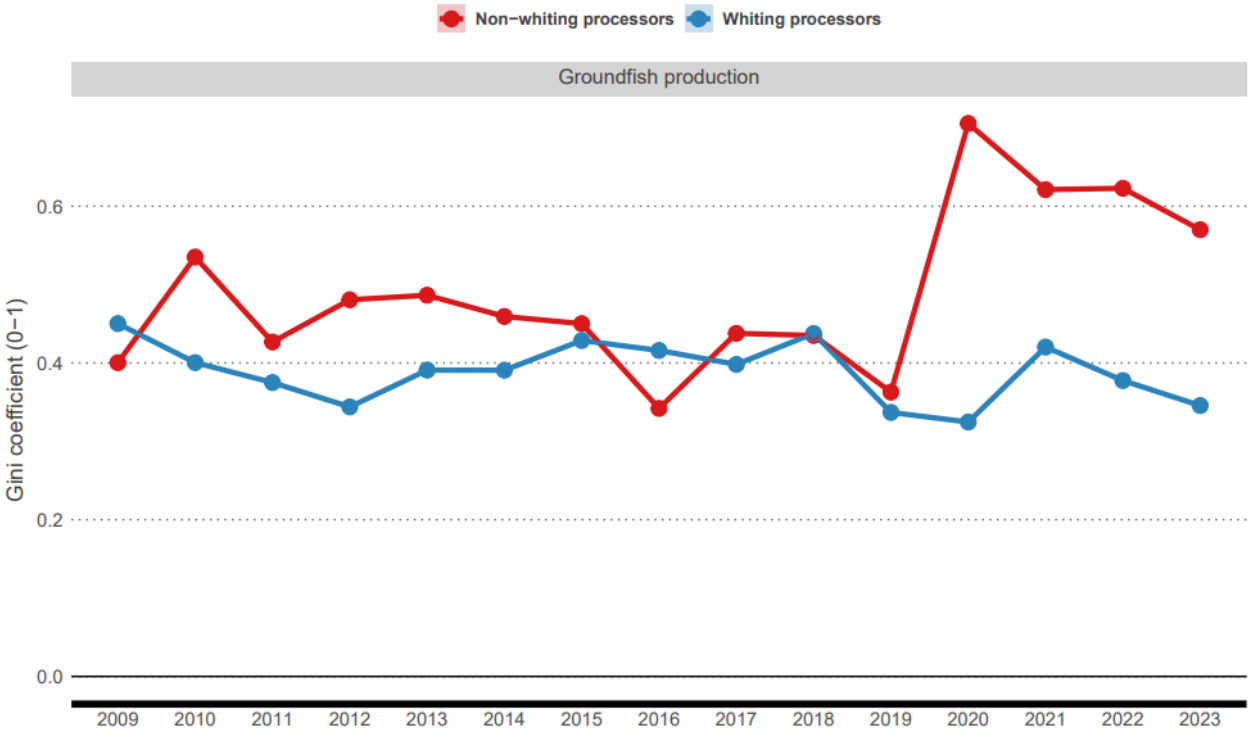
Figure 36. Gini coefficients for catcher vessel sector by activity



Source: FISHEyE

Revenue concentration for shorebased whiting processors remained relatively consistent under the catch share program (Figure 37), despite a reduction in the number of whiting processors. The number of whiting processors decreased from 11 before the catch share program was implemented to an annual average of 8 after implementation (Table 53). Among non-whiting processors, revenue inequality initially decreased overall from 2011 to 2019, from a Gini coefficient value of 0.47 to a value of 0.4, but increased between 2019 and 2023 to an average of 0.63, even though on average the number of non-whiting processors increased from 7 to 8 (Table 54). This indicates that while the number of processors increased slightly, revenue earned across processors was less evenly distributed.

Figure 37. Gini Coefficients for Shorebased Processors by Type



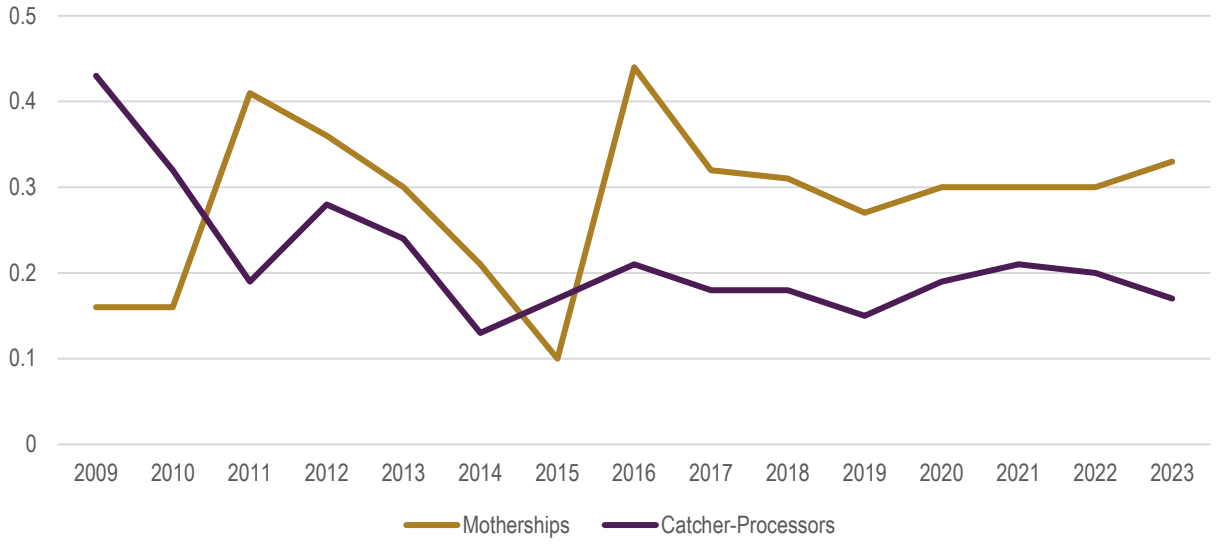
Source: FISHEyE

Table 70. Shorebased Processor Average Gini Coefficient by Processor Type

Period	Non-Whiting	Whiting
Pre-CS	0.47	0.43
CS	0.49	0.38
2011-2015	0.46	0.38
2016-2019	0.40	0.40
2020-2023	0.63	0.38

The revenue distribution of motherships and catcher-processors, as measured by Gini coefficients, moved in opposite directions under the catch share program (Figure 38). The average number of motherships decreased from 6 before the catch share program to 4 in 2023. The mothership's Gini coefficient indicates an increase in revenue inequality. It increased from 0.16 before the catch share program to 0.30 (2023). However, the Gini coefficient has been relatively stable since the last program review. The average number of catcher-processors increased from 6 before the catch share program was implemented to 10 in 2023. Revenue inequality in the catcher-processor sector decreased. As measured by the Gini coefficient, it changed from 0.32 (2010) to 0.18 (2023), and like the mothership sector has been relatively stable since the last program review.

Figure 38. Gini coefficients for motherships and catcher-processors



Source: FISHEyE

2.7 Community and Other Outcomes

This section discusses impacts to the fishing communities involved in the trawl catch share program since implementation. Minimizing any adverse impacts on these communities and providing for their sustained participation are described in the program goals and objectives and are included as part of the National Standards of the MSA:

> Amendment 20: Objective 5. Minimize adverse effects from an IFQ program on fishing communities and other fisheries to the extent practical.
>
> National Standard 8. Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

This review examines community impacts resulting from catch share implementation by considering relevant indicators such as the regional distribution of landings (2.7.1), regional QS and CHA ownership (2.7.4), and regional dependence, social vulnerability, and engagement (2.7.6), among others, as well socioeconomic outcomes of the program, such as infrastructure (2.7.7), seafood distribution and consumers (2.7.10), and safety (2.7.11). Related discussions of the ability of new participants to enter the fishery are discussed in section 2.8, Entry, Exit, Including New Entrants.

The immediate community-related impacts of the trawl catch share program following implementation in 2011 through 2015 are discussed in the previous Catch Share Review (PFMC & NMFS 2017). This review focuses on ongoing trends in community impact indicators up through the most recent year of data and discusses how impacts noted in the previous review may have changed, and examines any potential new impacts on participating fishing communities.

2.7.1 Distribution of Landings and Revenue

Key Takeaways

- California had a decrease in total landings with the disappearance of the whiting sector in the state at the start of the catch share program. While the volume of landings has remained relatively constant, revenue has declined in the state.
- Total landings in Washington increased on average after 2015, due to higher landings on shoreside whiting trips in the state, but between 2020 and 2023 both revenue and landings fell (by 39% and 20%, respectively, on average comparing 2016–2019 to 2020–2023).
- Total catch share landings remain highest in Oregon, primarily in Newport and Astoria, where landings and revenue have increased since the last review, though in the last four years both landings and revenue have declined. Revenue has declined more than landings, reflecting decreases in ex-vessel price. Annual average revenue declined by 22% in Astoria and 33% in Newport between 2016–2019 and 2020–2023

This section examines how the distribution of catch has shifted since the previous review, both geographically and by IFQ activity type (non-whiting or whiting). In contrast to previous sections where whiting and non-whiting catcher vessel types were presented, here results are summarized at the trip level, where non-whiting activity types include bottom trawl, non-whiting midwater trawl, and gear switching, and whiting is shoreside whiting. Figure 39 shows total shorebased IFQ sector landings of all species (groundfish and non-groundfish) landed on IFQ trips by region or port group area. Ports were combined to conserve confidentiality of individual vessels and dealers.

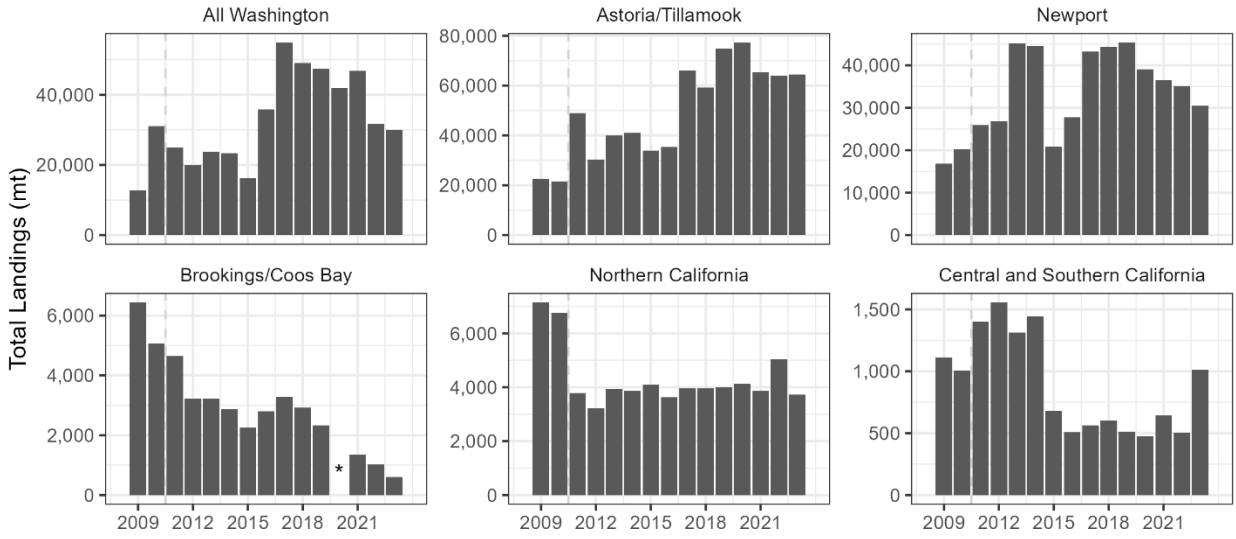
Figure 39 shows that Washington landings have increased between 2015 and 2017, but they have declined since. On average, average annual landings decreased 20% from 46,807 mt between 2016 and 2019 to 37,621 mt between 2020 and 2023, with the lowest landings since 2015 observed in 2023. Average annual revenue has increased even more, by 39% from $12.8 million to $7.8 million in the same period.

Landings in northern California ports have been fairly consistent since the start of the catch share program and have increased by 8% on average since 2016–2019 from 3,888 mt to 4,192 mt on average between 2020 and 2023. Despite this, average annual revenue fell 34% from $8.8 million to $5.8 million when comparing the same periods. Central and Southern California had relatively high

landings (on average, approximately 1,300 mt) between 2011 and 2015 and since has fallen to about 600 mt, on average until 2023, when landings rose to about 1,000 mt.

In Oregon ports, changes in landings and revenue have been more variable. In southern Oregon (Brookings/Coos Bay), total landings have been generally declining since 2009 with the exception of 2015–2017, where landings briefly increased before decreasing to the lowest levels in the time series in 2023 (1,152 mt on average between 2020 and 2023). In Astoria/Tillamook and Newport port groups, the total landings have generally increased over the catch share period with a noticeable increase in landings after the last review in 2017.However, in the last few years while landings have declined in both port groups, the decline has been proportionally greater in Newport than in Astoria/Tillamook, and on average, landings in Astoria landings remain higher between 2020 and 2023 compared to 2016–2019 (67,710 mt and 58,865 mt respectively), compared to Newport where average annual landings have decreased by 12% between the two periods. In Newport, the number of unique dealers purchasing catch share landings has also declined from 7 between 2016 and 2019 to 4 between 2020 and 2023. In both areas average annual revenue has declined. Annual average revenue declined by 22% in Astoria and 33% in Newport between 2016–2019 and 2020–2023.

Figure 39. Total IFQ Landings by Port Area



Note: Includes landings of all species on IFQ trips. Port areas and regions represent individual IOPAC port groups or groups of IOPAC port groups. Northern California includes Eureka, Fort Bragg, and Crescent City. Central and Southern California includes San Francisco Bodega Bay, Monterey, Morro Bay, and Santa Barbara. Wahington includes the South and Central WA Coast, North WA coast, North WA coast, and Puget Sound port groups. Columns with an asterisk (*) are redacted due to confidentiality.

Source: PacFIN

Table 71. Distribution of Landings and Revenue Across Landing Port Groups

State	Port Group	Period	Average Landings (mt)	Average Revenue ($2023)	Number of Vessels	Number of Dealers
CA	Central and Southern California	Pre-CS	1,058	3,134,509	14	22
		2011–2015	1,278	5,488,071	35	40
		2016–2019	546	1,797,747	14	15
		2020–2023	659	1,067,388	11	10
	Northern California	Pre-CS	6,949	13,568,819	34	21
		2011–2015	3,781	10,281,300	20	13
		2016–2019	3,888	8,823,007	19	13
		2020–2023	4,192	5,788,040	18	12
OR	Astoria/Tillamook	Pre-CS	22,035	18,550,194	45	9
		2011–2015	38,856	30,369,568	52	6
		2016–2019	58,865	32,721,893	56	5
		2020–2023	67,710	25,505,470	53	6
	Brookings/Coos Bay	Pre-CS	5,756	11,520,501	34	10
		2011–2015	3,243	7,843,696	32	5
		2016–2019	2,835	6,381,974	20	3
		2020–2023	1,152	1,494,599	19	4
	Newport	Pre-CS	18,526	13,258,911	31	8
		2011–2015	32,655	19,182,420	34	5
		2016–2019	40,174	21,177,718	37	7
		2020–2023	35,270	14,256,414	34	4
WA	All Washington	Pre-CS	21,957	8,940,395	24	6
		2011–2015	21,631	14,281,187	31	6
		2016–2019	46,807	12,808,050	30	11
		2020–2023	37,621	7,826,940	25	5

Note: Number of vessels and dealers counts the number of unique vessel and dealer numbers within a given period while average landings and revenue is the average annual landings or revenue in the period. Includes landings of all species (groundfish and non-groundfish) on IFQ trips. Port areas and regions represent individual IOPAC port groups or groups of IOPAC port groups. Northern California includes Eureka, Fort Bragg, and Crescent City. Central and Southern California includes San Francisco Bodega Bay, Monterey, Morro Bay, and Santa Barbara. Wahington includes the South and Central WA Coast, North WA coast, North WA coast, and Puget Sound port groups. All values represent averages across the period.

Source: PacFIN

Total IFQ landings by fishing activity type (non-whiting or whiting) varied greatly by state (Table 72). In California, while there was some shoreside whiting activity before the catch share period, the majority of landings occurred on non-whiting trips. Since the catch share program was implemented, there has not been any shoreside whiting fishing effort and non-whiting activity landings initially decreased from 5,059 mt on average between 2011 and 2015 to 4,434 mt between 2016 and 2019 but rebounded somewhat during the last four years to 4,851 mt. Over the same period, however, revenue, the number of vessels and the number of dealers decreased. Revenue declined 38% and the number of vessels and dealers declined by 20% and 23%, respectively.

In Washington, each year besides 2012 and 2013, the number of whiting processors was less than three. Across all years, landings from non-whiting activities in Washington ports have been a relatively low proportion of total landings. As shown in Figure 39 above), landings in all Washington ports increased after 2015, driven by increased landings of Pacific whiting. On average, annual landings on shoreside whiting trips more than doubled from 20,012 mt to 44,969 between 2016 and 2019 compared to 2011 and 2015, but the number of vessels and dealers only increased from 13 to 15 and from 3 to 4, respectively. Additionally, annual average revenue only increased by 2%, from $9.1 million to $9.3 million.

While average landings from non-whiting vessel activities increased by 51% in Oregon between 2016 and 2019 to 18,228 mt (from an average of 12,028 mt between 2011 and 2015), corresponding largely with an increase in non-whiting midwater trawl landings and revenue (Table 72), revenue only increased by 18%, reflecting decreases in average ex-vessel price. Between these periods, revenue from bottom trawl trips decreased on average, from $25.3 to $24.1 million. Similar to the non-whiting fleet overall, while total non-whiting activity landings remained relatively constant in the 2020 to 2023 period, annual average revenue from these activities declined by 41% from $35.7 million to $20.9 million. During this period, revenue from shoreside whiting trips also declined by 17% (from $24.6 million to $20.3 million) despite slight increases in average annual landings.

Across non-whiting activities in Oregon, in the 2020 to 2023 period, ex-vessel revenue declined for both bottom trawl and gear switching activities and increased slightly, on average, for non-whiting midwater trawl (Table 73). Average annual bottom trawl revenue in Oregon decreased by 47% in the last four years compared to the preceding four-year average, from $24.1 million to $12.8 million, corresponding with a 29% decline in total landings from 11,293 mt to 8,072 mt (Table 74). Oregon gear switching revenue declined by an even greater margin, 65%, from $5.7 million to $2 million (18% decrease in landings), while non-whiting midwater trawl revenue increased only slightly from $5.9 million to $6.1 million, despite a 48% increase in average landings.

Table 72. Distribution of Landings and Revenue by Landing State and Activity Type

State	Period	Species Group	Number of Vessels	Number of Dealers	Average Landings (mt)	Average Revenue ($2023)
CA	Pre-CS	Non-Whiting	37	35	5,882	16,093,016
		Whiting	11	9	2,126	610,312
	2011–2015	Non-Whiting	53	49	5,059	15,769,371
	2016–2019		33	26	4,434	10,620,754
	2020–2023		26	20	4,851	6,855,428
OR	Pre-CS	Non-Whiting	80	19	16,025	34,223,213
		Whiting	28	11	30,292	9,106,393
	2011–2015	Non-Whiting	73	10	12,028	30,271,304
		Whiting	24	8	62,725	27,124,381
	2016–2019	Non-Whiting	73	12	18,228	35,708,458
		Whiting	26	9	83,646	24,573,127
	2020–2023	Non-Whiting	68	12	17,894	20,926,112
		Whiting	26	8	86,237	20,330,371
WA	Pre-CS	Non-Whiting	14	5	2,384	3,750,734
		Whiting	14	2	c	c
	2011–2015	Non-Whiting	21	6	1,619	5,196,319
		Whiting	13	3	20,012	9,084,868
	2016–2019	Non-Whiting	22	9	1,838	3,519,247
		Whiting	15	4	44,969	9,288,803
	2020–2023	Non-Whiting	20	5	2,557	1,859,567
		Whiting	16	1	c	c

Note: Includes all species landed on IFQ trips. Data marked with "c" are redacted due to confidentiality based on the number of unique dealers and vessels, values with less than three unique vessels or dealers are withheld. All values represent averages across the period. "Pre-CS" is the time prior to the catch share period.

Source: PacFIN

Table 73. Non-Whiting Activity Average Ex-Vessel Revenue by State and Period

State	Period	Bottom Trawl Avg Revenue	Gear Switcher Avg Revenue	Non-Whiting Midwater Trawl Avg Revenue	% Bottom Trawl	% Gear Switcher	% non-whiting midwater trawl
CA	Pre-CS	16,093,016	-	-	100.0%	0.0%	0.0%
	2011–2015	13,101,088	2,668,283	0	83.1%	16.9%	0.0%
	2016–2019	9,498,759	c	c	89.4%	c	c
	2020–2023	6,155,406	c	c	89.8%	c	c
OR	Pre-CS	34,223,213	-	-	100.0%	0.0%	0.0%
	2011–2015	25,311,108	4,065,417	894,779	83.6%	13.4%	3.0%
	2016–2019	24,108,437	5,677,204	5,922,817	67.5%	15.9%	16.6%
	2020–2023	12,807,295	1,975,664	6,143,153	61.2%	9.4%	29.4%
WA	Pre-CS	3,750,734	-	-	100.0%	0.0%	0.0%
	2011–2015	3,081,004	1,920,832	194,482	59.3%	37.0%	3.7%
	2016–2019	1,562,184	1,310,427	646,636	44.4%	37.2%	18.4%
	2020–2023	494,964	285,803	1,078,799	26.6%	15.4%	58.0%

Note: All revenue values in real $2023 dollars. Includes all species landed on non-whiting IFQ trips. Data marked with "c" are redacted due to confidentiality based on the number of unique dealers and vessels, values with less than three unique vessels or dealers are withheld. All values represent averages across the period. "Pre-CS" is the time prior to the catch share period.

Source: PacFIN

Table 74. Non-Whiting Activity Average Landings by State and Period

State	Period	Bottom Trawl Avg Landings	Gear Switcher Avg Landings	Non-whiting Midwater Trawl Avg Landings	% Bottom Trawl	% gear switcher	% non-whiting midwater trawl
CA	Pre-CS	5,882	-	-	100.0%	0.0%	0.0%
	2011–2015	4,748	311	0	93.8%	6.2%	0.0%
	2016–2019	4,137	c	c	93.3%	c	c
	2020–2023	4,322	c	c	89.1%	c	c
OR	Pre-CS	16,025	-	-	100.0%	0.0%	0.0%
	2011–2015	11,097	377	555	92.3%	3.1%	4.6%
	2016–2019	11,293	627	6,307	62.0%	3.4%	34.6%
	2020–2023	8,072	516	9,306	45.1%	2.9%	52.0%
WA	Pre-CS	2,384	-	-	100.0%	0.0%	0.0%
	2011–2015	1,322	181	116	81.6%	11.2%	7.2%
	2016–2019	726	157	956	39.5%	8.5%	52.0%
	2020–2023	357	71	2,128	14.0%	2.8%	83.2%

Note: All landings values in mt. Includes all species landed on non-whiting IFQ trips. Data marked with "c" are redacted due to confidentiality based on the number of unique dealers and vessels, values with less than three unique vessels or dealers are withheld. All values represent averages across the period. "Pre-CS" is the time prior to the catch share period.

Source: PacFIN

2.7.2 Vessel Participation by Region

Key Takeaways

- California-based catcher vessel participation has decreased 46% on average since the start of the catch share program (from 39 vessels in the pre-catch share period to 21 vessels on average in any year during the catch share program). In the last four years (2020–2023), the number of active vessels declined to its lowest average level, at 17 vessels.

- Oregon-based catcher vessel participation is highest across the three states with 58 vessels on average over the catch share period, but participation has decreased overall from the baseline period (from 77 vessels, a 25% decrease). Participation in the last four years reached its lowest level, at an average of 50 vessels, caused by a decline in non-whiting catcher vessels from an average of 44 between 2016 and 2019 to an average of 33 between 2020 and 2023.

- Washington and Alaska-based catcher vessel participation varied over the course of the catch share program with an overall decrease of 11% over the catch share period. In the last four years, average annual whiting vessel participation was higher than the pre-catch share average (increasing from 13 to 14) and non-whiting vessel participation was lower (decreasing from 6 to 4 vessels).

Minimizing adverse impacts on communities and providing for the sustained participation is part of Amendment 20 goals and objectives and emphasized in the National Standards of the MSA. Communities are one way in which most impacts on the fishing industry are characterized. Understanding that trade-offs exist between objectives, transferability provisions can be utilized to achieve specific objectives (National Guidance for Conducting Reviews of Catch Share Programs) and are specifically relevant to a community's ability to acquire quota, relationships between community members, and entry-level participants (PFMC & NMFS, 2017). This section describes the trends in regions that participate in the catch share program.

Participation by region is defined as the number of vessels that report their homeport in each state that actively fished in the catch share program in any given year. There are a few who report their homeport as Alaska each year, so to preserve confidentiality of those vessels, they are grouped with Washington for the purposes of these analyses[28]. Participation by catcher vessels homeported in each state has decreased over time for non-whiting vessels in all regions.

California-based vessel participation started between total participation in Oregon and Washington & Alaska, but in recent years the decreases in participation have brought it slightly below total participation levels observed in vessel totals from Washington & Alaska. Overall, total vessel participation from California has decreased over time. The decrease in participation was steeper at

[28] It should be noted that there is a strong relationship between Kodiak, Alaska and Newport, Oregon, the nuance of which may be lost due to this method of data aggregation.

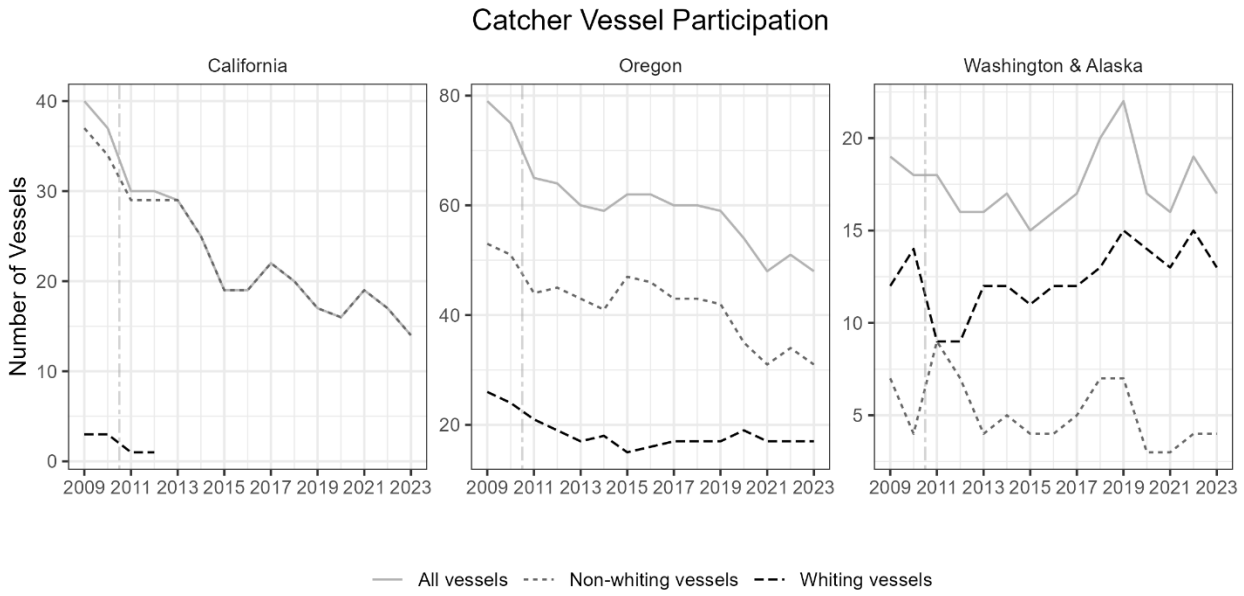
the start of the catch share program, but the decrease slowed in more recent years. For California-based vessels, the number of active whiting vessels decreased after the start of the catch share program from 3 in 2009 and 2010 to 1 in 2011 and 2012. Since 2013, no whiting vessels based in California have participated in the program (Figure 40 and Table 75).

Total Oregon-based vessel participation had a decreasing trend from the start of the catch share period to the present and remains the state with the highest vessel participation both in total and across both target species groups. For Oregon-based vessels, whiting vessel participation decreased initially until 2013 and has been relatively stable since (Figure 40 and Table 75). Non-whiting vessel participation decreased over the catch share period, for an observed 30% decrease.

For Washington and Alaska homeported vessels, whiting vessel participation has been relatively stable with a slight increasing trend (Figure 40 and Table 75). This is the only region with higher participation of whiting vessel than non-whiting vessels. Non-whiting vessel participation for Washington- & Alaska-based vessels, similar to the other two states, has also decreased over the catch share period. Since the last review, non-whiting vessel numbers have continued to decrease across all regions while whiting vessel participation has increased slightly for vessels homeported in Washington & Alaska and Oregon.

For motherships and catcher-processors, the number of participating vessels each year is provided. The number of active motherships has also declined over time. There was an initial decrease by one vessel (from six to five participating vessels) and other than 2015 where only three mothership vessels participated, there have been four to six mothership vessels participating each year (Figure 42 and Table 76). As noted throughout the previous review, all sectors that target Pacific whiting were adversely affected by anomalous ocean conditions (called 'the Blob') in 2015 (PFMC & NMFS, 2017). After an initial increase at the start of the catch share program from six to nine, the number of participating catcher-processors has remained fairly constant at nine or ten vessels each year (Figure 42 and Table 76). Notably, the increase from 9 to 10 participating catcher-processors corresponds occurred in 2020, the year when all other sectors saw declines in participation. This was initially due to a company that owned an MS permit notifying its MSCVs that they would not be using their vessel as a mothership in the 2020 whiting fishery. As noted in *public comment to NMFS*, "the company explained to the CV owners that because its economic returns are far superior on its catcher-processors and because of the unknown but significant risk that one or more of its vessels could be shut down because of a COVID-19 pandemic, the company had decided to not put a vessel into the mothership sector which would disqualify its use in the catcher-processor sector for the balance of 2020." The trend in having 10 CP vessels operating has continued, with the ability for vessels to operate as both a CP and MS in the same calendar year to support increased utilization of the sector allocation being permitted through emergency rule in 2020 (85 FR 37027) and 2021 (*86 FR 26439*) and formally as a part of the Whiting Utilization Action.

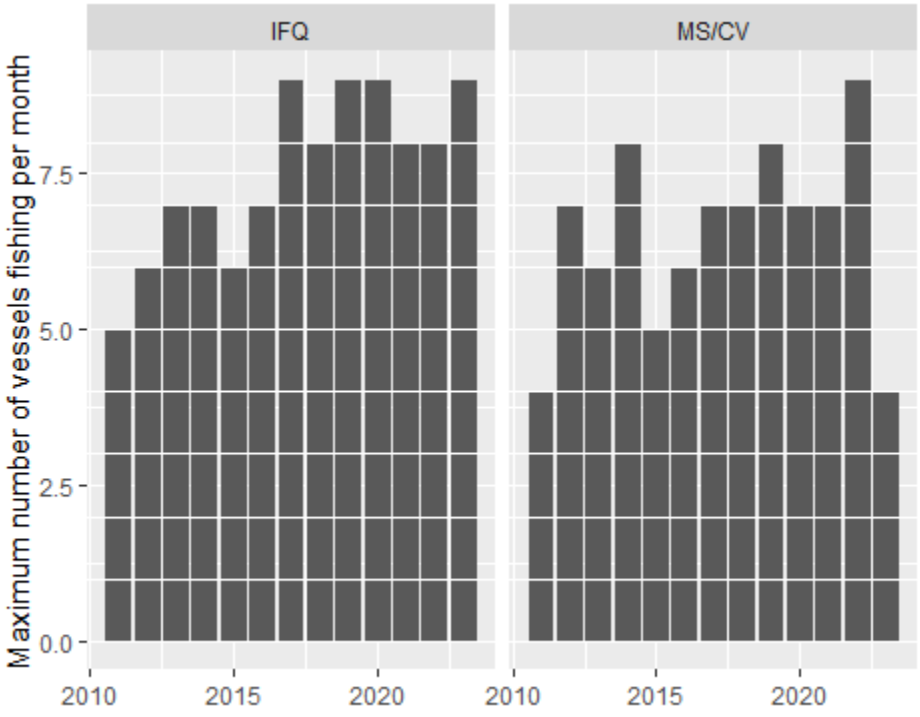
Figure 40. Catcher Vessel Participation by Homeport State



Note: Dashed vertical line denotes the beginning of the catch share program. Data were found by querying the FISHEyE catcher vessel database using the terms: "Statistic: Total", "State of homeport: Washington & Alaska, Oregon, California", "Vessel type: All vessels, Non-whiting vessels, and Whiting Vessels", "Fisheries: All catch share fisheries", and "Years: 2009–2023".

Source: FISHEyE

Figure 41. Number of Washington and Alaska Homeported Whiting Catcher Vessels by Fishery



Source: Erin Steiner, Personal Communication August 12, 2025

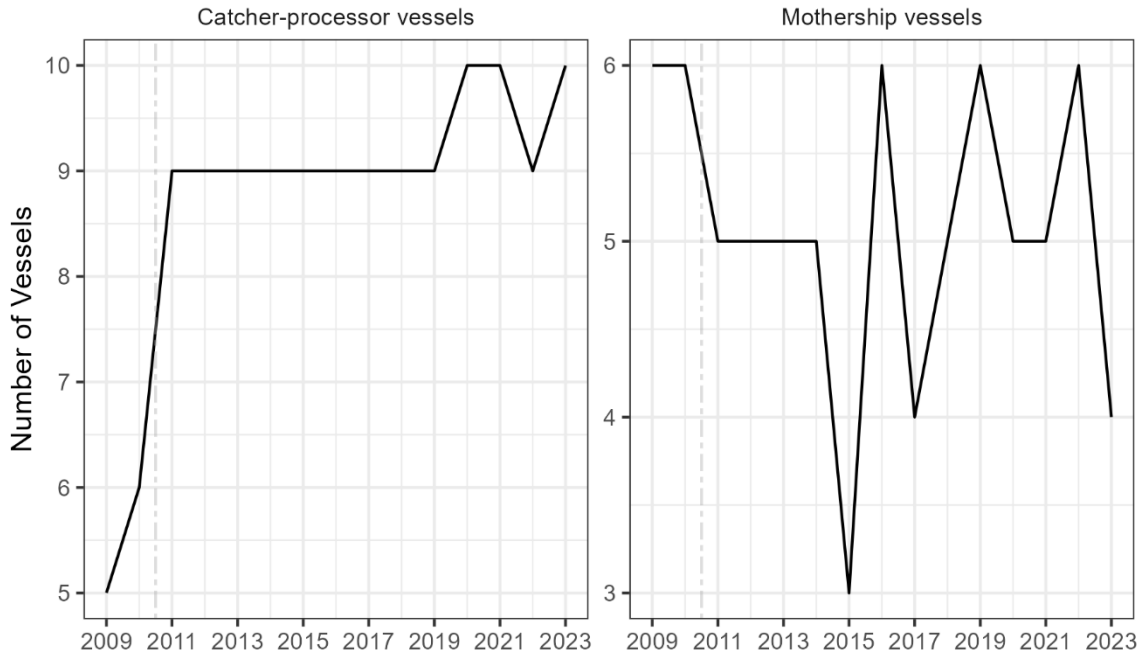
Table 75. Number of Vessels By Homeport State by Vessel Type

	California			Oregon			Washington & Alaska		
Period	Total Number of Vessels	Number of Non-whiting Vessels	Total number of Whiting Vessels	Total Number of Vessels	Number of Non-whiting Vessels	Total number of Whiting Vessels	Total Number of Vessels	Number of Non-whiting Vessels	Total number of Whiting Vessels
Pre-CS	39	36	3	77	52	25	19	6	13
CS	21	21	1	58	40	17	17	5	12
2011–2015	27	26	1	62	44	18	16	6	11
2016–2019	20	20		60	44	17	19	6	13
2020–2023	17	17		50	33	18	17	4	14

Note: All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period.

Source: FISHEyE

Figure 42. Mothership and Catcher-Processor Participation



Note: Dashed vertical line denotes the beginning of the catch share program. Data were found by querying the FISHEyE Mothership and Catcher-processor vessel database using the terms: "Vessel characteristics: Number of vessels", "Statistic: Total", and "Years: 2009–2023".

Source: FISHEyE

Table 76. Participation Each Year by Motherships and Catcher-Processors

Period	Number of Motherships	Number of Catcher-Processors
Pre-CS	6	6
CS	5	9
2011–2015	5	9
2016–2019	5	9
2020–2023	5	10

Note: All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period.

Source: FISHEyE

2.7.3 Shorebased Processor Participation by Region

Key Takeaways

- EDC data are used to count the number of shorebased processors and represent the number of companies in a given region, not unique plants.
- Shorebased processors in California have been exclusively non-whiting since the start of the catch share program, with about 7–8 until 2018 where it dropped to 2–4.
- In Washington and Oregon, shorebased processor participation was relatively steady with 10–12 shorebased processors participating between 2009 and 2023. However, by processor type, the number of whiting processors has decreased over time while the number of non-whiting processors has increased.

Similar to vessels, trends in the number of shorebased processors[29] purchasing deliveries of catch share managed species can also be examined over time. The previous review found that the total number of unique buyers (or 'first receivers', including shorebased processors) purchasing trawl-caught groundfish had declined steadily since the 1990s. Participation of shorebased processors in each region divided by Washington & Oregon[30] and California are illustrated in Figure 43. Since the last review, the number of processors has continued to decrease, particularly in California.

The number of processors in California has decreased substantially since the last review from 8 in 2015 to 2 in 2023. This decline occurred primarily between 2017 and 2018, when the number of shorebased processors purchasing catch share species declined from 7 to 3. While between 2019 and 2022 the number of processors fluctuated between 3 and 4, the decline to 2 processors in 2023 represents the smallest number of processors in the time series. Because this decline represents a

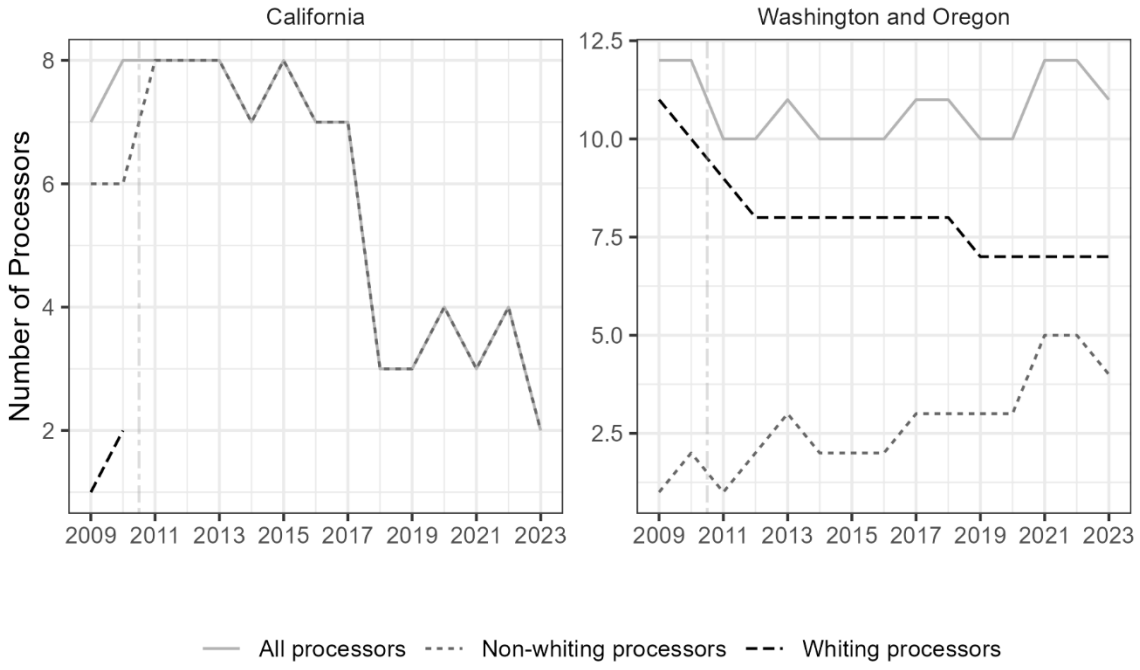
[29] Note that in contrast to vessel participation, here the number of shorebased processors represents the number of companies, not unique plants (See Steiner 2021 for more information)

[30] Washington and Oregon are grouped together in FISHEyE due to confidentiality restrictions

decline in the number of shorebased processing companies, it is not clear what this decline means for the number of active processing plants purchasing catch share species in the state, as opposed to consolidation of ownership.

The total number of shorebased processors in Washington and Oregon has remained steady since the last review. Between 2016 and 2020 the number of processors fluctuated between 10 and 11; however, in 2021, this increased to 12, the highest number since the pre-catch share period. This increase is driven by an increase in the number of processors that did not purchase whiting (non-whiting processors), which has steadily risen from 2 in 2015 to 5 in 2022, while at the same time the number of processors purchasing whiting (whiting processors) declined from 8 to 7.

Figure 43. Processor Participation by Region



Note: Here the number of shorebased processors represents the number of companies, not unique plants. Dashed vertical line denotes the beginning of the catch share program. Data were found by querying the FISHEyE Shorebased processor database using the terms: "Processor characteristics: Number of processors", "Statistic: Total", "Region: Washington and Oregon and California" and "Years: 2009–2023".

Source: FISHEyE

Table 77. Number of Processors Participating in Each Species Group

	California			Washington and Oregon		
Year	All processors	Non-whiting processors	Whiting processors	All processors	Non-whiting processors	Whiting processors
Pre-CS	7.5	6.0	1.5	12.0	1.5	10.5
CS	5.5	5.5	0.0	10.6	2.9	7.7
2011–2015	7.8	7.8	0.0	10.2	2.0	8.2
2016–2019	5.0	5.0	0.0	10.5	2.8	7.8
2020–2023	3.3	3.3	0.0	11.3	4.3	7.0

Note: Here the number of shorebased processors represents the number of companies, not unique plants. All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period.

Source: FISHEyE

2.7.4 QS Ownership by Region

Key Takeaways:

- There has been very little change in the percentage of non-whiting quota attributed to each community from 2017 through 2024.
- Whiting transfers showed more movement between communities. Whiting quota holdings increased in Oregon and decreased in all other states. In Oregon, the Portland metro area had the largest increase, followed by the Astoria area. In Washington, the "Other Washington" community grouping gained the most whiting quota and Westport lost the most quota. All California and Alaska communities that held whiting quota lost quota.

Table 78 and Table 79 summarize the percentage of quota shares held by community residents and species for 2017 and 2024, respectively. The tables also show the rank of communities in terms of non-whiting and whiting ownership. The community-level information presented in the tables is summed to provide a state-level percentage. The analysis identified very little change in the percentage of non-whiting quota attributed to each community. This is primarily the result of relatively few quota share sales over time and because changes in quota owner addresses are not tracked. This means that retrospective analysis of community attribution will not reflect these changes. Whiting transfers showed more movement between communities. Whiting quota holdings increased in Oregon (6.4% of the total) and decreased in all other states. Washington holdings declined by 2.5% of the total. Alaska and California decreased by 1.7% and 1.3%, respectively. In Oregon, the Portland metro area had the largest increase (4.1%), followed by the Astoria area. In Washington, the Other Washington group[31] gained the most whiting quota (3.1%). Westport lost the

[31] All Washington communities other than the ones listed in the table that are home to QS holders. These same methodology is also used for Oregon and California.

most quota (3.5%). Followed by the Seattle MSA (2.4%), Alaska (1.7%), and Crescent City/Eureka Area (1.0%). All other communities lost less than 1% of the whiting quota. All California and Alaska communities that held whiting quota lost quota.

Table 78. Percentage of quota allocated by community in 2017 and the community's rank

Community	Dover sole	Petrale sole	Other Flatfish	Rockfish	Sablefish North & South	Pacific cod and lingcod	Non-whiting Total	Pacific whiting	Non-whiting Rank	Whiting Rank
Alaska	**1%**	**0%**	**0%**	**1%**	**0%**	**0%**	**0%**	**3%**	**19**	**8**
Washington Total	**21%**	**22%**	**26%**	**27%**	**21%**	**32%**	**24%**	**42%**		
Bellingham	0%	0%	0%	0%	0%	0%	0%	0%	20	20
Other Puget Sound	3%	5%	6%	5%	3%	5%	4%	3%	8	7
Seattle Metro	10%	9%	12%	12%	10%	18%	11%	22%	3	2
Westport Area	1%	1%	1%	2%	1%	1%	1%	13%	18	3
Ilwaco Area	1%	2%	3%	2%	1%	2%	2%	1%	16	14
Other Washington	6%	6%	5%	7%	5%	6%	6%	2%	7	9
Oregon Total	**54%**	**57%**	**53%**	**54%**	**50%**	**53%**	**54%**	**53%**		
Astoria Area	12%	14%	14%	12%	14%	15%	13%	7%	2	4
Portland Metro	7%	5%	9%	5%	5%	6%	7%	6%	5	5
Garibaldi	2%	2%	2%	2%	2%	2%	2%	1%	14	11
Newport Area	19%	20%	18%	23%	17%	20%	20%	30%	1	1
Coos Bay Area	7%	9%	6%	5%	7%	5%	7%	2%	6	10
Brookings	3%	3%	3%	4%	4%	3%	3%	5%	10	6
Other Oregon	2%	2%	3%	2%	2%	3%	2%	1%	13	12
California Total	**25%**	**21%**	**20%**	**19%**	**29%**	**15%**	**22%**	**2%**		
Crescent City/Eureka Area	5%	4%	3%	3%	4%	3%	4%	1%	9	13
Fort Bragg Area	11%	6%	7%	7%	9%	6%	9%	0%	4	16
San Francisco/Half Moon Bay	1%	3%	3%	2%	3%	2%	2%	0%	15	17
Monterey	3%	4%	4%	3%	3%	1%	3%	0%	11	19
Morro Bay Area	3%	2%	3%	3%	5%	1%	3%	0%	12	15
Other California	2%	2%	1%	1%	5%	1%	2%	0%	17	18

Source: Personal communication Dan Holland

The other flatfish column includes allocated flatfish species other than those listed in the table

Rockfish includes all allocated rockfish species

Table 79. Percentage of quota allocated by community in 2024 and the community's rank

Community	Dover Sole	Petrale Sole	Other Flatfish	Rockfish	Sablefish North and South	Pacific cod and lingcod	Non-whiting Total	Pacific Whiting	Non-whiting Rank	Whiting Rank
Alaska	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**0%**	**1%**	**20**	**12**
Washington Total	**21%**	**22%**	**26%**	**27%**	**21%**	**32%**	**24%**	**40%**		
Bellingham	0%	0%	0%	0%	0%	0%	0%	0%	19	20
Other Puget Sound	3%	5%	6%	5%	3%	5%	4%	3%	8	8
Seattle Metro	10%	9%	12%	12%	10%	18%	11%	20%	3	2
Westport Area	1%	1%	1%	2%	1%	1%	1%	10%	18	4
Ilwaco Area	1%	2%	3%	2%	1%	2%	2%	0%	16	18
Other Washington	6%	6%	5%	7%	5%	6%	6%	5%	7	6
Oregon Total	**54%**	**57%**	**53%**	**54%**	**50%**	**53%**	**54%**	**59%**		
Astoria Area	12%	14%	14%	12%	14%	15%	13%	9%	2	5
Portland Metro	7%	5%	9%	5%	5%	6%	7%	10%	5	3
Garibaldi	2%	2%	2%	2%	2%	2%	2%	1%	14	10
Newport Area	19%	20%	18%	23%	17%	20%	20%	31%	1	1
Coos Bay Area	7%	9%	6%	5%	7%	5%	7%	2%	6	9
Brookings	3%	3%	3%	4%	4%	3%	3%	5%	10	7
Other Oregon	2%	2%	3%	2%	2%	3%	2%	1%	13	11
California Total	**25%**	**21%**	**20%**	**19%**	**29%**	**15%**	**22%**	**1%**		
Crescent City/Eureka Area	5%	4%	3%	3%	4%	3%	4%	0%	9	15
Fort Bragg Area	11%	6%	7%	7%	9%	6%	9%	0%	4	14
San Francisco/Half Moon Bay	1%	3%	3%	2%	3%	2%	2%	0%	15	16
Monterey	3%	4%	4%	3%	3%	1%	3%	0%	11	19
Morro Bay Area	3%	2%	3%	3%	5%	1%	3%	0%	12	13
Other California	2%	2%	1%	1%	5%	1%	2%	0%	17	17
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**		

Source: Personal communication Dan Holland

Note: The other flatfish column includes allocated flatfish species other than those listed in the table. Rockfish includes all allocated rockfish species.

2.7.5 Income Impacts and Total Employment by Region and Sector

Key Takeaways

- Impacts, both income and employment, in California had a relatively consistent decreasing trend for catcher vessels (54% decrease in income impacts decrease between the pre-catch share period and the last four years and 43% decrease in employment impacts comparing the same periods).

- Oregon overall employment and income impacts increased from pre-catch share levels by about 44% and 15%, respectively. However, since the last review period employment and income impacts have decreased 11% and 22% on average respectively compared to the last four years (2020–2023).

- For Washington and Alaska, both income and employment impact levels are strongly dependent on whiting vessel contributions year to year and the overall decrease in impacts is due to non-whiting vessels.

- Catcher-processors generally had increasing income (44% increase on average in the last four years compared to the first review period) and employment impacts (29% increase on average in the last four years compared to the first review period) over the course of the catch share program. Motherships had a slight increase in employment impacts (about a 12% increase) between the last review period and the last four years (2020–2023) and a very slight decrease (about 7%) in income impacts in comparing the same periods.

- While there was an initial decrease in employment impacts, processors had a very slight decrease of about 6% when comparing the last four years to the previous review period. Processor income impacts experienced an initial increase at the start of the catch share period and had about a 42% increase comparing the initial review period to the last four years.

- Processors in California had decreased employment income impacts over the catch share period compared to the pre-catch share period with a 14% decrease in employment impacts in the last four years compared to the first review period and a 15% increase in income impacts during the same period comparison. In Washington & Oregon, the trends and impacts were due to the predominant whiting processors which has seen an increase in the last four years on average compared to the average of the last review period of 13% in employment impacts and 52% in income impacts.

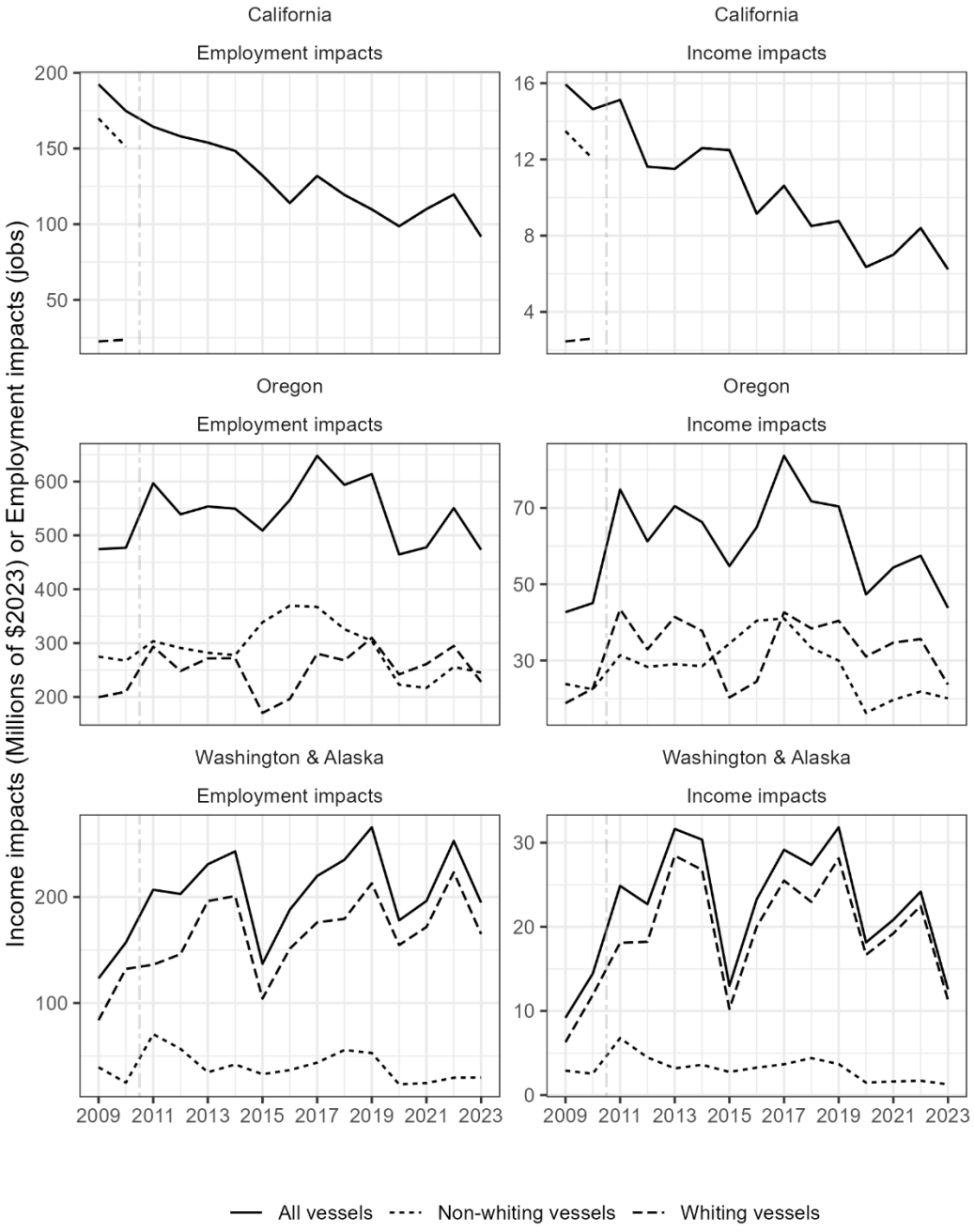
Income and employment impacts discussed in this section help show the total economic contribution of the catch share program to the economy of the West Coast. The data presented is from FISHEyE and originated from fish tickets, EDC forms, and the Input-Output Model for the Pacific Coast fisheries (IO-PAC, Leonard 2011). EDC forms provide data on the number of positions, direct expenditures, and some revenue data. Fish tickets provide the remaining revenue data. Data from IO-PAC included the multipliers for employment and income. Employment impacts included the indirect and/or induced employment from direct expenditures, indirect/induced impact from proprietary income, total number of crew positions, and captain employment. Income impacts by vessel are the indirect/induced income from expenditures, indirect/induced impacts from proprietary income, direct payments to proprietors, and direct wage payments to crew and captain (see FISHEyE documentation for more information). Here, direct impacts accrue to states based on their homeport (for vessels) or the state where operations are based (for shorebased processors). [32]

[32] Per the FISHEyE documentation, an important caveat of this analysis is the following: “The impacts calculated for EDC performance metrics measure the total economic impacts of a particular fishing activity, port, state, or vessel grouping on the entire U.S. West Coast economy. This is in contrast to the impacts that are calculated for the Biennial

The fluctuations in the catch share fisheries can impact the communities that rely on them through changes in income and employment. In California, income impacts from the catcher vessels homeported in the state targeting non-whiting species has consistently decreased over time (Figure 44 and Table 80) for about a 45% decrease no average between the first review period and the last four years (2020–2023). Income impacts from vessels that participate in the non-whiting and whiting fisheries homeported in Washington and Alaska have also seen a decline (180% and 85% respectively) after an initial slight increase at the start of the catch share program (Figure 44 and Table 80). Employment impacts from non-whiting vessels homeported in Washington and Alaska was stable on average at about 47 jobs from 2011–2019 and then dropped to about 27 jobs on average in last four years (2020–2023) for a 43% decrease. Employment impacts for whiting vessels homeported in Washington and Alaska were about 156 jobs on average for the first review period (2011–2015) then jumped to about 179 jobs since, about a 15% increase. Oregon-based catcher vessels have seen more fluctuations in income and employment impacts for both whiting and non-whiting vessels. Income and employment impacts for Oregon-based vessels increased on average during the first review period, increased again during the next four years (2016–2019) and then decreased on average in the last four years (2020–2023). There was a 22% decrease across all vessels in income impacts between the last review period and the last four years (2020–2023) and an 11% decrease in employment impacts across the same periods.

Harvest Specification (NMFS WCR 2020) which, depending on the analysis, reports on the economic contribution of landings to port areas and states."

Figure 44. Catcher Vessel Employment & Income Impacts



Note: Any years that are missing data are due to confidentiality of having fewer than three vessels in that year. In California, both income and employment impacts a reported for non-whiting vessels and are equal to the value for all vessels from 2013 forward. Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

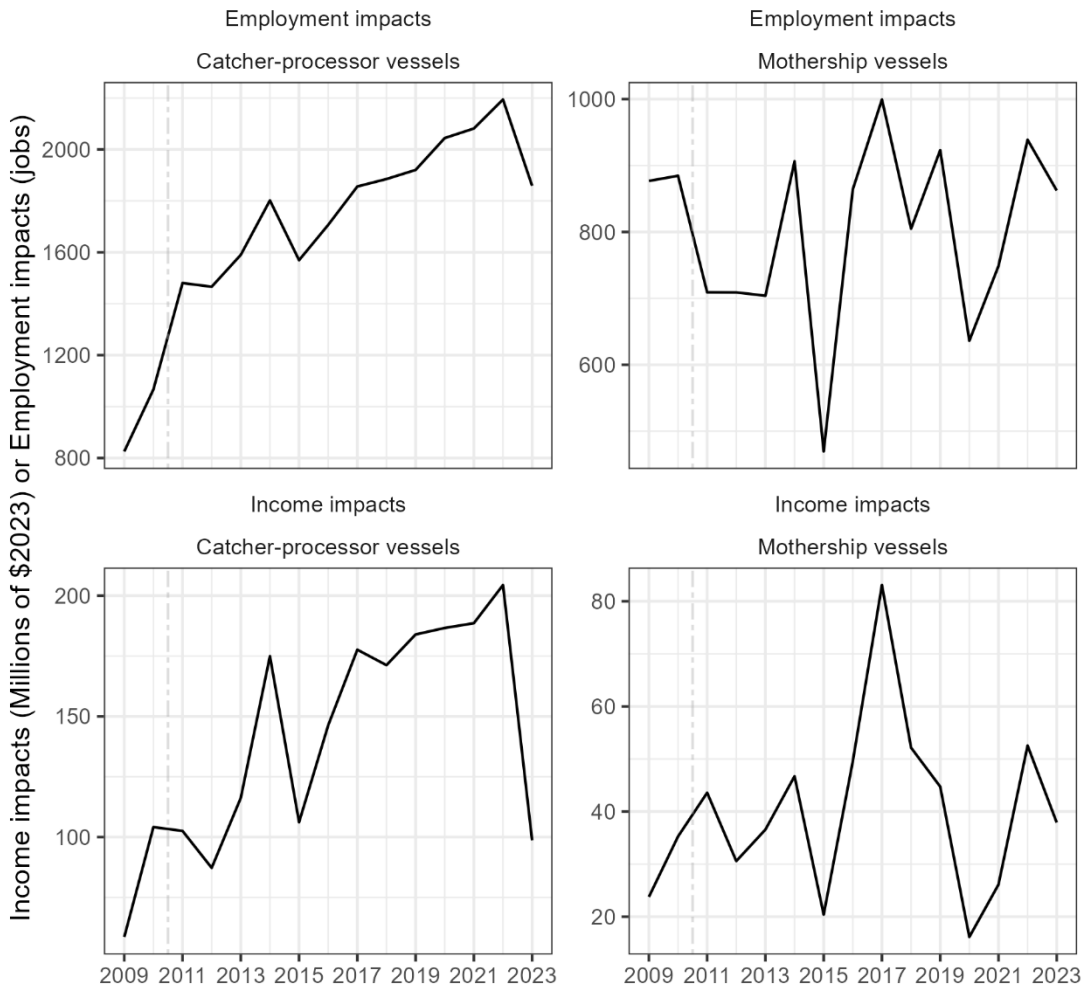
Table 80. Catcher Vessel Income Impacts

Period	California			Oregon			Washington & Alaska		
	All vessels	Non-whiting vessels	Whiting vessels	All vessels	Non-whiting vessels	Whiting vessels	All vessels	Non-whiting vessels	Whiting vessels
					Income Impacts (Millions of $2023)				
Pre-CS	15.3	12.8	2.5	43.9	23.2	20.7	11.8	2.7	9.1
CS	9.9	9.2		63.2	28.8	34.4	23.9	3.2	20.6
2011–2015	12.7	12.2		65.5	30.3	35.2	24.5	4.2	20.4
2016–2019	9.3	9.3		72.7	36.2	36.5	27.9	3.8	24.2
2020–2023	7.0	7.0		50.8	19.5	31.3	19.0	1.5	17.4
					Employment Impacts (Jobs)				
Pre-CS	183.5	160.5	23.5	476.0	271.0	205.0	140.0	32.0	108.0
CS	127.1	120.9		549.1	292.5	256.5	211.7	41.2	170.5
2011–2015	151.2	144.7		549.8	298.8	251.0	204.2	47.6	156.6
2016–2019	118.8	118.8		605.5	341.8	263.5	227.3	47.5	179.8
2020–2023	105.3	105.3		491.8	235.3	256.5	205.5	27.0	178.8

Note: All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Figure 45. Mothership & Catcher-Processor Employment and Income Impacts



Note: Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

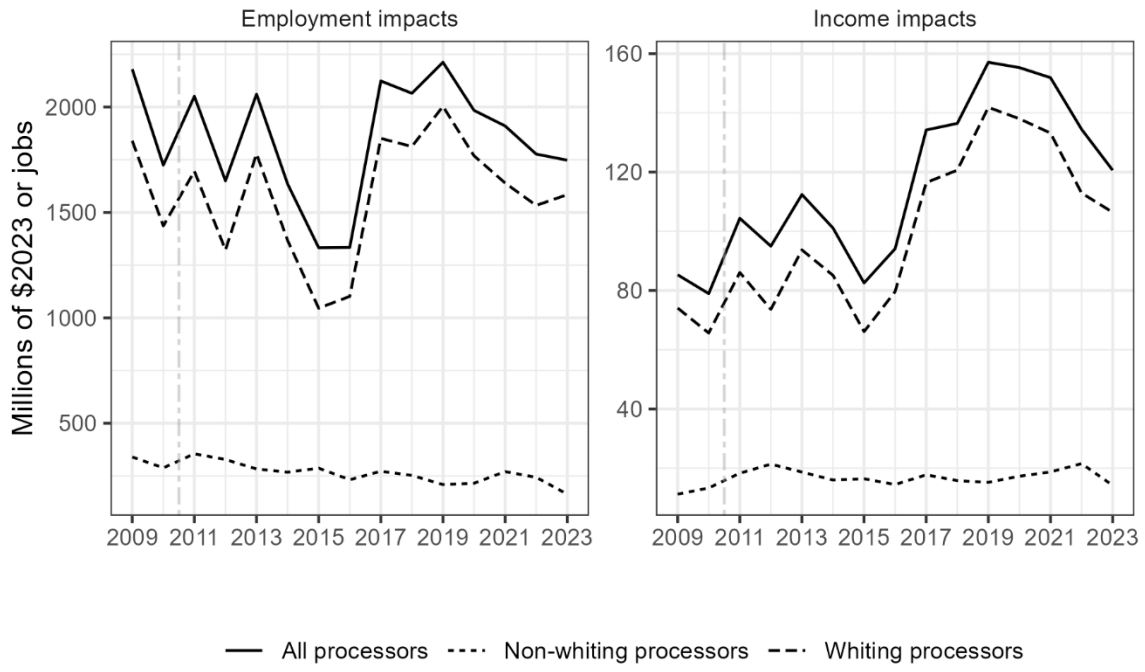
Table 81. Mothership and Catcher-Processor Impacts

	Mothership Impacts		Catcher-Processor Impacts	
Year	Employment Impacts (Jobs)	Income Impacts (Millions$2023)	Employment Impacts (Jobs)	Income Impacts (Millions$2023)
Pre-CS	881.0	29.6	946.5	81.4
CS	790.4	41.6	1,804.2	149.6
2011–2015	699.6	35.6	1,581.6	117.5
2016–2019	897.8	57.4	1,842.0	169.8
2020–2023	796.5	33.2	2,044.5	169.6

Note: All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Figure 46. Processor Employment & Income Impacts



Note: Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

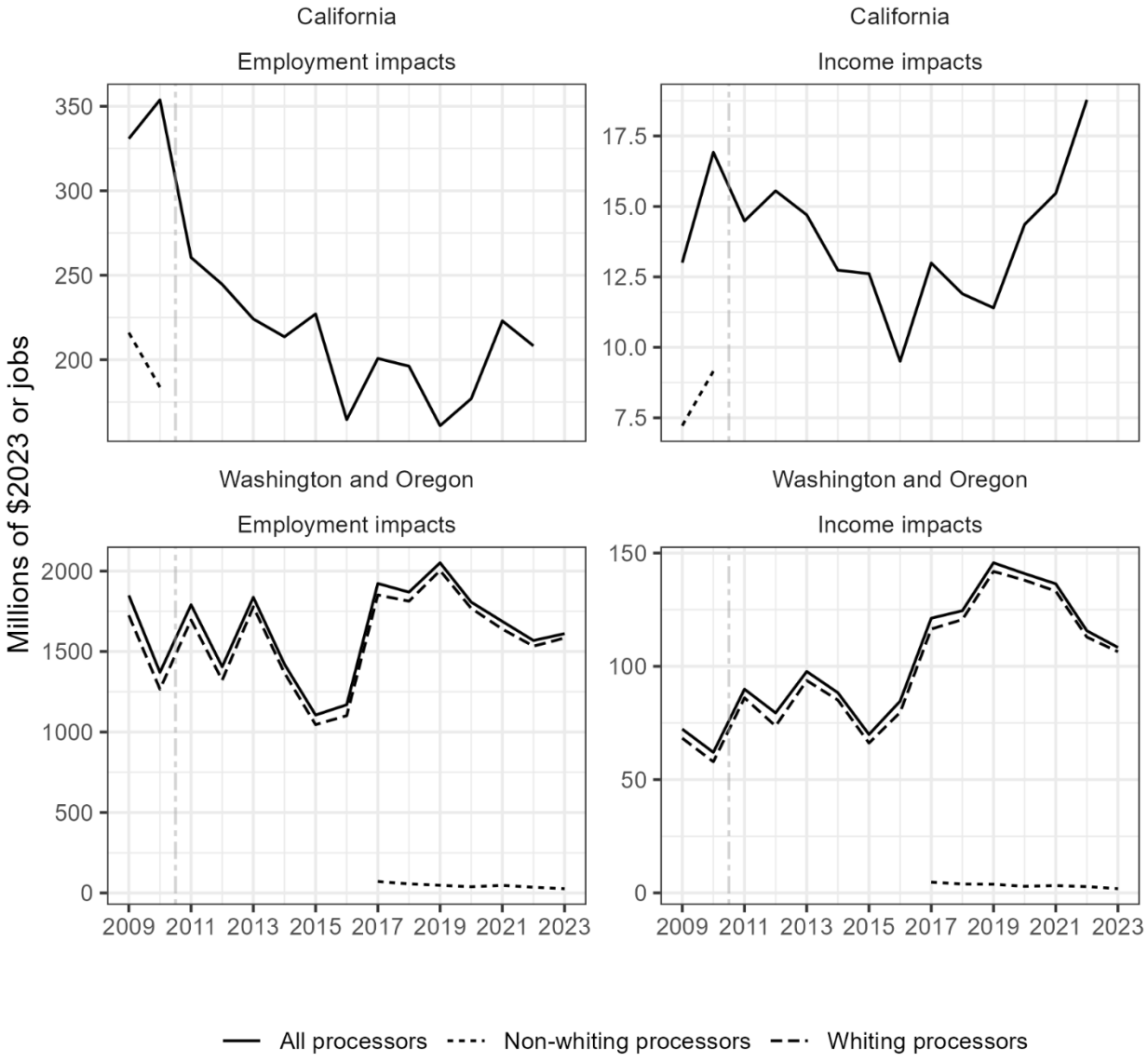
Table 82. Processor Employment and Income Impacts

	Employment Impacts (Jobs)			Income Impacts (Millions $2023)		
Year	All processors	Non-whiting processors	Whiting processors	All processors	Non-whiting processors	Whiting processors
Pre-CS	1,952.0	314.0	1,638.0	82.2	12.3	69.9
CS	1,837.2	260.1	1,577.2	121.5	17.4	104.1
2011–2015	1,746.0	304.2	1,441.8	99.1	18.1	80.9
2016–2019	1,933.5	241.5	1,692.3	130.5	15.8	114.6
2020–2023	1,854.8	223.5	1,631.5	140.6	17.9	122.6

Note: All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Figure 47. Shorebased Processor Employment and Income Impacts by Region



Note: Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

Table 83. Shorebased Processor Employment and Income Impacts by Region

	California			Washington and Oregon		
Period	All processors	Non-whiting processors	Whiting processors	All processors	Non-whiting processors	Whiting processors
			Employment Impacts (Jobs)			
Pre-CS	342.5	200.0		1,610.0		1,495.5
CS	208.5			1,634.1	47.9	1,577.2
2011–2015	234.2			1,511.6	59.0	1,441.8
2016–2019	180.8			1,753.0	58.7	1,692.3
2020–2023	202.7			1,668.3	37.0	1,631.5
			Income Impacts (Millions $2023)			
Pre-CS	15.0	8.2		67.2		63.1
CS	13.7			107.9	3.4	104.1
2011–2015	14.0			85.1	4.0	80.9
2016–2019	11.5			119.0	4.2	114.6
2020–2023	16.2			125.3	2.7	122.6

Note: All values represent averages across the period. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period. All values are reported as 2023 dollars.

Source: FISHEyE

Catcher-processor and mothership vessels are presented by sector and not by region. Most offload in Washington. Employment impacts by catcher-processor vessels have steadily increased since the implementation of the catch share program with a dip in 2015 and 2023 (Figure 45 and Table 81). Employment impacts by motherships fluctuate from year to year in response to changes in participation (Figure 42) and effort (Table 45) with a low in 2015 of less than 500 (more than 100 fewer than any other year) which coincides with the year with lowest mothership participation (Figure 42) and a high in 2017 of about 1,000 (Figure 45 and Table 81). During other years within the catch share program, employment impacts from motherships typically ranged from about 650 to about 950 but have seen a 10% decrease overall compared to the pre-catch share period. Income impacts by catcher-processor vessels have steadily increased since the implementation of the catch share program, with a noticeable rise in 2014 and dips in 2015 and 2023. Income impacts from motherships have regular fluctuations between $30 and $50 million, with a substantial peak in 2017 and lows in 2015 and 2020, with about a 40% increase overall compared to the pre-catch share period.

When looking at shorebased processors, both employment and income impacts are primarily generated by the whiting fishery. (Figure 46 and Table 81). Employment impacts overall stayed about the same over time and income impacts have increased overall. Also, employment impacts from the non-whiting sector have decreased over time, potentially stemming from decreases in the number of mean monthly production workers (Table 89), while non-whiting income impacts have remained relatively stable. In Washington and Oregon, the fluctuation of processor employment impacts was fairly substantial year after year (Figure 46 and Table 81). After 2017, the dramatic fluctuations were

more limited, peaked in 2019, and have decreased most years since then with an average of about 1,631 jobs in the last four years. In California, employment impacts decreased substantially after the start of the catch share program and has averaged at 208 jobs through the catch share period (about a 40% decrease compared to the pre-catch share period). Income impacts in Washington and Oregon from shorebased processors had an overall positive trend since the implementation of the catch share program with a dramatic increase from the lowest point in 2015 to the highest level of income in 2019, with a steady decrease since then (2019–2023) (Figure 47 and Table 82). The income impacts in California from groundfish shorebased processors decreased from the start of the program to 2016 when they started to increase again most years until 2023. The average income impacts from California shorebased processors were the highest in the time series on average in the last four years (2020–2023). When looking across the entire coast, the trends of whiting processors follow those of Washington and Oregon while non-whiting processors have seen slightly decreased employment impacts and slightly increased income impacts.

2.7.6 Engagement and Social Vulnerability

Key Takeaways:

- Astoria and Newport, OR continue to be the most highly engaged communities.
- Communities in California and Coos Bay, Oregon continue to have limited and decreasing engagement.
- Most highly engaged groundfish communities are moderately vulnerable to shocks, including fishery management changes (Table 84). Fort Bragg, CA and Morro Bay, CA each have the highest vulnerability relative to the other highly engaged communities.
- The housing disruption index is highest in both Eureka and Morro Bay California .

2.7.6.1 Engagement

To evaluate how important various communities are to the shorebased trawl fishery, a groundfish trawl specific engagement index is provided, consistent with the previous review. This index consists of four different variables specific to the Shorebased IFQ program: landed weight, ex-vessel revenue, number of active processors, and the number of QS permits affiliated with that community (PFMC and NMFS 2017) [33].

A summary of communities that were highly engaged in the shorebased trawl fishery in any year between 2009 and 2023 is shown in Table 83. Highly engaged communities are defined as any

[33] Note data is aggregated to the CDP level and normalized where needed (e.g., split-share ports). Ex-vessel revenue is inflation adjusted using the consumer price index, and a principal component analysis is applied to the engagement variables. PCA scores are used to create a continuous Engagement Index, which is also categorized into four ordinal levels for reporting purposes

community whose engagement index value exceeds one standard deviation of the mean engagement index value across all communities (here, an index value greater than 1).

Seven communities have been highly engaged in the fishery in at least one year since 2009.[34] Only two communities have been highly engaged in every year, Newport and Astoria, Oregon, where engagement index values generally in the catch share program period have remained consistently high relative to the pre-catch share period. Several communities have decreasing engagement index values over time, particularly communities in California and Coos Bay, Oregon. Westport, WA, became "highly engaged" first in 2016, and has been highly engaged in every year since except 2023.

[34] Note this is a change from the previous review, which found 16 communities to be highly engaged in any year. While this analysis worked to replicate the previous approach, this result could not be reproduced.

Table 84. Engagement Index Values for Communities Highly Engaged (HE) in the Shorebased IFQ Program 2009–2023

Community	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Number of HE years
Astoria, OR	**2.43**	**2.44**	**4.01**	**3.35**	**3.78**	**3.48**	**3.24**	**3.28**	**5.08**	**4.63**	**5.36**	**4.96**	**4.49**	**4.28**	**4.05**	**15**
Fort Bragg, CA	**1.60**	**1.21**	0.96	0.88	**1.09**	**1.13**	**1.06**	**1.04**	**1.25**	0.36	0.26	0.46	0.45	0.20	0.32	7
Charleston (Coos Bay), OR	**1.41**	**1.14**	**1.36**	**1.23**	**1.03**	0.94	0.93	0.99	**1.12**	**1.00**	0.66	0.61	0.57	-0.21	-0.23	5
Eureka, CA	**1.06**	0.50	0.62	0.61	**1.02**	0.70	0.59	0.74	0.42	0.78	0.57	0.18	0.16	0.23	0.11	2
Morro Bay, CA	0.07	NA	**1.85**	0.93	0.16	-0.13	-0.28	-0.17	-0.26	0.04	-0.30	-0.14	-0.13	-0.27	-0.28	1
Newport, OR	**1.86**	**1.65**	**3.35**	**3.53**	**4.47**	**4.02**	**2.97**	**3.83**	**4.64**	**4.67**	**4.68**	**3.81**	**3.84**	**2.27**	**1.94**	**15**
Westport, WA	0.43	0.92	0.95	0.89	0.96	0.74	0.40	**1.22**	**2.02**	**1.81**	**1.91**	**1.52**	**1.90**	**1.05**	0.89	**7**

Note: 'HE' stands for 'Highly Engaged'.

Source: Personal Communication with Connor Lewis-Smith June 2025

2.7.6.2 Vulnerability

To examine how vulnerable highly engaged groundfish communities may be to management and other shocks, we include the most recent set of Community Social Vulnerability Indicators (CSVI).

First produced in their original form by Jepson & Colburn (2013), the composite indices are a set of quantitative measures that represent different aspects of community wellbeing and vulnerability (Table 84). Each index is composed of different readily observable community characteristics and data, generally available from the U.S. Census Bureau's American Communities Survey. Together, the scores of individual indices produce a single vulnerability index score for a given community (here, at the census designated place (CDP) level). It should be noted that causal links between these indicators and fishery related shocks, such as changes in populations or management shifts, are not direct and require more development (Jepson & Colburn, 2013).

The eight base indicators include the following (please see Jepson & Colburn (2013) for a full description including all composite variables):

- **Personal Disruption Index:** individual vulnerability (such as educational attainment and unemployment)
- **Population Composition Index:** Presence of vulnerable populations (including populations with more dependents, residents that do not speak English, and single female heads of households)
- **Poverty Index:** measure of poverty including those below national poverty levels and number of residents receiving public assistance.
- **Labor Force Structure Index:** measure of stability and makeup of the labor force where higher rates of self-employment and fewer opportunities indicate higher vulnerability
- **Housing Characteristics Index:** measure of infrastructure vulnerability, including vulnerability to coastal hazards
- **Retiree Migration Index:** indicator of gentrification measured by the concentration of elderly people.
- **Urban Sprawl Index:** high indicator of gentrification measured by costs of living and population growth
- **Housing Disruption Index:** reflects fluctuations in the housing market, as when rising home values and rents cause displacement.

Social vulnerability index scores for the seven communities that have been highly engaged in the shorebased IFQ program in at least one year between 2009 and 2023 indicate that overall, most

communities are moderately vulnerable to shocks, including fishery management changes (Table 84). Fort Bragg, CA and Morro Bay, CA each have the highest vulnerability relative to the other communities, with a "medium high" social vulnerability index score. As described previously, both communities have not been highly engaged in the catch share program since at least 2013, and engagement has declined over time, particularly in Fort Bragg. The housing disruption is highest in both Eureka, CA, and Morro Bay.

Table 85. Social Vulnerability Indices for Communities Highly Engaged in the Shorebased IFQ program

Community	Population	Personal Disruption	Population Composition	Poverty	Labor Force Structure	Housing Characteristics	Housing Disruption	Retiree Migration	Urban Sprawl	Social Vulnerability
Eureka, CA	26,519	Med High	Medium	Medium	Low	Med High	High	Low	Low	Medium
Fort Bragg, CA	7,007	Med High	Med High	Med High	Medium	Med High	Medium	Medium	Low	Med High
Morro Bay, CA	10,766	Medium	Low	Low	Med High	Medium	High	Med High	Low	Med High
Astoria, OR	10,184	Medium	Low	Medium	Low	Med High	Medium	Low	Low	Low
Coos Bay, OR	15,949	Medium	Low	Medium	Medium	High	Low	Medium	Low	Medium
Newport, OR	10,319	Medium	Low	Medium	Med High	Med High	Low	Med High	Low	Medium
Westport, WA	2,498	Medium	Low	Med High	High	High	Low	Med High	Low	Medium

Note: Values are based on 2022 data, the most recent available data for use at the time of this report. social vulnerability indices for communities highly engaged in the shorebased west coast groundfish trawl IFQ program for one or more years between 2009 and 2023. Also note values differ from values included for 2022 in the CCIEA (Figure P.3).

Source: Personal Communication with Connor Lewis-Smith June 2025

2.7.7 Infrastructure

Key Takeaways:

- The loss of infrastructure that supports the groundfish fisheries and fisheries overall remains a concern in many ports coastwide.
- Newport and Astoria/Tillamook were reported to have supplies and services available relatively close to the permit holders' address. These communities appear to be faring better for support services than other areas under the catch share program.
- Washington, Northern California, and Brookings/Coos Bay permit holders generally had to travel the farthest for most support services, including processors and fish buyers.

Fisheries and fishing communities depend on adequate infrastructure, including but not limited to harbors and wharfs; processors; suppliers of fishing gear, ice, and other supplies; and vessel maintenance services. Because it was expected that consolidation in the number of harvesters would occur under the program, a concern was that such consolidation would similarly occur in port areas and contribute to ongoing loss of infrastructure across ports (PFMC & NMFS, 2017).

To explore how the implementation of the program affected infrastructure, the 2017 Review provided an assessment of changes to infrastructure based on social science interview results and a study that was conducted for that review (the Pacific Coast Groundfish Fishery Social Survey, PCGFSS, (PFMC & NMFS, 2017).

Overall, 23.3 percent of interviewees indicated a loss of infrastructure in many ports coastwide. Interviewees in Oregon noted consolidation and centralization of fishing activity in Newport and Astoria and losses in infrastructure in other ports during the same time period. The review concluded that Newport appeared to have done well under the program, in part because the diversity of its fisheries and infrastructure available there (PFMC & NMFS, 2017). In Washington, interviewees noted a reduction in the number of processors over the first five years of the program, but overall few changes in the amount of infrastructure. Participants noted that California's trawl infrastructure appeared to have been shrinking since before the catch share program, starting with the vessel buyback program, particularly in central California. In Northern California, interviewees indicated that they anticipated further infrastructure losses as suppliers and service provided reached retirement age.

Because there have been no updates to the social survey conducted for the first review, this review relies on different information sources to identify trends in infrastructure loss. In 2023, the NWFSC conducted a Participation Survey of all West Coast permit holders (NWFSC, 2023). This was the third iteration of the survey, and a new set of questions was added, asking about the number of miles traveled between homeports for services and supplies. Vessels were assigned to a homeport

according to the permit holder's address. Because there were only 20 IFQ respondents to the participation survey, all groundfish responses are provided to report the response by port group (Table 85, Table 86, and Figure 48).

Information on the distance traveled to obtain supplies or services is not available before 2023, so a direct comparison of the changes in distance traveled cannot be provided. To the extent that the permit holder's address does not closely correspond to where the vessel used to fish, is kept when not fishing, or where their catch is offloaded, it could impact the results. The 2023 survey data indicates that Newport appears to have many of the supplies and services close to the permit holder's reported address. In both Newport and Astoria/Tillamook, supplies and services are relatively close to the permit holder's address. One exception was that Newport permit holders had to travel further by vessel than any of the other permit holders for cold storage, and the second furthest by vehicle. Based on access to services and supplies, as stated in the previous program review, this is an indication that Newport and Astoria/Tillamook have fared relatively well under the catch share program.

Processors/Buyers were furthest by vessel in the "All Washington" and "Brookings/Coos Bay" areas, with travel distances averaging 40 miles and 46 miles, respectively. Vessel travel distances to the processor/buyer were about 6 miles in Northern California and 4 miles in Southern California.

Permit holders in Washington, Northern California, and Brookings/Coos Bay had to travel the farthest by vessel for ice and bait (11 to 14 miles). In Central and Southern California, the travel distance for bait and ice was about 3 miles. The same general trend is shown for the travel distance by vessel for fuel with Washington, Northern California, and Brookings/Coos Bay permit holders traveling the farthest.

In almost all cases, permit holders had to travel farther by vehicle for services than they did by vessel, and in some cases, it was substantially farther. A notable exception was travel to the drydock/boatyard in Northern California, where it was more than twice the distance by vessel.

Table 86. Average miles travelled by vehicle or vessel between homeport and fishery suppliers

		Fuel		Gear		Ice/Bait	
Port group	n	Vehicle	Vessel	Vehicle	Vessel	Vehicle	Vessel
All Washington	30	82.9	19.0	178.8	2.4	106.7	14.2
Astoria/Tillamook	21	4.6	0.6	36.9	2.5	10.3	0.5
Newport	22	4.0	0.2	42.3	1.6	6.9	0.5
Brookings/Coos Bay	40	26.1	7.8	53.6	46.0	34.4	11.1
Northern California	43	21.3	12.6	206.5	44.4	39.0	11.9
Central and Southern California	142	8.9	2.5	34.1	7.9	14.9	2.9

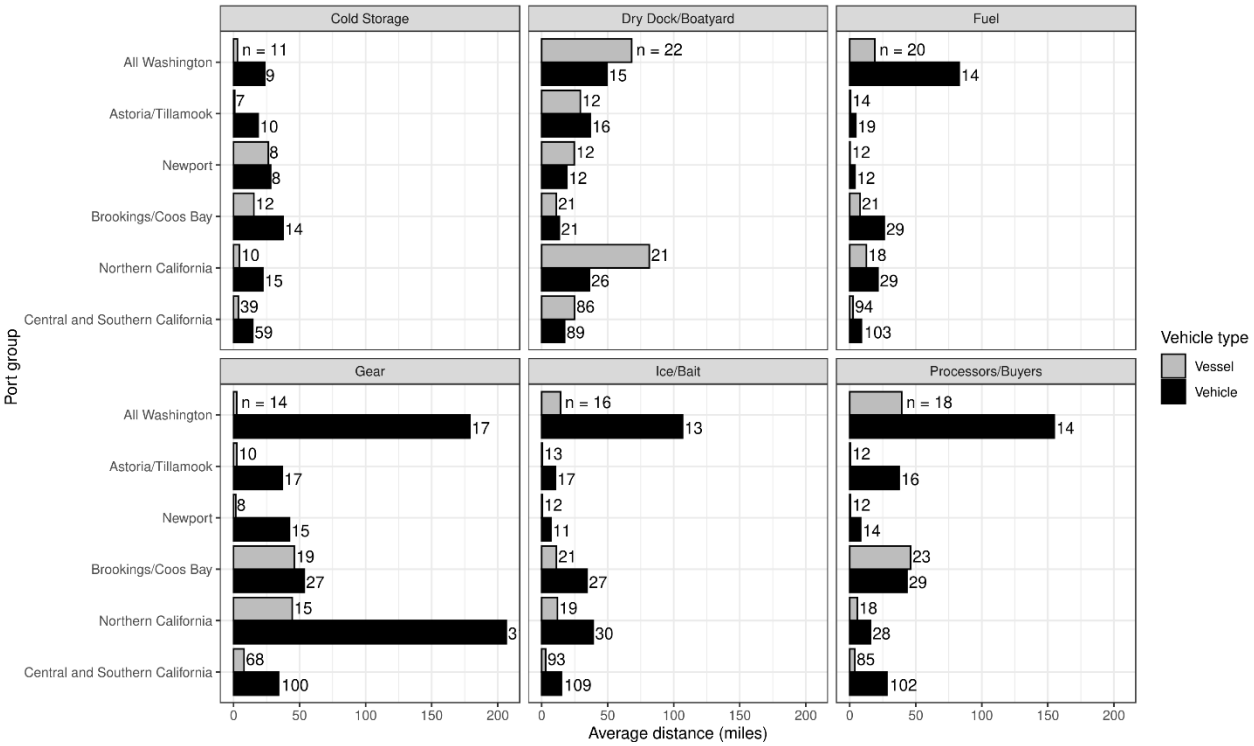
Source: Participation Survey of all West Coast permit holders (NWFSC, 2023)

Table 87. Average number of miles travelled by vehicle or vessel between homeport and service providers or processors/buyers

		Cold Storage		Dry Dock/Boatyard		Processors/Buyers	
Port group	n	Vehicle	Vessel	Vehicle	Vessel	Vehicle	Vessel
All Washington	30	23.6	2.9	49.5	68.1	154.9	39.3
Astoria/Tillamook	21	18.6	0.9	36.8	29.2	37.4	0.5
Newport	22	28.0	26.4	19.1	24.7	8.3	0.5
Brookings/Coos Bay	40	37.4	15.3	13.4	11.1	43.3	46.1
Northern California	43	22.1	4.4	36.0	81.5	15.8	5.7
Central and Southern California	142	14.5	3.6	17.4	24.9	28.2	3.9

Source: Participation Survey of all West Coast permit holders (NWFSC, 2023)

Figure 48. Average distance traveled (mean miles) for groundfish respondents to 2023 NWFSC Participation survey by vessel and vehicle.



Note: The number of non-NA responses is shown to the right of the bars. Zeroes were included in the mean calculations.

Source: Participation Survey of all West Coast permit holders (NWFSC, 2023)

2.7.8 Other Fisheries

Key Takeaways:

- In 2023, the most common catcher vessel fishery portfolio was composed of those who fished in any non-whiting catch share fishery (e.g., DTS trawl, non-DTS trawl or gear-switchers) as

well as in the Dungeness crab and pink shrimp fisheries (31 vessels), compared to 15 vessels that only fished in any non-whiting catch share fishery.

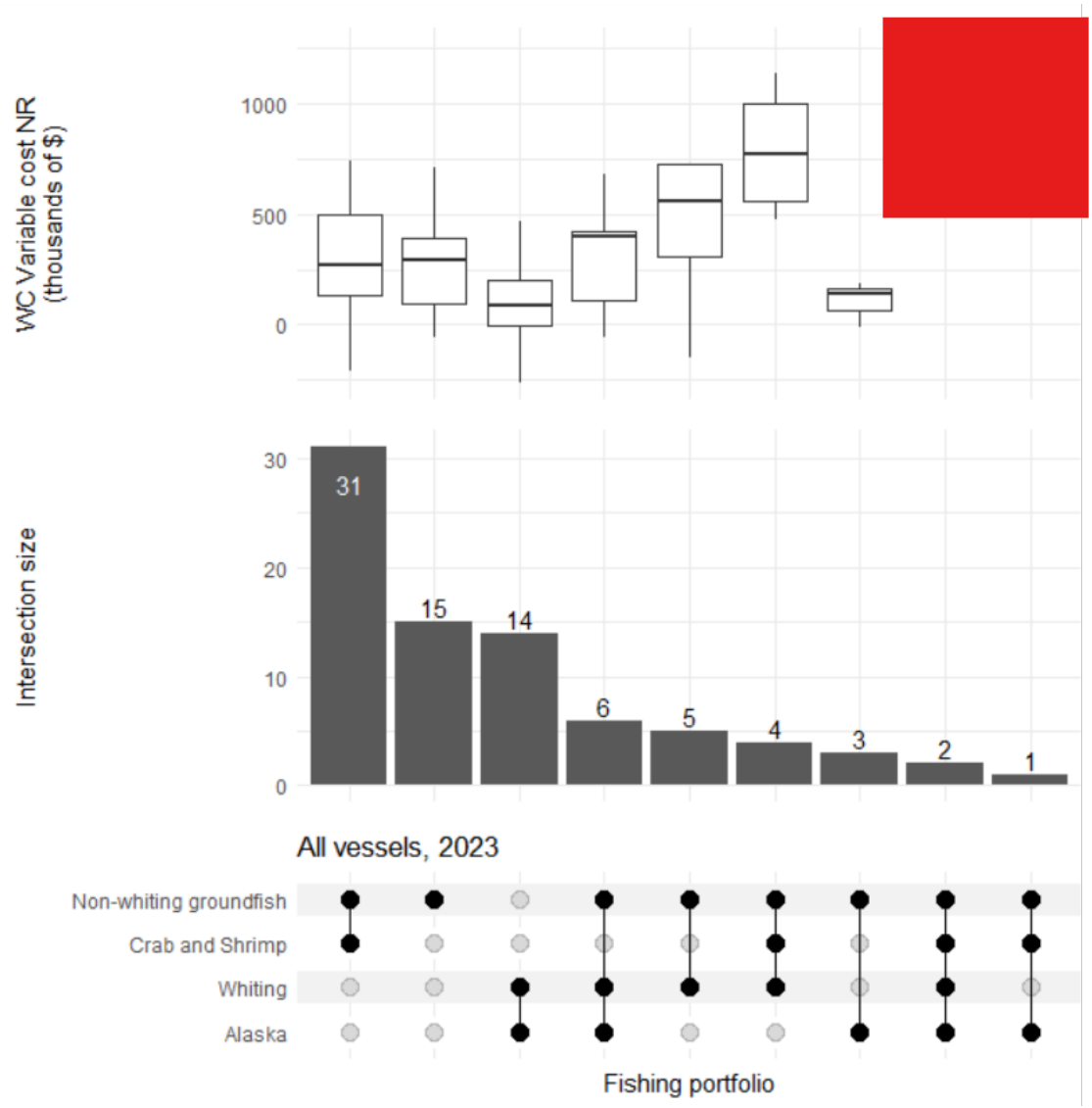
- The proportion of ex-vessel revenue from catch share program fisheries has declined to less than 50% in 3 of the last 4 years (through 2023), indicating more reliance on other fisheries.
- Shorebased processors derived a lower proportion of their production value from catch share fisheries than catcher vessels derived ex-vessel value. The proportion has exhibited more variability but generally declined in recent years (except 2023) under the catch share program.

The ability to determine when to fish and what to fish for under the catch share program is a benefit to catch share program participants, but since nearly all catcher vessels also participate in non-CS activities, it is important to understand the role of these other fisheries on the economic profile of these fleets. For example, trends might show a decrease in catch shares-related earnings, but it could be related to vessels opting to spend an increased share of time in the Dungeness crab fishery. Different interventions might be considered to support the fishery, depending on how vessels are choosing to allocate their fishing days across state and other federal fisheries.

EDC surveys provide data on the harvest and value of non-groundfish species that are summarized in the FISHEyE reporting tool. In FISHEyE, "other species production" includes coastal pelagics (including sardines and mackerel), crab, echinoderms (including sea urchins and sea cucumbers), California halibut, Pacific halibut, Pacific herring, salmon, squid, sturgeon, tuna, other shellfish, and other species (Steiner et al., 2021).

In 2023, the most common catcher vessel fishery portfolio was composed of those who fished in any non-whiting catch share fishery (e.g., DTS trawl, non-DTS trawl or gear-switchers) as well as in the Dungeness crab and pink shrimp fisheries (at 31 vessels). Of those 31 vessels, 7 were gear-switchers that also fished in the Dungeness crab fishery. The remainder were bottom trawlers who did a mix of crab, shrimp or crab and shrimp. The next most common portfolio were vessels that only fished in the non-whiting groundfish sector (15 vessels). These vessels were predominantly bottom trawlers, but also included 2 gear-switchers and three vessels that fished in the non-whiting midwater trawl fishery. The third most common fishery portfolio is vessels who fished in any whiting fishery (MS-CV or shoreside) and also fished in Alaska (14). The remaining 21 vessels participated in different combinations of all these fisheries, with 17 vessels participating in both the whiting and non-whiting catch share fisheries. Under the catcher vessel type definitions, these are all classified as whiting vessels, and as described previously, are driven by increased participation of whiting vessels in the non-whiting midwater trawl fishery (Section 2.5.1). Notably, of these, the four vessels that participate in the non-whiting, whiting, and crab and shrimp fisheries had the highest median VCNR of any portfolio (~$750,000), approximately three times greater than the median VCNR of the two most common vessel portfolios (~$250,000).

Figure 49. Catcher Vessel Fishing Portfolios Across Catch Share and Non-Catch Share Fisheries

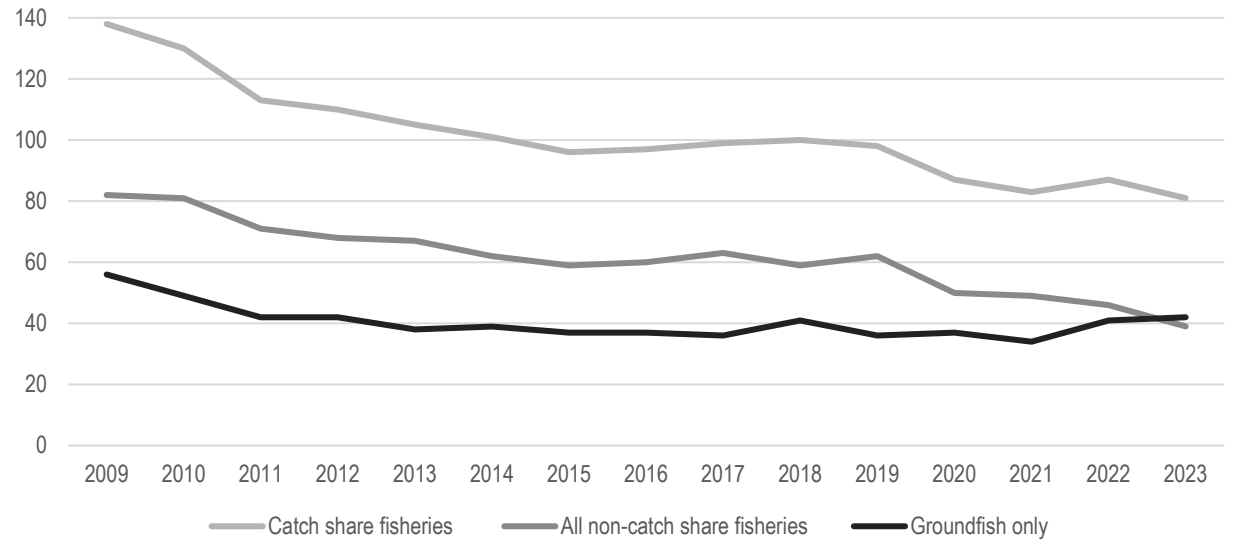


Source: EDC data, personal communication with Erin Steiner on 8/11/2025

Figure 50 shows the total number of catcher vessels that participated in the catch share program fisheries. The number of catcher vessels declined after the program was implemented, both in terms of those that only fished catch share program groundfish and those that participated in catch share program groundfish and other species fisheries as defined in FISHEyE. In 2010, a total of 130 catcher vessels participated in the catch share program fisheries, 49 fished only groundfish and 81 also fished other species. When the program was implemented in 2011 the numbers decreased to a total of 113 catcher vessels, with 42 only fishing groundfish and 71 also fishing other species. By 2017, there were 99 catcher vessels, with 36 only fishing groundfish and 63 also fishing other species. For the first time in 2023, more catcher vessels fished only groundfish (42) than fished both groundfish and other species (39), and the total number of catcher vessels had declined to 81. These trends indicate a

decrease in the overall number of vessels participating in the catch share program, with those that left being more likely to have participated in non-catch share fisheries than only groundfish fisheries. This trend may indicate that participants are taking advantage of the flexibility provided under the catch share program by choosing what fisheries to focus their effort on during the year. For example, during years when the shrimp and/or crab fisheries are more economically viable, a vessel operator could choose to lease the catch share program quota and exclusively participate in those fisheries. When those fisheries are less economically viable, a vessel operator could choose to focus on groundfish harvests. As described in the previous program review, vessels that are not participating in the catch share program but increase effort in other fisheries "continue to benefit their local communities through these activities, but they may also have adversely impacted [the] other fisheries."

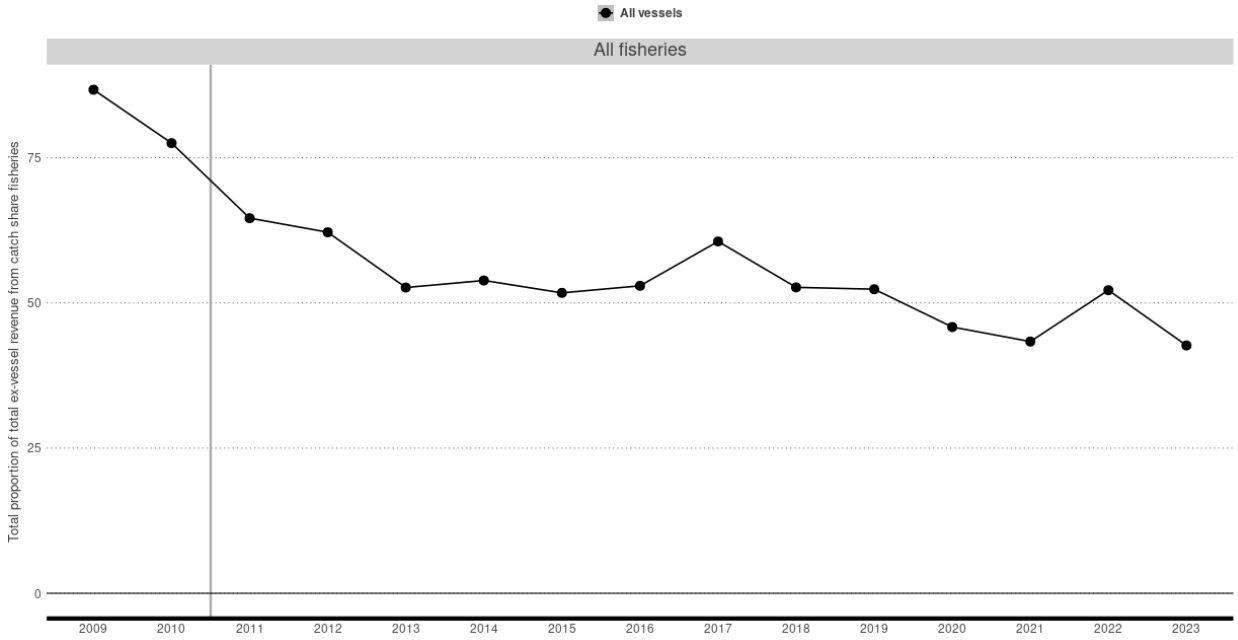
Figure 50. Total number of catch share program catcher vessels and catch share program catcher vessels that participate in other fisheries



Source: FISHEyE

Figure 51 shows the proportion of total ex-vessel revenue that catcher vessels derive from catch share program fisheries. The proportion of ex-vessel revenue derived from trawl catch share fisheries was greater than 75% before the catch share program was implemented and has declined to less than 50% of ex-vessel revenue being derived from catch share program fisheries in three of the four years during 2020–2023. So, while fewer catcher vessels are being used to harvest species not included in the catch share program, those other species are accounting for a greater proportion of the total ex-vessel value.

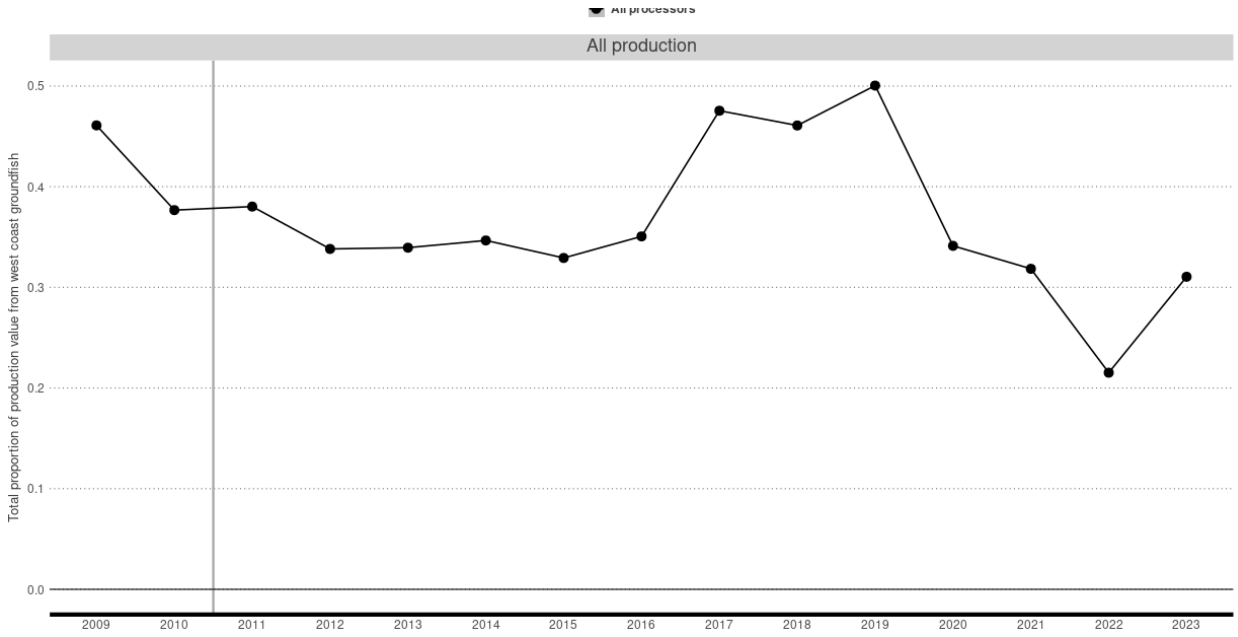
Figure 51. Proportion of ex-vessel value that catcher vessels derived from catch share program fisheries



Source: FISHEyE

Figure 52 shows the proportion of production value (first wholesale gross revenue) that shorebased processors derived from West Coast groundfish relative to all fisheries. The overall proportion of production value derived from groundfish by these entities is less than the proportion of ex-vessel revenue derived from groundfish by catcher vessels, exhibiting different trends. The proportion of production value from groundfish was greater during the 2017 through 2019 period (approaching 50%) than before the catch share program. The combination of relatively strong whiting, widow rockfish, dover sole, petrale sole, and sablefish fisheries helped increase the proportion of value derived from groundfish. However, by 2022, just over 20% of the value was derived from groundfish. Weak groundfish markets during that period were a factor in this outcome. The proportion increased to over 30% in 2023, or about the 2021 level.

Figure 52. Proportion of product value from catch share fisheries

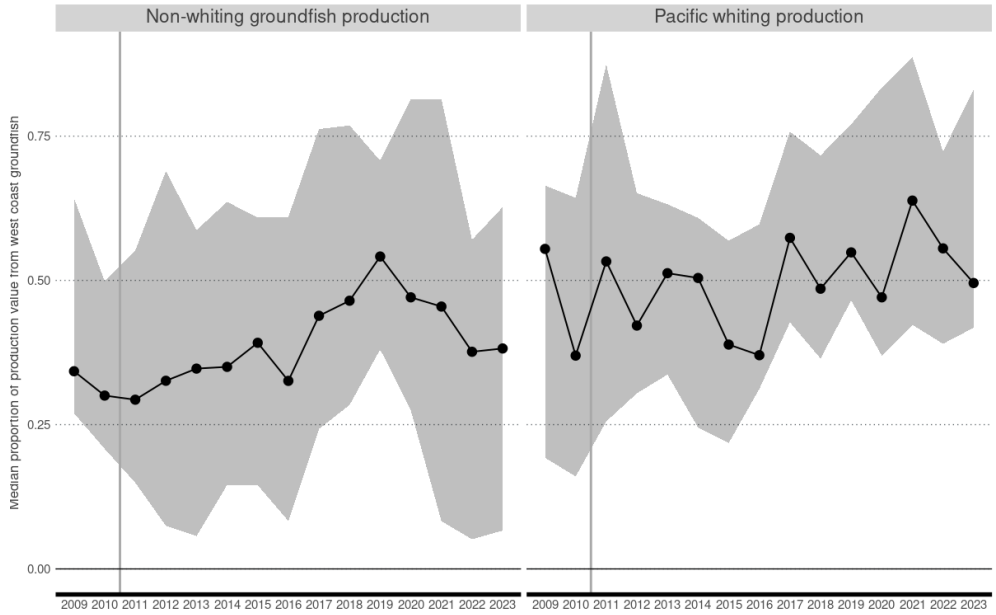


Source: FISHEyE

At the individual processors' level, a total production value for all groundfish species (including small amounts of groundfish harvested in fisheries outside the catch share program) is compared to the total production value for all species. Proportions are calculated per processor and summarized as processor averages and for the sector.

Figure 53 indicates that non-whiting groundfish production value for shorebased processors generally increased after implementation of the catch share program through 2019 and declined until 2023. Mean Pacific whiting production had more interannual variation compared to the total value, with a slight increasing trend through 2021. Declines occurred in 2022 and 2023. By 2023, median whiting production accounted for about 50% of all production value.

Figure 53. Mean proportion of shorebased production value derived from West Coast groundfish (including whiting)



Source: FISHEyE

2.7.9 Direct Employment by Sector

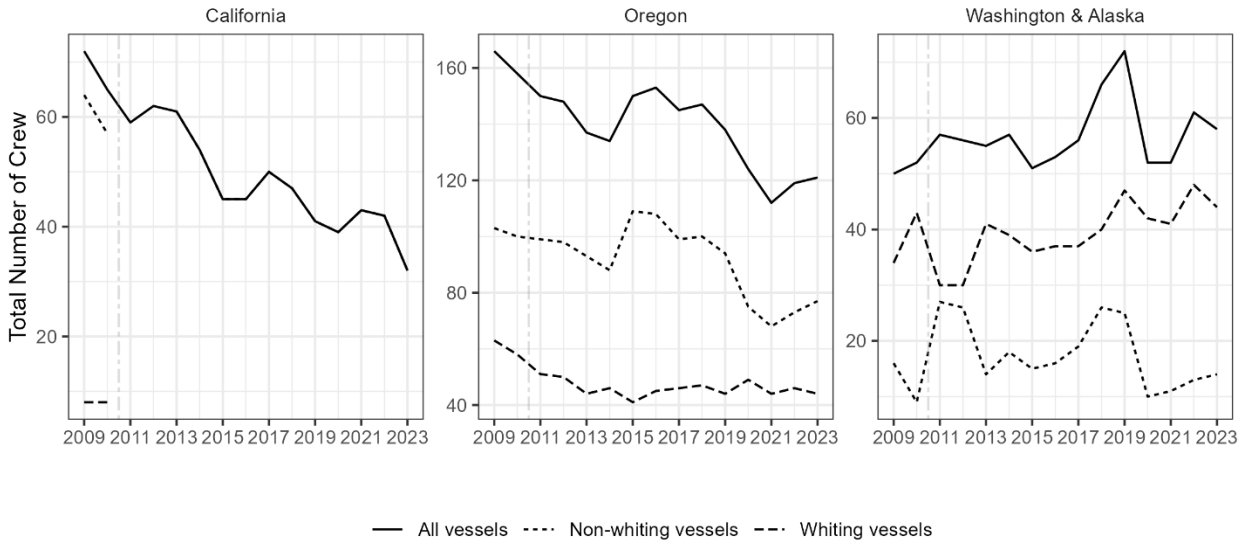
Key Takeaways:

- The total number of crew positions on vessels homeported in California consistently decreased over time with a decrease of over 10% between the first review period average (2011–2015) and the 2016–2019 average and again between the 2016–2019 average and 2020–2023 average.
- Oregon-based vessels have the highest number of crew positions, driven by non-whiting fisheries. However, despite seeing increases between 2014 and 2015, total number of crew positions decreased sharply in 2018 and remains at the lower levels in the time series at 119 positions.
- The number of crew positions on vessels based in Washington and/or Alaska was variable staying between 50 and 60 positions besides 2018, 2019, and 2022, which all had more than 60.

The data on direct employment by sector illustrates the number of crew positions on a vessel, excluding the captain, and does not account for any turnover that may occur for a position, so it is not a count of the number of individuals employed (FISHEyE). The number of crew positions presented should be considered as the minimum number of people employed. Before the EDC program, little was known about employment in the processing sector and data on captain and crew employment

on vessels were also limited. The total number of crew positions on vessels homeported in California has decreased over time from about 68 on average before the catch share program to about 48 since the start of the program (Figure 54). For vessels based in California, the number of crew positions on vessels targeting whiting has been zero since the start of the catch share program and the number of crew positions on vessel participating in the non-whiting fisheries based in California has generally decreased over time with a few upticks in 2017 and 2021. In Oregon, total number of crew positions on vessels homeported in the state has also generally decreased from an average of 162 across all vessels to an average of about 137 across all vessels. Employment positions with vessels targeting whiting homeported in Oregon decreased until 2013 and have plateaued with a few relatively minor fluctuations at about 46 positions (Figure 54). With vessels participating in non-whiting fisheries based in Oregon, the number of crew positions decreased slowly until 2014 (an average of 97 positions between 2011 and 2015 compared to about 102 positions before the catch share program) when it increased for the period 2016 to 2019 (about 100 positions on average) but then continued to decrease after that until 2022 (about a 73 position average from 2020 to 2023). With Washington and Alaska homeported vessels, the number of crew positions has been relatively steady around 50 total crew positions available each year, besides a slight bump in 2018 and 2019 (Table 87). Crew positions with vessels participating in non-whiting fisheries have made up the majority of the jobs (about 75%) and have a slightly increasing trend with a dip in 2011 and 2012. Employment with vessels targeting whiting has been low and has a slightly decreasing trend since the start of the catch share program.

Figure 54. Catcher Vessel Number of Crew Positions by Homeport State



Note: Number of crew indicates the number of positions, not individuals, not including the captain. Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

Table 88. Catcher Vessel Number of Crew Positions by Homeport State

	California			Oregon			Washington & Alaska		
Year	All vessels crew	Non-whiting vessels crew	Whiting vessels crew	All vessels crew	Non-whiting vessels crew	Whiting vessels crew	All vessels crew	Non-whiting vessels crew	Whiting vessels crew
Pre-CS	68.5	60.5	8.0	162.0	101.5	60.5	51.0	12.5	38.5
CS	47.7	45.4		136.8	90.8	45.9	57.4	18.0	39.4
2011–2015	56.2	53.3		143.8	97.4	46.4	55.2	20.0	35.2
2016–2019	45.8	45.8		145.8	100.3	45.5	61.8	21.5	40.3
2020–2023	39.0	39.0		119.0	73.3	45.8	55.8	12.0	43.8

Note: Number of crew indicates the number of positions, not individuals, not including the captain. The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period.

Source: FISHEyE

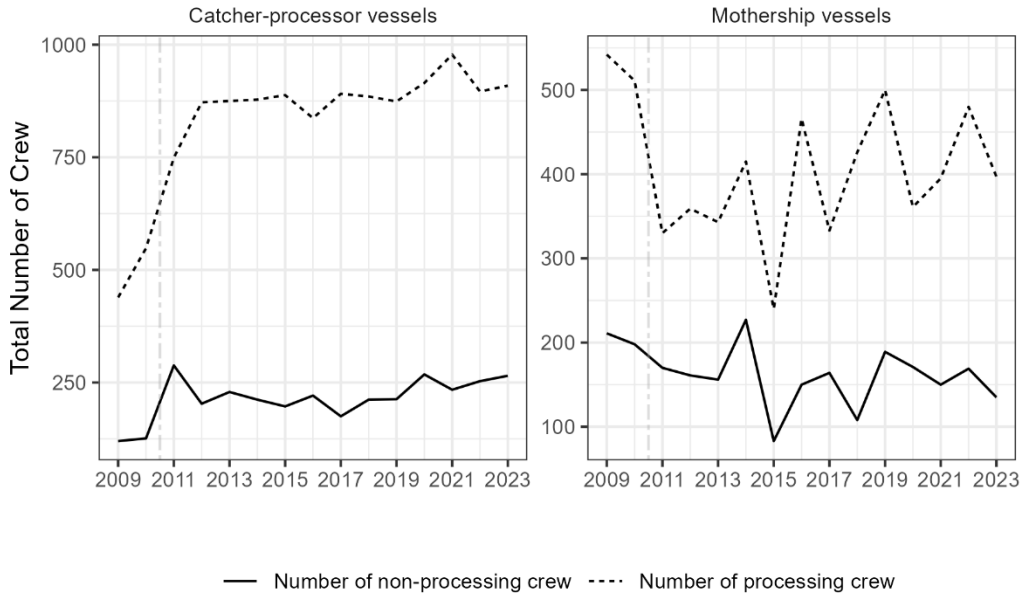
The number of crew positions on motherships has fluctuated throughout the years since the start of the catch share program. While the fluctuation in mothership processor crew employment positions was more pronounced since the last review, there was a slight increasing trend during that time (Table 88). For non-processing mothership crew positions, including the captain, wheelhouse, deckhands, engine room, and galley, the trend since the last review is flatter. Catcher-processor processing crew member positions increased at the start of the catch share program and have been relatively steady since 2012 with a slight dip in 2016 and a slight high in 2021. Catcher-processor non-processing crew employee positions have fluctuated more than the non-processing crew. Non-processing crew position numbers increased dramatically at the start of the catch share program in 2011 and then decreased to about 200 in 2012 (Table 88). Since 2012, the non-processing crew member numbers have increased with a slight dip in 2017 and a slight high in 2020.

For Washington and Oregon shorebased processors, the average number of monthly production employees (for all production, including groundfish and non-groundfish species at processors who process catch share species) has fluctuated between 1,000 and 1,500 with the exception of 2013 (1,520.6) and 2016 (990.6). The number of non-production employees, including those involved in supervision above line-supervisor level, sales, advertising, credit, collection, installation, cafeteria, recordkeeping, clerical and routine office functions, guard services, executive, purchasing, finance, and legal, at Washington and Oregon shorebased processors has been relatively consistent from 2011 to 2016 at between 100 and 125 and increased in 2017 to nearly 175 where it has stayed consistent through 2023, averaging 160 between 2020 and 2023.

In California, the average monthly number of production employees decreased over time from roughly 450 in 2012 to 200 in 2018, but rebounded to over 400 in 2022 (Figure 56 and Table 89). However, for non-production employees, which had been decreasing from 2009 to 2019, to an average of 28.5 mean monthly employees between 2016 and 2019, in 2020, this jumped to over 150, before jumping again in 2022 to over 300. However, even though groundfish landings in the state did increase in 2022, it likely did not drive the increase in production and non-production workers in

that year, since the data include the number of employees for all species production, including other non-groundfish species in large seafood processing and distributing companies.

Figure 55. Mothership & Catcher-Processor Direct Employment



Note: Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

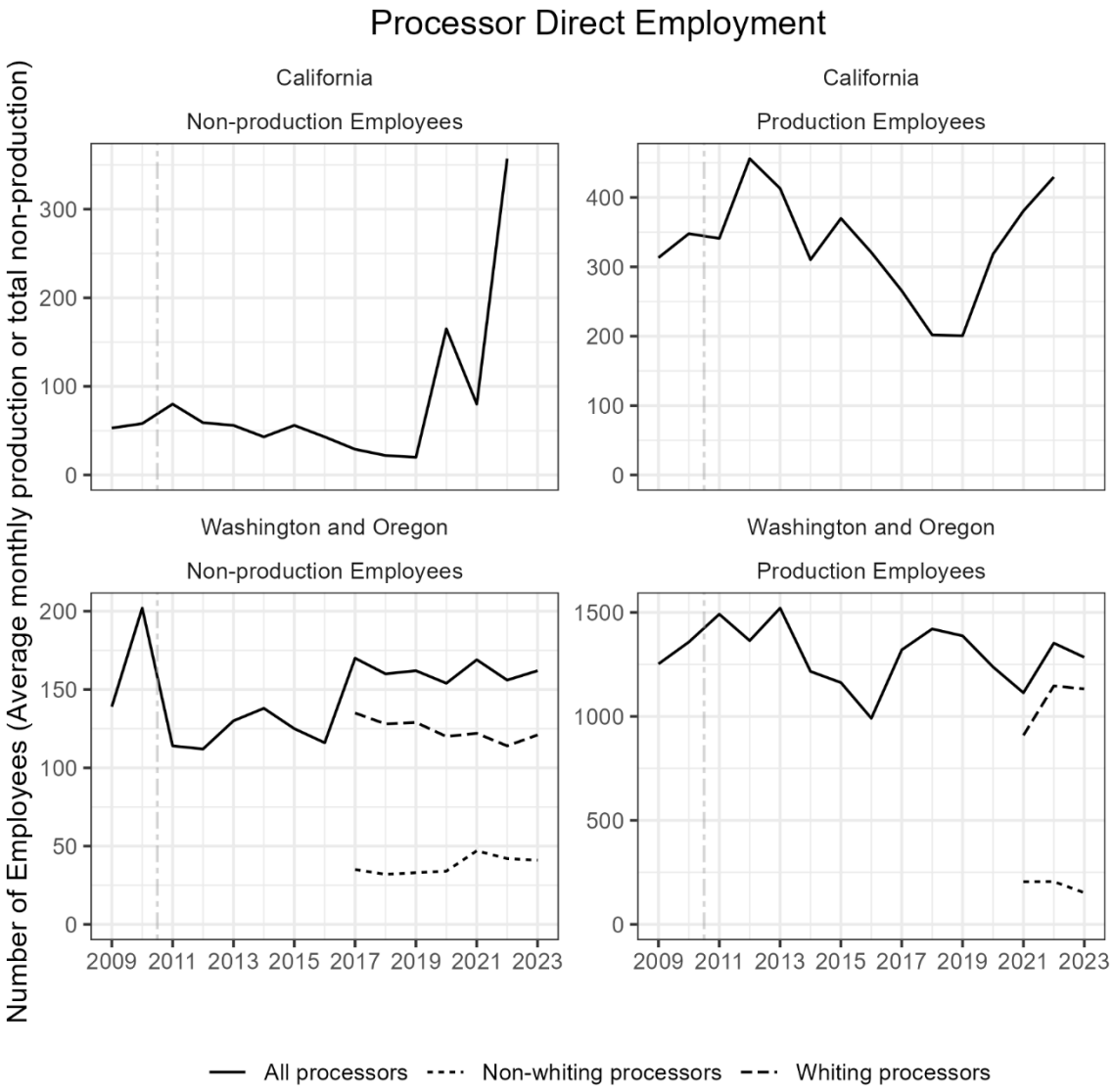
Table 89. Mothership & Catcher-Processor Direct Crew Employment

	Mothership		Catcher-Processor	
Year	Processing Employees	Non-processing Employees	Processing Employees	Non-processing Employees
Pre-CS	526.5	204.5	493.5	123.0
CS	388.1	156.4	880.5	228.5
2011–2015	337.4	159.4	852.4	225.8
2016–2019	431.3	152.8	871.8	205.3
2020–2023	408.3	156.3	924.5	255.0

Note: The rows are means of the specified period with "CS" being the entire catch share period (2011–2023) and "Pre-CS" being the time prior to the catch share period.

Source: FISHEyE

Figure 56. Shorebased Processor Direct Employment



Note: Average number of monthly employees reflects all species production, not just groundfish. As a result, trends may not be attributable solely to changes in the groundfish fishery depending on other species processed. Production employees are reported as a sum of the workers employed in an average month across the year for all processors. Non-production employees are reported as the number of non-production employees the week of 12 March for the sector as a whole. Years where there is no data reported, there were fewer than three processors that participated in the fishery and the data for the year is considered confidential. This FISHEyE data is from all fisheries and includes employees from non-catch share processors. Data on the processors exclusively part of the catch share program was confidential. Dashed vertical line denotes the beginning of the catch share program

Source: FISHEyE

Table 90. Direct Employment by Shorebased Processors

	California		Washington & Oregon	
Year	Mean Monthly Production Employees	Non-production employees	Mean Monthly Production Employees	Non-production employees
Pre-CS	330.5	55.5	1,305.0	170.5
CS	334.1	84.2	1,296.9	143.7
2011–2015	378.0	58.8	1,350.8	123.8
2016–2019	247.5	28.5	1,279.5	152.0
2020–2023	376.3	200.7	1,247.0	160.3

Note: Production employees are reported as a sum of the workers employed in an average month across the year for all processors. Non-production employees are reported as the number of non-production employees the week of 12 March for the sector as a whole. Only data from all processors were included in this table. As with Figure 55, years without data reported here are years where there were fewer than three processors that participated in the fishery and the data is considered confidential.

Source: FISHEyE

2.7.10 Seafood Distribution and Consumers

Key Takeaways:

- Small-scale retail markets are the most important market in terms of total groundfish production value for first receivers and shorebased processors.
- Direct-to-consumer groundfish sales were negatively impacted by COVID-19 but improved after 2020.
- Wholesale, export, and intermediate markets were the highest ranked whiting markets.
- Distribution of catch by month for most species considered had similar trends before and after the catch share program, but with some shift to account for the amount of the species available for harvest and the flexibility to accommodate participation in other fisheries.

This section focuses on two issues. First is the seafood markets sold to by the first receiver/shorebased processor of groundfish and whiting products. The second is the mean annual catch by month for select species.

The markets discussed are in terms of the buyers/consumers of seafood products produced by the first receivers or shorebased processors of groundfish and whiting. Starting in 2018, the EDC program requested that participants in the First Receiver and Shorebased Processor survey "Rank each [market]category with regard to importance in terms of total production value." The following definitions were provided to the individuals completing the survey:

- Large-Scale Retailers include supermarkets, restaurant chains, grocery store chains, and other corporations.

- Small-Scale Retailers include fish markets, restaurants, community-supported fishery (CSF) programs, and other small businesses.
- Other Intermediate Markets include fish sold to entities where the final product market is unknown (i.e., other fish processing facilities).
- Other markets reported include direct-to-consumer sales, exporters, wholesalers, and other buyers that are not included in the previous categories.

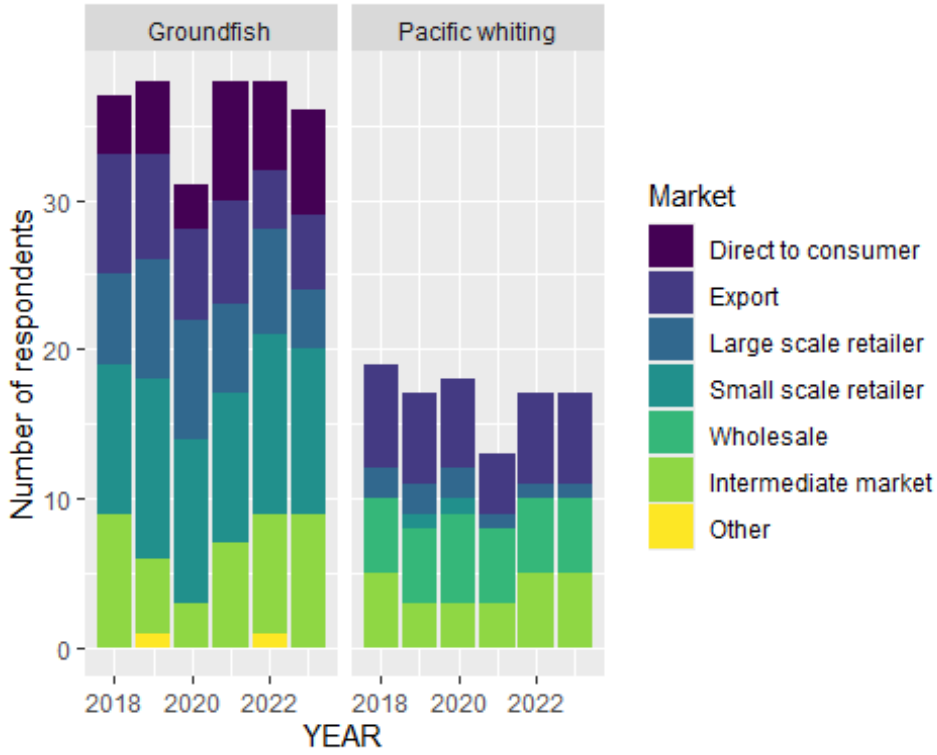
Responses were specific to "Groundfish Activities" and "Whiting Activities". The two categories were separated because the marketing channels for non-whiting groundfish and whiting often differ.

Washington, Oregon, and California each require a state fish seller/buyer license for all fish purchases, including vessel operators selling directly to consumers. These requirements have remained unchanged since the catch share program was implemented. The catch share program added a requirement that fish buyers obtain a Federal first receiver site license. This license was implemented for accurate catch accounting.

The number of first receivers/shorebased processors who ranked a market as being among the top three in sales value is shown in Figure 57. The same information in percentage terms is shown in Figure 58. Small-scale retailers were the most frequent market type, ranked as being of high importance (in the top three markets), for companies reporting groundfish activities. Other common categories of groundfish activities reported by the first receiver/shorebased processor submitting the survey included large-scale retailers and export markets, both of which have decreased in frequency since 2020. Conversely, direct-to-consumer sales and intermediate markets increased after 2020. During 2020, there were fewer direct-to-consumer sales; the COVID-19 pandemic, which limited personal contact, is suspected to have impacted this outcome.

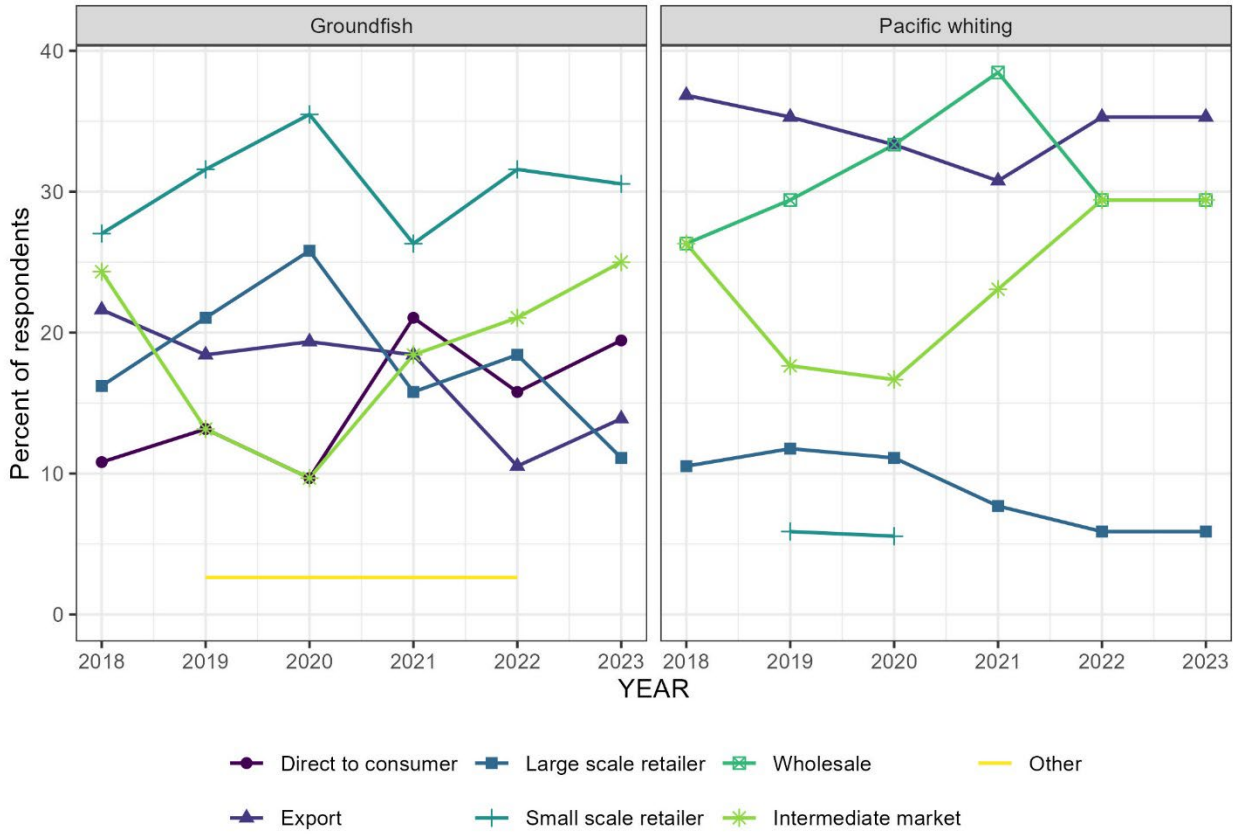
For whiting activities, the most frequent market types ranked highest (in the top three) were wholesale, export markets, and intermediate markets. The intermediate markets ranking was primarily used to indicate that the participant did not know the final disposition of the fish because their facility distributed the product to a cold storage facility. Direct-to-consumer, large-scale retail, small-scale retail, and other market sales were included in the top three markets, but their frequency varied by year.

Figure 57. Number of respondents who ranked the market category as the top three most important in terms of production value.



Source: Personal communication, Erin Steiner

Figure 58. Percent of respondents who ranked the market category as the top three most important in terms of production value



Source: Personal communication, Erin Steiner

The mean monthly shoreside catches (lb) of the five selected species are shown in Figure 59. The species selected are whiting, sablefish, petrale sole, dover sole, and widow rockfish. These species were selected because of their economic importance and to reflect changes under the program. Overall, timing of when fishing took place during the year were somewhat similar before and after the catch share program was implemented, with some notable changes in quantity harvested and adjustments required to accommodate the catch levels. Whiting harvests peak in August under the catch share program, but in June during the pre-catch share program years (2009 and 2010). This reflects both an increased amount of catch under the catch share program and an increase in catch later in the year. Bottom trawl sablefish showed an increased harvest in April and a decline in December, before the catch share program was implemented. During the catch share periods catch increased through March/April, decreased, and began increasing again in August/September. Gear switchers harvest of sablefish was less than 100,000 lb per month, on average, through June and then increased through October, before declining. The petrale sole fishery typically experienced decreasing catches from January through April. In each time period, the catch was relatively stable from May through August, but at different levels of catch. During the catch share program years, the catch tended to increase through December, but declined during the pre-catch share program years.

Dover sole exhibits similar average monthly trends before and after the catch share program; however, harvest levels were higher during the pre-catch share program years. Widow rockfish had higher quotas since the last review, providing consumers greater access. Peak harvests occurred in March during the first half of the year, an EFP allowed catches before the whiting season, and in October and November in the second half of the year.

Figure 59. Mean catch (lb) by month of select species

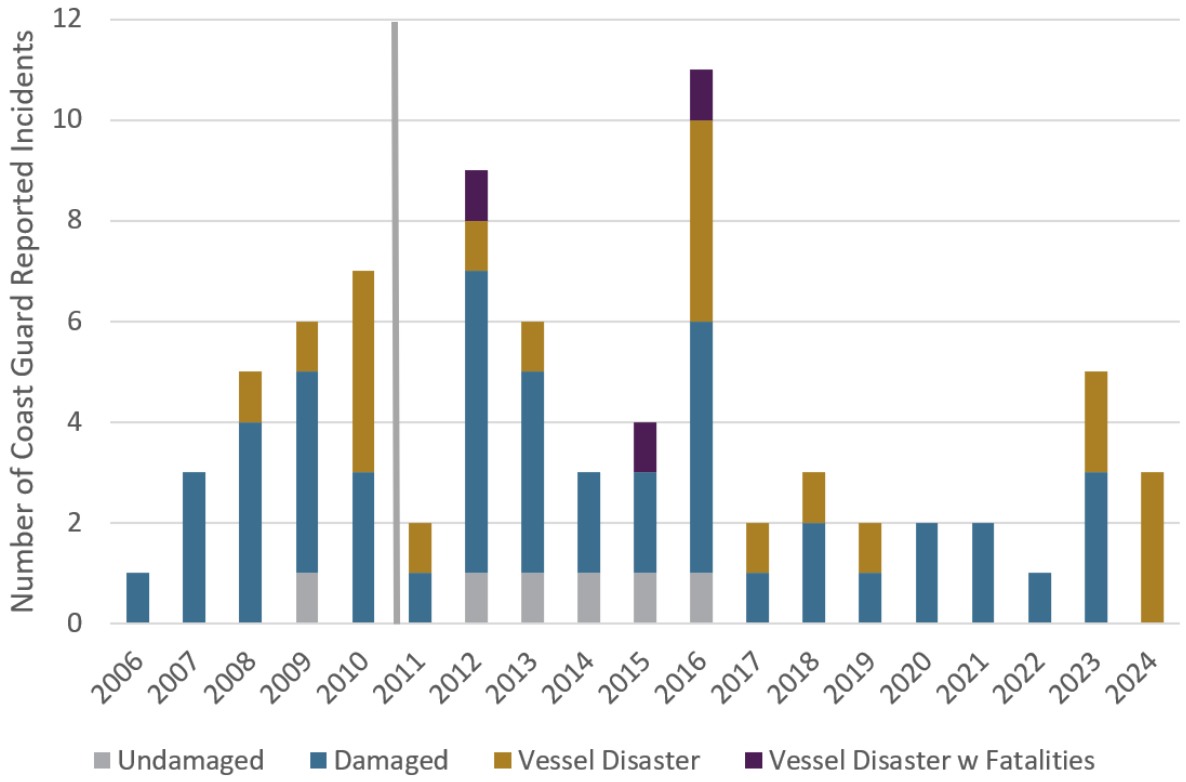
Source: PacFIN Data

2.7.11 Safety

One goal of the catch share program related to safety is the objective to increase safety in the fishery (Amendment 20 objective). In addition, safety is a broader fishery management objective, including promoting safety of human life at sea to the extent practicable in conservation and management measures (National Standard 10), and promoting safety (MSA LAPP requirement). The previous review discusses results from a survey and set of interviews conducted just before that review, which was not conducted for this review. Instead of updated responses or new information using those methods, this review relies on US Coast Guard incident reports for the limited entry West Coast Groundfish trawl fishery. Prior to the start of the catch share program, incidents consistently rose

from 2006 to 2010 (Figure 60). After the start of the catch share program, incidents immediately decreased in 2011 but increased again in 2012 and included one fatality. There were two more fatalities, one in 2015 and one in 2016. Since 2016, there have been no fatalities, but at least one damaged vessel each year and an average of one vessel lost each year.

Figure 60. Coast Guard reported incidents from Catch Share Vessels



Note: The gray vertical line denotes the start of the catch share program.

Source: U.S. Coast Guard[35].

2.7.12 Compliance

Key Takeaways

- Non-whiting first receivers had increasing compliance 2021–2023 (82% to 89%), but non-whiting catcher vessels had decreasing compliance (95% to 88%).
- Whiting catcher vessel compliance varied from 81% to 97%, motherships had no violations in 2021 or 2022 but an 80% compliance rate in 2023, and catcher-processors were 100% compliant in the last two years (2022 & 2023).

[35] (C. German, personal communication, 2025)

The NOAA Office of Law Enforcement (OLE) is primarily responsible for enforcing compliance with the catch share program regulations. The previous review noted that at the start of the catch share program there was an emphasis on communication and education to achieve compliance, for which their logged 3,330 calls in 2015. Information on compliance in the catch share program is limited from 2016–2020 with some annual counts structured differently than the data discussed here for 2021–2023.[36] Compliance across the catch share program for both whiting and non-whiting activities was 80% for the most recent years (2021–2023). For non-whiting groundfish Trawlers vessels, the compliance rate ranged between 88% and 96% with about half of the incidents being addressed through compliance assistance (Table 90). First receivers had the lowest compliance rates of any sector, ranging between 82% to 89%. For non-whiting groundfish trawlers, the most common violation was VMS issues followed by Observer-Impede/Interfere/Resisted/Oppose/Refusal violations and fishing in a deficit and first receiver violations were predominantly EDC issues, which follows the violations noted in the last review.

For whiting catcher vessels and motherships, there was a decline in compliance rates in 2023 compared to the prior two years. While whiting catcher vessel compliance was 93% and 97% in 2021 and 2022, respectively, it dropped to 81% in 2023. Similar to the groundfish trawlers, whiting catcher vessels had EDC issues, VMS issues, and fishing in a deficit as the most frequent violations. Among motherships there were not any actions or violations in 2021 or 2022, but there was an 80% compliance rate in 2023. Overall in 2023, there were increases in observer-related violations, ranging from 11 groundfish trawler catcher vessel Observer-Impede/Interfere/Resisted/Oppose/Refusal violations to 4 other observer-related violations in the mothership sector. For whiting CVs, there were 5 EDC related violations, compared to 0 in the prior two years.

Catcher-processors had no violations in 2021 and had a 100% compliance rate in 2022 and 2023 (Table 91).

Table 91. 2023 Trawl Rationalization Compliance Statistics: First Receivers and Groundfish Trawlers

	Groundfish Trawlers			First Receiver Sites		
Groundfish Limited Entry Permit	**2021**	**2022**	**2023**	**2021**	**2022**	**2023**
Permits						
General Groundfish	134	117	134	43	49	48
Groundfish and Whiting				13	14	
Whiting-only				1	1	
Contacts						
Complaints/Referrals	21	19	28	7	24	10
Investigations/Boardings/Audits	52	47	55	5	1	0
Incidents						

[36] Some data on violations for 2018-2020 can be found here: https://www.pcouncil.org/documents/2021/02/informational-report-5-ole-trawl-rationalization-compliance-summary-2020.pdf/ .

	Groundfish Trawlers			First Receiver Sites		
Groundfish Limited Entry Permit	**2021**	**2022**	**2023**	**2021**	**2022**	**2023**
Non-whiting Enforcement Incidents	73	66	79	12	25	10
2022 Carry-over Non-whiting Enforcement Incidents		5	7		1	2
Actions						
No Violation/ Dismissed	29	29	41	5		1
Compliance Assistance	35	27	32	4	20	7
Written Warning	1	1	1		2	
Summary Settlement	2	2	1	1		2
NOVA/ Settlement Agreement		3	1	1	1	
Transferred to Another Agency			2			
Ongoing Investigation	6	9	3	1	3	3
Violations						
Economic Data Collection (EDC) Issue			1	4	18	8
Vessel Monitoring System (VMS) Issue	14	17	12			
Observer-Impede/Interfere/Resisted/Oppose/Refusal	6	7	11			
Fishing in Deficit	6	4	2			
Catch Monitor Not Present During Offload				1	4	
Recordkeeping and Reporting Requirements	3		3			
Permits	3					
Permit Not Onboard			2			
Declaration Issue	3		2			
Retention of Prohibited Species	2					
Closed Area		1	2			
Noncompliant Discard	1					
Overage		1	1			
Observer- Sexual Harassment		1				1
Observer- Intimidate/Harassment		1				
Vessel Monitoring Plan (VMP)		1	2			
Current First Receiver Site License (FRSL) Not Posted				1	1	
Compliance Rates						
Closed Non-whiting Enforcement Incidents	67	62	83	11	23	9
Non-Violation/Dismissed	29	29	41	5	0	1
Compliance Assistance	35	27	32	4	20	7
Compliance Rate	96%	90%	88%	82%	87%	89%

Note: Blanks indicate no violations or actions occurred in that year or sector. Compliance rate is calculated by dividing the sum of non-violations and compliance assistance by closed enforcement incidents.

Source: 2023 Trawl Rationalization (Trat) Compliance Summary, NOAA Office of Law Enforcement, March 2024

Table 92. 2023 Trawl Rationalization Compliance Statistics: Whiting CVs, Motherships, and Catcher-Processors

	Catcher Vessels*			Mothership Vessels			Catcher-Processor Vessels		
Groundfish Limited Entry Permit	**2021**	**2022**	**2023**	**2021**	**2022**	**2023**	**2021**	**2022**	**2023**
Permits									
Whiting Assignment/Endorsement	33	32	35	6	6	7	10	6	11
Contacts									
Complaints/Referrals	2	6	15		3	3		3	5
Investigations/Dockside Boardings	13	27	20		1			3	2
Incidents									
Enforcement Incidents	15	33	35		3	7		6	7
2022 Carry-over Whiting Enforcement Incidents		1	3			3			3
Actions									
No Violation/ Dismissed	11	19	16			1			4
Compliance Assistance	2	11	10			3		3	2
Written Warning			2						
GCES Settlement Agreement / NOVA		1	1						
Summary Settlement	1								
Transferred to Another Agency						1			
Ongoing Investigation	1	3	6		3	2		3	1
Violations									
Economic Data Collection (EDC) Issue			5						
Vessel Monitoring System (VMS) Issue	1	5	2					2	
Fishing in Deficit		4							
Observer - Failure to Provide Reasonable Assistance		1				1		1	
Observer-Impede/Retain Prohibited Species	1		2			2			2
Observer- Sexual Assault/Harassment						1			
Catch Monitor Not Present During Offload			1						
Closed Area		1							
Vessel Monitoring Plan (VMP)			2						
Permit Not Onboard	1	1	1						
Compliance Rates									
Closed Whiting Enforcement Incidents	14	31	32			5		3	6
Non Violation/Dismissed	11	19	16			1			4
Compliance Assistance	2	11	10			3		3	2
Compliance Rate	93%	97%	81%			80%		100%	100%

Note: blanks indicate no violations or actions occurred in that year or sector. Compliance rate is calculated by dividing the sum of non-violations and compliance assistance by closed enforcement incidents.
** Vessels delivering to both Mothership and shorebased IFQ first receiver sites.*

Source: 2023 Trawl Rationalization (Trat) Compliance Summary, NOAA Office of Law Enforcement, March 2024

2.8 Entry, Exit, Including New Entrants

Key Takeaways:

- Overall, using the number of new vessel accounts to new owners and to new vessels that had not previously participated in the fishery, new entrants have declined over time from a high of 6 in 2012 to 0 in 2022.
- Between 2012 and 2023, gear switchers entered the fishery at the highest rate in terms of entry by new vessels and new owners (32 vessel accounts).
- Between 2012 and 2023, 8 vessel accounts were associated with bottom trawl vessels that had not previously participated in the IFQ program and also had owners that had not participated in any previous year. However, when looking only at the number of vessel accounts with new owners alone, the highest rate of entry was by bottom trawlers (36 vessel accounts).
- Entry into the whiting fishery is lower than other activities, with 5 accounts to new vessels, 16 to new owners, and 3 vessel accounts to new vessels and owners.

As discussed in the previous review, the phrase "New entry" or "New Entrant" was used frequently by stakeholders in the fishery during PCGFSS interviews, but there is not one single definition of what a new entrant is (PFMC & NMFS, 2017). However, across interviews, the term "new entrant" was generally described by participants as someone who is entering the fishery at a new level of vessel, permit(s), quota access, and/or ownership. Participants also raised concerns about the aging of crew members, the need for training of new entrants, the high financial barriers to entering the fishery, and the knowledge of fishing grounds that crews and, specifically captains, need to be successful in the fishery. Even though there was a recognized need for new entrants, participants acknowledged the barriers that face potential new entrants from vessel and quota costs to fishery specific knowledge (PFMC & NMFS, 2017).

Because a similar interview effort was not conducted for this review updated responses or new information cannot be used to update results about perceptions of new entry in the fishery. Instead, this review relies on information about new IFQ vessel accounts[37] and associated ownership information to identify trends in the number of new vessels and/or individual owners that have not participated in previous years of the catch share program. New vessel account numbers are assigned whenever there is a change in ownership information, including adding new co-owners or when

[37] As discussed in the previous review, a vessel account is registered to a specific vessel and a specific vessel owner. It is an online accounting system, like a bank account. This system allows vessel owners to transfer quota in and out, either permanently (through QS sales) or temporarily (by leasing QP in or out). See page 435 in the previous review for more information about vessel accounts (PFMC and NMFS 2017)

ownership changes to a trust or LLC. A vessel account may go inactive when it is not associated with a vessel that actively participated in the fishery or when a vessel is sold.

In this review we identify the number of new, closed, or inactive vessel accounts between 2011 and 2023. Data provided for this analysis by the WCR's permit office included all vessel accounts in this period that were associated with vessels that landed at least 1 pound of any species in a given year. By looking at vessel account ownership and vessel names, this analysis identifies if any new vessel accounts were owned by potential new entrants to the fishery and the disappearance of vessel accounts in the dataset as exit from the fishery.

Exit was determined if a vessel account number did not appear in any subsequent years in the dataset (i.e., the number of closed or inactive vessel accounts). Therefore, the number of inactive or closed vessel accounts as an indicator of exit becomes less reliable for the most recent years in the dataset since there are few years to see if the vessel account reappears (since closed vessel accounts cannot be distinguished from inactive vessel accounts).

Table 92 shows the number of new vessel accounts, closed or inactive vessel accounts, the number of vessel accounts associated with new vessels ('new vessels'), and the number associated with new owners ('new owners') by year. Here, 'new vessels' are vessels that have not been associated with other vessel accounts and/or did not actively participate in the pre-catch share period (2009–2010). 'New owners' are similarly defined as owner names not previously associated with any other vessel account.[38] Because ownership information associated with vessel accounts is only available from 2011 onwards, evaluation of 'new owners' can only be done from 2012 forward. If a vessel account was not associated with either a previous vessel or a previous owner, they are identified as a new vessel and new owner, which may be the most conservative estimate of the number of new entrants using the available data. However, it is likely that the true number of new entrants is likely between this estimate and the number of new owners, in part because it does not account for vessels who previously fished in the fishery that are now under the ownership of someone who did not or does not own other IFQ vessels. The 'new owners' analysis counts the number of new vessel accounts with new owners, but this likely overestimates new entrants since owners name changes may include changes to LLCs, trusts, or co-owners.

Looking at the number of new vessel and owner entrants, Figure 61 shows an initial high number of new entrants in the second year of the program (6) and then a relatively slow decline with exceptions of 2016 (5 new entrants), 2017 (4 new entrants) and 2023 (4 new entrants). Consistent with the decline in active vessels, there has been a decline in the number of active IFQ vessel accounts (from 108 in 2011 to 77 in 2023), stemming from a lower entry rate than the exit rate, which is in turn

[38] Note new owner names were identified as complete matches, therefore, new owners would include changes to an LLC, a trust, or additions or changes to co-owners listed.

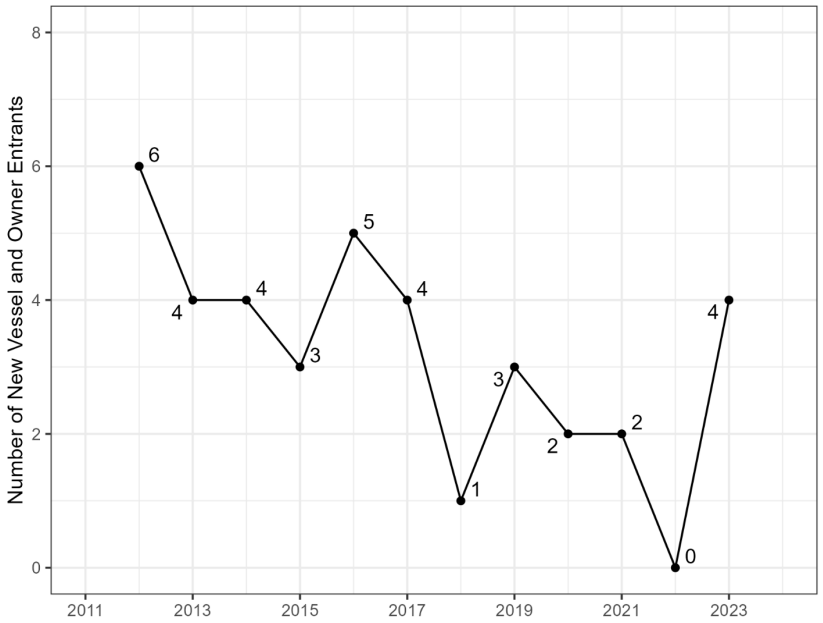
consistent with consolidation in the number of active vessels. On average, the annual new entry rate is approximately 3% and the average exit rate is 10% (Table 92).

Table 93 shows total entry and exit patterns for active vessels by their primary IFQ activity, or the IFQ fishing activity that they derive the majority of their ex-vessel revenue in a given year[39]. Between 2012 and 2023, gear switchers entered the fishery at the highest rate in terms of entry by new vessels and new owners (32 vessel accounts), however, if looking only at the number of vessel accounts with new owners, the highest rate of entry was by bottom trawlers (36 vessel accounts). The number of bottom trawl accounts to vessels that had not previously participated in the IFQ program or in the fishery prior to rationalization was much smaller, at 8. However, using the number of new vessel accounts with new owners alone is not a reliable indicator of entry, since here, new owner names would include if new co-owners were added, or if a new trust or LLC were created. Across all metrics, entry into the whiting fishery is lower than other activities, with 5 new vessels, 16 new owners, and 3 vessel accounts to new vessels and owners.

Overall, that gear switchers may compose the majority of new entrants is unsurprising, given the previous review's finding that the gear-switching provision was more commonly used by 'enterers' than 'switchers' (those who already participated in the fishery using trawl gear, PFMC and NMFS 2017). It is similarly unsurprising that entry within the bottom trawl sector is more likely to occur due to changes in ownership across the same fleet of vessels.

[39] Note that unlike other analysis in this document that examines fishing activities, this data using PacFIN data determines a primary activity based on the majority of revenue for a given vessel in a given year. This is to identify primarily if and how many new entrants primarily prosecuted the fishery as gear-switchers or not.

Figure 61. Number of IFQ New Entrants- New Vessel and/or New Owner



Note: New entrants are defined as new vessel accounts for a vessel that had not previously been associated with an active vessel account in any prior year and owned by someone that is not already associated with another active vessel account in any prior year, therefore, new entrants prior to 2012 cannot be determined.

Source: Active Vessel Account data provided by Jeff Cowen, NOAA WCR 4/2/2025, Northern Economics Analysis

Table 93. Entry and Exit Patterns of Active IFQ Vessel Accounts 2011–2023

Quota Year	Closed/ Inactive Vessel Accounts	New Vessel Accounts	New Vessel	New Owner	New Vessel and New Owner	Total Active IFQ vessel accounts	% new vessel and owner entry	% Exit
2011*	12	NA	20	NA	NA	108	NA	11.11%
2012	12	15	6	15	6	105	5.71%	11.43%
2013	9	8	4	7	4	103	3.88%	8.74%
2014	18	6	4	6	4	102	3.92%	17.65%
2015	7	8	3	7	3	93	3.23%	7.53%
2016	11	8	5	9	5	92	5.43%	11.96%
2017	9	16	4	16	4	95	4.21%	9.47%
2018	7	4	2	3	1	96	1.04%	7.29%
2019	11	6	3	6	3	93	3.23%	11.83%
2020	9	5	2	5	2	82	2.44%	10.98%
2021	6	5	2	5	2	78	2.56%	7.69%
2022	13	3	0	2	0	81	0.00%	16.05%
2023	NA	7	5	6	4	77	5.19%	NA

Note: 'New vessel and new owner' entrants are defined as new IFQ vessel accounts for a vessel that had not previously been associated with an active vessel account in any prior year and owned by someone that is not already associated with another active vessel account in any prior year. Therefore, new entrants are not able to be determined for 2011 in the same way because IFQ account information is not available prior to 2011. Instead, the number of vessels who participated in 2011 but not 2009 or 2010 are calculated. Closed/inactive accounts are defined as IFQ accounts that in any subsequent year are not found to have made any landings, and therefore, are less reliable as an indicator of exit patterns as time goes on. For example, the closed/inactive vessel accounts in 2022 are only determined by the number of accounts that did not have any landings in 2023.

Source: Active Vessel Account data provided by Jeff Cowen, NOAA WCR 4/2/2025, Northern Economics Analysis

Table 94. Entry and Exit Patterns of Active IFQ Vessel Accounts by Primary IFQ Sector

Period	Primary IFQ Activity	New Vessel Accounts	Closed/Inactive Vessel Accounts	New Vessels	New Owners	New Vessel and New Owner
2012–2023	Bottom Trawl	36	96	8	36	8
2012–2023	Gear Switchers	32	46	25	32	25
2012–2023	Midwater Rockfish	3	8	c	3	c
2012–2023	Whiting	20	38	5	16	3

Note: 'c' indicates that values have been withheld due to confidentiality restrictions. Primary IFQ activity is determined as the activity where the majority of IFQ ex-vessel revenue came from in a given fishing year. New entrants are defined as new IFQ vessel accounts for a vessel that had not previously been associated with an active vessel account in any prior year and owned by someone that is not already associated with another active vessel account in any prior year.

Source: Landings and primary sector data are from PacFIN;, active Vessel Account data provided by Jeff Cowen, NOAA WCR 4/2/2025, Northern Economics Analysis

2.9 Program Review and Modification

As mandated by MSA, and in supported in Amendment 20 objectives, various data collections support ongoing program monitoring and management, as well as periodic program reviews such

as this. In addition to routine fishery dependent and independent data collection, data collections directly connected to the program have included routine permit applications, ownership information used to calculate cumulative share ownership, mandatory and voluntary economic and social science surveys, and cost recovery information needed to calculate incremental costs.

Program reviews may result in evaluations that lead to actions, as indicated by the implementation of nearly all recommendations that came out of the first catch share program review. These modifications come in the form of FMP and regulatory amendments. The fishing opportunities allocated under the program are privileges and are therefore more easily modified than if they were considered to be property rights. The process for this, the 2nd review of the trawl catch share program, is described in Section 1.1.

One tool the Council has available to it for modifying the effects of the shoreside IFQ fishery is the AMP. The Council has not yet developed an alternative allocation process for adaptive management program quota, and, has continuing the pass-through procedure on an indefinite basis (see Section 3.4.6 of PFMC & NMFS, 2017).

2.9.1 Adaptive Management Program

The adaptive management program (AMP) is a component of the catch-share program where ten percent of the shoreside non-whiting QS and the corresponding QP are set aside to facilitate adaptive management (PFMC & NMFS, 2017). This quota set-aside was intended to addresses five goals: community and processor stability, conservation, unintended/unforeseen consequences, and facilitating new entrants (PFMC & NMFS, 2017). Specifically, the AMP was implemented to meet the MSA requirement to "include measures to assist, when necessary and appropriate, entry-level and small vessel owner-operators, captains, crew, and fishing communities through set-asides of harvesting allocations, including providing privileges, which may include set-asides or allocations of harvesting privileges, or economic assistance in the purchase of limited access privileges" MSA § 303A(c)(5)(C). Moreover, the goals are supported by initial discussions surrounding the goals of the AMP: "the adaptive management program should be restricted to conservation, unforeseen and unintended consequences, and possibly facilitating new entrants" (PFMC Agenda Items I.5 & I.6, September 2010, Council meeting transcript). Despite these goals, these QPs, to date, have been passed through to QS holders proportionally based on the amount of QS they own (Nayani & Warlick, 2018; PFMC & NMFS, 2017).

Early discussions surrounding the distribution of AMP quota cautioned about the consequences of the pass-through: "[if] it gets passed through for a longer period than we originally said, that people think that it's gone away" (PFMC Agenda Items I.5 & I.6, September 2010, Council meeting transcript). Concerns were further emphasized, stating, "I think that the longer it gets passed through, the greater the risk there is of that" and "with regard to the adaptive management question, and what we heard is if there's nothing done, then in year three, there's a void. Maybe the program even goes away" (PFMC Agenda Items I.5 & I.6, September 2010, Council meeting transcript).

During the development of the catch share program, the Council discussed mechanisms for communities to request AMP quota. One discussion on the Council floor in November 2010 discussed the potential for individual communities to demonstrate that establishing the catch-share program has damaged them and request AMP allocation to mitigate these challenges (PFMC Agenda Item H.5, November 2010, Council meeting transcript). Specifically, it was noted that "It's also been mentioned that, well, if communities can come back and show that they've been damaged, and that therefore they could request some of the adaptive management program opportunity here" (PFMC Agenda Item H.5, November 2010, Council meeting transcript).

The use of the AMP is especially relevant today, given noted declines in shoreside infrastructure and associated impacts on fishing communities (Gilden, 2025a, 2025b, 2025c). Specifically, an informational report submitted to the Council in April 2025 discussed the need to explore alternatives to the current use of the AMP. Arguments centered on the precedent that "the structure of the trawl program puts the entirety of the program's cost recovery burden onto active vessels, who also bear monitoring costs and massive operating expenses". For this program review specifically, the GAP recommended that "…enough information be provided in the document on background and current uses of AMP quota so that if participants want to explore a different use for or elimination of AMP under a follow-on action, it can be informed by the analysis." (PFMC, 2024b). These discussions amplify the importance of examining how the AMP could be modified to meet current issues facing the fishery.

While the AMP quota has continued to be passed through, concerns exist that a change to this practice could disrupt existing operations, by introducing uncertainty and business planning (Nayani & Warlick, 2018). Despite these concerns, discussions about the declining performance of the IFQ program warrant revisiting how to more effectively utilize AMP quota to meet its goals.

3 Research and Data Needs

The SSC and potentially the GAP and GMT will provide research and data recommendations to the Council in November of 2025. At that time, this section will be updated. For now, the research and data needs identified in the previous review are included, noting that as described in Sections 1.5 and 1.6, many of these recommendations were acted upon.

3.1 Data Needs from the 2017 review

Assessment of Quota Costs, Earnings, and Share Owner Participation

Problem: For the Council to fully evaluate the impacts of the catch share program on fishing industries, the Council requires information on the effects of quota leasing on the financial performance of active vessels in the fleet, the extent to which quota owners are leaving the fishery (i.e., "absentee owners"), and the ability to make accurate economic impact estimates for different port areas or states. This requires data not only about revenues from fish landings and processing, but also from quota sales and leases. The available data are insufficient: the EDC program was not authorized to collect information from entities that do not own a vessel active in the fishery, so complete data collection from QS owners is not possible. In many cases, the QS holder is a different entity than the vessel. Thus, data collected by the EDC are not a complete representation of revenues earned from the leasing of quota by quota owners. In addition, the EDC collects data by fiscal year, and quota costs cannot be reallocated to the calendar year using accepted cost disaggregation methods, as other costs can be. This means that existing data is not sufficient a complete analysis of several important issues. These issues are expected to become more important if the proportion of quota controlled by entities that do not own an actively fishing vessel increases in the future.

Potential solution: The EDC mandatory data collection program could be expanded with a quota share owner survey to collect information regarding the revenues earned from quota leasing and the quota owners' connections to actively participating vessels from QS owners. The mandatory survey could be very short and would need to be administered to all quota owners. This could result in removing quota-related questions from the PCGFSS and the EDC. Implementation would require Council action and NMFS rulemaking.

Ownership Information for the Catcher-processor Sector

NMFS does not collect ownership information for catcher-processor permits, which would prevent enforcing accumulation limits at the owning entity level equivalent to those enforced in the mothership and shorebased IFQ sectors.

Problem: With existing data, there is not sufficient information to monitor ownership of catcher-processor permits at the individual-entity level. The Council may wish to initiate collection of this

information to support the development and enforcement of accumulation and processing standard limits in the catcher-processor sector. Without this data, there is also reduced ability to consider holistic ownership across sectors in the trawl rationalization program.

Potential solution: Add ownership information data collection to the catcher-processor permit annual renewal application (requires Council action and rulemaking), equivalent to that currently collected for shorebased participants.

Data and Studies on Administrative Costs

Problem: Determining the benefits generated by the program depends on knowing the full cost of administering the program. To date, while NMFS has quantified the incremental costs of implementing the program, full cost-accounting (including costs incurred by the Council and states) has not yet been implemented. This information would need to be developed to fully understand the relationship between costs of the program and the economic benefits to the nation that are generated.

Potential solution: NMFS will assess the feasibility of providing additional program administration cost information in future annual reports.

Quality Assurance/Quality Control of the Quota Transactions Database administered by the WCRO

Problem: The Quota Transactions Database records the transfer of quota between accounts and also collects certain key information such as the amounts paid or other compensations associated with the transactions. Currently, the database is of questionable quality for some research uses because there is no quality assurance/quality control (QA/QC) of the data, no feedback is provided to data providers, and because data providers cannot revise previous submissions. Research users have noted outliers and obviously incorrect recorded values. There is no mechanism for quota purchasers to revise values (often prices are not set until the fish is delivered).

Potential solution: Develop staff and resources to QA/QC and maintain the database. This would include redesigning the interface to allow users to more accurately classify their transactions and revise entries once a price has been decided; contact participants to help them correct inaccurate information; and determine which uses of the data are appropriate.

3.2 Research Needs Identified in the 2017 Review

Attainment Rates, Aggregation Limits, Economies of Scale, and Market Manipulation

Problem: It has been hypothesized that aggregate limits are causing under-attainment of the trawl allocation, but we do not know how participants would behave if these limits were not in place, nor the potential market effects of changing the aggregate limits.

Potential Research: There is a need to identify the information and analysis that would further an understanding of the effects of aggregate limits that are used to achieve social objectives as well as facilitate efficiency and prevent market manipulation. One potential option would be to update Lian, Singh and Wenniger 2009. Similarly, to help develop future research and data needs lists, it may be useful to develop an analysis of possible reasons for under-harvest and identify the data necessary evaluate those causes.

Identifying Observed Drivers of Change

Problem: Changes in the fishery have been observed since the implementation of the catch share fishery. However, the source of these changes continues to be unclear. For instance, the catch share program or other factors may induce participants with certain characteristics to leave the fishery. This bias in exiting participants will alter the composite characteristics of the fishery, even if the behavior of the remaining vessels has not changed. Alternatively, the observed changes may be due to the participants as a whole changing their behavior. In addition, some departure from the fishery may be due to pre-existing trends. Determining the source of these changes will support more effective management decisions.

Potential research: Additional research to try to separate observed changes into those due to changes in individual behavior from those due to a change in the makeup of the population of participants.

100 Percent At-Sea Monitoring and Shoreside Monitoring

Problem: The current level of monitoring was required by the Council to maintain individual accountability, a central tenet of the program. However, it is costly to vessels and processors. It amounts to about half of a percent of revenue for motherships, catcher-processors, and shorebased first receivers, and up to 4.5 percent of revenue for non-whiting trawl vessels (in 2015).

Potential research: An assessment of whether the goal of individual accountability can be maintained with less than 100 percent at-sea and shoreside monitoring could be conducted.

Changes in Sablefish Fisheries South of 36° Latitude

Problem: This report begins to address conflicts between the IFQ and non-IFQ fisheries for sablefish south of 36°. However, the issues and interactions are complex and more than can be covered in a general program review. Topics to be explored include issues such as temporary localized impacts on CPUE, more general localized depletion and stock productivity impacts, on the grounds gear conflicts, market conflicts, and others.

Potential Research: Available data should be further explored to evaluate these issues, including, in particular, the increased harvest of trawl allocation by fixed gear in the area south of 36° and the geo-specific nature of those impacts including their consequences for fishing opportunities and the health of the stocks.

4 Summary of Major Findings

This review of the West Coast Groundfish Trawl Catch Share Program offers a detailed assessment of the program's performance with emphasis on changes since the last review (2016–2023). Information presented is intended to provide information to allow the reader to understand how performance has changed since the first five years of the program, specifically with respect to meeting its goals and objectives (see Sections 1.1, 1.2, and 1.3 for more information).

Major conclusions and changes since the previous review are summarized below (Table 91). Overall, many of the trends and conclusions from the previous review continued between 2016 and 2023, specifically with respect to individual accountability of catch and bycatch, excessive shares, consolidation, flexibility, environmental outcomes and sustainability, and safety. However, outcomes related to several economic goals and objectives, including utilization, net benefits, efficiency, and profitability have been variable in the eight years since the last review, with most sectors showing improvements in key economic indicators between 2016 and 2019 relative to the first five years and then a decline over the last four (2020–2023).

For all sectors except shorebased processors, average annual net benefits were at record-highs between 2016 and 2019, following increased catch limits for several stocks (Table 21). However, between 2020 and 2023, this trend reversed itself, and utilization, revenue, profitability, and net benefits all declined. The decline in net benefits after the last program review is influenced by national and global market changes that impacted the catch share program fisheries as well as non-catch share program fisheries. The strong U.S. dollar and tariffs have impacted export markets and the price U.S. consumers pay for imported seafood products (NMFS, 2024a). Additionally, there have been several changes through time in how individual companies assign costs and earnings to individual operations which complicate the ability to compare the programs' effects on net benefits over time.

Reasons for the general decline in economic outcomes between 2020 and 2023 differ by sector and primary target species. While non-whiting ex-vessel prices had been declining since 2016 (Figure 14) between 2016 and 2019 landings increased, coincident with increases in non-whiting midwater trawl effort, leading to increases in total ex-vessel revenues for non-whiting species and increases in median revenue for non-whiting catcher vessels during that period (Table 25, Table 38). However, since 2020, landings have remained relatively consistent, yet ex-vessel prices continued to decrease, leading to declines in revenue and indicators of profitability (Table 25, Table 36). Declining revenue per day has caused monitoring costs as a percentage of revenue to generally increase over time. Monitoring costs as a proportion of revenue have been less than 1% for all sectors except for non-whiting catcher vessels, who overall have paid between 4.5% and 6.7% of their revenue towards monitoring and averaged 5% between 2016 and 2023 (Figure 34). Since the last review, cost recovery has been at or near the cost recovery fee cap of 3% for the shorebased IFQ sector, compared

to between 0.29% and 1.82% for motherships and 0.08% and 0.19% for catcher-processors (Table 66).[40]

However, for the shorebased IFQ whiting fishery, in the same time period ex-vessel prices held steady but landings decreased (Table 24, Table 22). Mothership median purchase weight and number of days participating in the fishery also declined during this period, even though the same number of mothership vessels participated on average (Table 45). However, for catcher-processors, indicators of profitability remained high between 2020 and 2022, but in 2023 declined substantially (Figure 28). Outcomes in recent years across whiting sectors appear to be driven by changes in and access to markets for different seafood commodities and product types (Section 2.3.5). While catcher-processors have consistently produced surimi and fillets as primary product forms, in 2023 production prices and value decreased for both (Figure 17, Figure 18). Motherships also always produced surimi but were more consistent producers of fillets after 2018, when their surimi production declined. Shoreside processors sporadically produced fillets before 2018 but have not had substantial production of that product form since. They tend to produce frozen round products and headed-and-gutted products.

In 2023, 64% of catcher vessels participated in non-catch share fisheries and received an increasingly large share of revenue from these fisheries since the program was implemented. In 2023, the most common catcher vessel fishery portfolio was composed of those who fished in any non-whiting catch share fishery (e.g., DTS trawl, non-DTS trawl or gear-switchers) as well as in the Dungeness crab and pink shrimp fisheries (31 vessels), compared to 15 vessels who exclusively fished in any non-whiting catch share fishery. The proportion of ex-vessel revenue from catch share program fisheries has declined to less than 50% in 3 of the last 4 years (through 2023), indicating more reliance on other fisheries. Shorebased processors derived a lower proportion of their production value from catch share fisheries than catcher vessels derived ex-vessel value. The proportion has exhibited more variability but generally declined in recent years (except 2023) under the catch share program.

Additionally, West Coast states and fishing communities continue to experience different outcomes under the catch share program. In California, the number of shorebased IFQ active vessels and dealers as well as total landings and revenue have continued to decline (Section 2.7.1). Overall, landings declined mostly in Central and Southern California ports but stayed relatively consistent in Northern California ports. In Oregon, the port areas that were found to have fared best in first five years, Astoria and Newport, continued to see high average landings between 2016–2023 overall (Figure 39) and the highest average revenues of any port group analyzed, despite experiencing declines in the last four years. In Washington, average landings increased dramatically since the last review, but average revenue declined slightly (Table 70).

[40] Note that in 2025, the cost recovery fee for motherships increased to 3%.

By homeport state, the number of vessels homeported in California and Oregon have declined since the last review, in Oregon, the majority of this decline occurred in the last four years. In contrast, overall, the number of vessels homeported in Washington and Alaska has increased from 15 in 2015 to a high of 23 in 2019, due to an increase in the number of whiting catcher vessels homeported in these states (Section 2.7.2). Such changes influence the levels of total employment supported by the fishery across states (Section 2.7.9), as well as total income and employment impacts (Section 2.7.5), with generally declining employment and impacts from employment and income decreasing as participation decreases across regions. Despite these changes, there has been very little change in the percentage of non-whiting quota holdings across communities over time (Section 2.7.4).

Overall, mothership and catcher-processor participation was relatively stable across the catch share period for this review (2011–2023).[41] Shorebased processor participation, in terms of the number of companies in each region, has remained relatively stable in Oregon and Washington at 10 to 12 in any given year, however, in California the number has declined from 8 in 2015 to 3 in 2023. Note that while the number of total processors have not declined in Oregon and Washington, there have been closures and reductions in processing of groundfish in 2024 and 2025.

Consistent with the previous review, the loss of processors, buyers, and support sectors remains a concern. While Newport and Astoria/Tillamook have fared relatively well under the catch share program in terms of access to processors and support sectors, permit holders in Washington, Northern California, and Brookings/Coos Bay had to travel the farthest for support sector services (Section 2.7.7).

In summary, key findings from this review indicate continued success in meeting several goals and objectives, particularly those related to groundfish conservation, and sustainability, flexibility, consolidation, and preventing excessive consolidation of quota shares. In addition, the program continues to support its goal of full accountability of catch and bycatch through its requirements for comprehensive at-sea and shoreside monitoring. It also continues to support effective assessment of all goals and objectives through the data generated by this program and the EDC program. However, challenges remain in achieving full utilization across sectors and following declines in revenue, indicators of profitability, efficiency, and participation have declined in the last four years. There also remain disparities in economic outcomes within sectors and across geographic regions and communities.

[41] However, it is worth noting that in 2024 and 2025, only 2 mothership vessels participated in the program.

Table 95. Summary of Conclusions and Changes Since the Last Review

Topic Area	Summary of Conclusions
	Section 2.1 Environmental Outcomes
Conservation Benefits	There have been two occurrences of the trawl sector allocation being exceeded (sablefish north in 2017 and 2022)
	The total discard rate across all sectors remains stable at less than 2.5%
	The number of Council groundfish stocks considered overfished have dropped from nine stocks in 2002 to four stocks in 2011 (when the IFQ program has started) to one stock (California quillback rockfish) in 2023
	Section 2.2 Full Utilization
Utilization	Despite increased catch, higher quotas for several stocks caused utilization of the non-whiting shorebased IFQ sector allocation to remain low between the 2016 to 2023 period. Utilization of the total IFQ non-whiting allocation decreased slightly from the previous review period (2011–2015) from 28.4% to 26.4% across all years (2011–2023).
	Change: Shorebased IFQ attainment of Pacific whiting has declined since the previous review (2011–2015) from 84.5% to 77.7%% (20162023), with the lowest average attainment in the last four years (74.6%).
	Change: Catch and utilization rates for midwater rockfish species have increased, but petrale sole, sablefish north, and shortspine and longspine thornyheads have had variable or declining trends since the last review.
	Change: Catcher-processors and motherships experienced lower than average utilization between 2016 and 2023. However, while catcher-processors had higher average annual catch 2016–2023 than in 2011–2015, due to higher allocations, MS sector average annual catch declined, primarily 2019–2023.
	Section 2.3 Net Benefits and Related Outcomes
Net Benefits	Between 2020 and 2023, net benefits of the program declined, on average in this period by $17. 8 million (from $77.7 million between 2016–2019 to $59.9 million 2020–2023).
	Between 2011 and 2023, total net benefits across all sectors averaged $69.9 million per year, an increase from the pre-catch share period mean of $33.3 million. The catcher-processor sector continues to contribute largest share of net benefits to the program, with the exception of 2023.
Ex-Vessel Price, Value, and Landings	Dover sole, arrowtooth flounder, and other flatfish catches have declined since the last program review. Petrale sole was the only flatfish species whose catch substantially increased.
	Rockfish species catches have generally increased since the last program review, the primary exceptions were longspine and shortspine thornyheads, consistent with declining profitability of the DTS trawl fishery.
	Change: Between 2016 and 2023 real ex-vessel prices have been below the 2011–2015 average for most species since the last program review.
	Total catch of all allocated QP has been above average since the last program review but lower prices have resulted in lower real gross ex-vessel revenue.
Productivity and Efficiency (Changes in Profit Margins)	Catcher vessel profit margins tended to be greater under the catch share program relative to pre-catch share program years, consistent with findings from the previous review
	Change: Mean efficiency for all catcher vessels peaked in 2017 after the first review in the 2016–2019 period and then decreased in the 2020–2023 period to below levels in the 2011–2015 period.
	Change: Shorebased processor efficiency has decreased since the last review.
	Change: Mothership and catcher-processor efficiency increased since the last review during the 2016–2019 timeframe, but efficiency decreased after (2020–2023) to levels below the previous review.
Product Value	The total value of Pacific whiting products sold by first receivers/processors has declined in each of the last four years (2020–2023) and the value of whiting products has declined over the previous three years as a share of total production value of shoreside processors.
	Both the mothership and catcher-processor sectors realized substantial declines in both whiting caught/purchased and the value derived from that whiting in 2023 compared to 2022.
	Outcomes in recent years across whiting sectors appear to be driven by changes in and access to markets for different seafood commodities and product types.
Quota Market	**Change:** Uncertainty about future seafood markets, less than full utilization of allocated species, and past QS portfolio adjustments likely have limited the number of QS transfers in years since the last program review. QP transfers for flounder and sole have declined and prices decreased except for petrale sole. Rockfish QP prices have been more stable.

Topic Area	Summary of Conclusions
	Section 2.4 Accumulation Limits and Excessive Shares
Excessive Shares	**Change:** The number of individuals within 90% of the aggregate non-whiting QS control limit decreased since the last review.
	Change: The number of QS holders over 90% of the species-level QS control limit for any species has decreased since the last review from 30 in 2016 to 10 in 2025.
	Overall, annual vessel QP limit trends are similar to the previous review, though the number of vessels at 90% of the limit for petrale and widow rockfish have increased over time.
	Section 2.5 Individual Economic Outcomes
Individual Economic Outcomes	Relatively high catch limits compared to the pre-catch share period continue to support higher revenue and indicators of profitability for whiting catcher vessels on average over the catch share period.
	Indicators of operating and cash flow profitability for the median non-whiting catcher vessel remain higher on average than in the pre-catch share period, despite declines in both indicators in the last four years.
	Change: Across all the catch share fishing activities that catcher vessels can participate in, DTS trawl is the only catcher vessel fishing activity where overall VCNR (per vessel?) is lower than the pre-catch share average, declining from $125,305 to $81,994. The number of vessels participating in the DTS trawl fishery has declined from 51 in 2015 to 35 in 2023.
	New: Median non-whiting, non-DTS trawl VCNR increased from $13,237 to $62,250 on average and has increased over time. The number of vessels participating in this activity has remained relatively consistent, ranging between 42 and 50.
	Change: Increased viability of a non-whiting midwater trawl fishery has led to increased participation and revenue from this activity. In 2023, 64% of vessels participating in this activity are classified as whiting vessels.
	Change: While indicators of economic outcomes for catcher-processors have increased on average since the last review, indicators of profitability declined dramatically in 2023, due to sharp decreases in catch, as well as average revenue per vessel and per metric ton caught, reflecting declines in production prices and total production value for surimi and fillets.
	Conclusions from the previous review regarding the average economic performance of motherships generally hold from 2011–2023. While VCNR is higher than the pre-catch share average, TCNR remains lower.
	Change: While median non-whiting shorebased processor TCNR has increased slightly on average over the catch share period, the 75th and 25th percentiles have decreased. Between 2021 and 2023, both median VCNR and median TCNR decreased dramatically for whiting shorebased processors to $160,057 and -$1.2 million.
	New: The Quota Share Owner Survey, implemented after the last program review, provides data on QP leases. The majority of QP lease revenue is paid to inactive QS holders each year (between 57% and 64%).
Governance Costs	Median daily monitoring costs vary across sectors. For motherships and catcher-processors, who carry two observers, costs have generally increased over time and peaked in 2020. For catcher vessels, whiting catcher vessels see the lowest median monitoring costs ($141 to $255 per day), due to their increased use of EM. Since the subsidy for observers expired in 2015, the median non-whiting catcher vessel paid between $612 and $722 per day for monitoring.
	Declining revenue per day has caused monitoring costs as a percentage of revenue to generally increase over time. Monitoring costs as a proportion of revenue have been less than 1% for all sectors except for non-whiting catcher vessels, who overall have paid between 4.5% and 6.7% of their revenue towards monitoring and averaged 5% between 2016 and 2023.
	Since the last review, cost recovery has been at or near the cost recovery fee cap of 3% for the shorebased IFQ sector, compared to between 0.29% and 1.82% for motherships and 0.08% and 0.19% for catcher-processors
	Section 2.6 Concentration of Value
Concentration of Value	Revenue inequality fluctuated over time for whiting catcher vessels, generally decreasing between 2011 and 2019 and increasing between 2020 and 2023.
	For non-whiting catcher vessels, revenue inequality has increased as the number of active vessels continues to decline.

Topic Area	Summary of Conclusions
	Revenue inequality did not change for whiting shorebased processors, but increased for non-whiting processors after 2019.
	The mothership vessels had more revenue inequality and the catcher-processor vessels had less revenue inequality under the catch share program.
	Section 2.7 Community and Other Outcomes
Distribution of Landings and Revenue	California had a decrease in total landings at the start of the catch share program. Non-whiting landings have remained relatively constant, but revenue has decreased in the state.
	Change: Total catch share landings have increased in Washington since the last review, due to higher whiting landings in the state.
	Change: Total catch share landings remain highest in Oregon, primarily in Newport and Astoria, where landings have increased since the last review.
Quota Share Owners	**Change:** The number of quota owners increased by 17% between the last review (145) and 2018 (170), then decreased 10% through 2025 (153).
Consolidation	Overall, the number of shorebased processors and non-whiting vessels have continued to decrease from 18 to 15 and from 76 to 61, respectively. The number of whiting catcher vessels have slightly increased from 29 to 32.
	The number of motherships, catcher-processors, and whiting catcher vessels remained stable.
Engagement & Vulnerability	Astoria and Newport, OR continue to be the most highly engaged communities
	Communities in California and Coos Bay, Oregon continue to have limited and decreasing engagement.
	Most highly engaged groundfish communities are moderately vulnerable to shocks, including fishery management changes. Fort Bragg, CA and Morro Bay, CA each have the highest vulnerability relative to the other highly engaged communities.
	The housing disruption index is highest in both Eureka and Morro Bay, California
Infrastructure	Loss of processors/buyers and support sectors remains concern. Newport and Astoria/Tillamook have fared relatively well under the catch share program in terms of access to processors and support sectors through 2023. Permit holders in Washington, Northern California, and Brookings/Coos Bay had to travel the farthest for support sector services.
Safety	With the exception of 2016, the number of USCG reported safety incidents is lower on average since the last review.
Flexibility (Other Fisheries)	The number of catcher vessels participating in both the catch share program and other fisheries has declined. In 2023, more catcher vessels participated in just the catch share program fisheries than in both the catch share program fisheries and other fisheries.
	Change: The proportion of ex-vessel revenue from catch share program fisheries has declined to less than 50% in 3 of the last 4 years (through 2023), indicating more reliance on other fisheries.
	Shorebased processors derived a lower proportion of their production value from catch share fisheries than catcher vessels derived ex-vessel value. The proportion has exhibited more variability but generally declined in recent years (except 2023) under the catch share program.
	Section 2.8 Entry, Exit, Including New Entrants
Entry, Exit, and New Entrants	**New:** Overall, using the number of new vessel accounts to new owners and to new vessels that had not previously participated in the fishery, new entrants have declined over time from a high of 6 in 2012 to 0 in 2022.
	New: Between 2012 and 2023, gear switchers entered the fishery at the highest rate in terms of entry by new vessels and new owners (32 vessel accounts).
	New: Between 2012 and 2023 8 vessel accounts were associated with bottom trawl vessels that had not previously participated in the IFQ program and had owners that had not participated in any past year. However, when looking only at the number of vessel accounts with new owners alone, the highest rate of entry was by bottom trawlers (36 vessel accounts).
	New: Entry into the shorebased whiting fishery is lower than other activities, with 5 accounts to new vessels, 16 to new owners, and 3 vessel accounts to new vessels and owners.

Note: changes indicated highlighted changes in trends or conclusions since the last review. New conclusions indicate conclusions based on an analysis that was not conducted in the previous review.

4.1 Initial Diagnosis

At its September 2024 meeting, the Council made a motion that this review should consider the program's performance and provide a diagnosis of why the program is not meeting its economic goals and objectives. The Council wanted this diagnosis to look at program design and factors outside of the Council process, and have a focus on the non-whiting bottom trawl sector.

This initial diagnosis will be prepared after the September 2025 meeting for consideration by the Economic subcommittee of the SSC in advance of the November 2025 Council meeting and for the Council and its advisory bodies at its November 2025 meeting.

5 Council Conclusions

To be completed after Council review in November 2025.

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7 Appendix: Public Hearing Summaries

CATCH SHARE HEARING REPORT

The online public hearing was held on April 24, 2025. Representatives on hand included:

Pacific Fishery Management Council (Council)	Lynn Mattes, Rebecca Lent, Corey Ridings, Heather Hall, Caroline McKnight, Corey Niles, Marci Yaremko, Aja Szumylo, Keeley Kent, Maggie Sommer
National Marine Fisheries Service (NMFS)	See participant list.
Council staff	Jessi Waller, Todd Phillips
Groundfish Management Team (GMT)	Katelyn Lockhart, Kate Richerson, Gretchen Hanshew
Groundfish Advisory Subpanel (GAP)	Susan Chambers, Sarah Nayani, Jeff Lackey, Dave Kasheta, Steve Becic, Shems Jud

Participants

61 participants attended the hearing, including those listed above, industry members, and other agency staff. A full list of participants and organizations can be found in the appendix.

Opening Remarks

Ms. Lynn Mattes provided opening remarks for the hearing as the Council hearing officer, including comments related to the Council's interest about wanting to understand why the program isn't meeting its economic goals and objectives- particularly for the non-whiting fleet.. Ms. Jessi Waller, Council Staff, provided a presentation on preliminary findings on utilization, participation and economic trends since the last catch share review.

Summary of Testimony

A total of 6 participants, one written, five verbal, provided testimony, about five main themes:

- Request for more granular data
- Monitoring and other costs are too high
- Overly burdensome regulations
- Economic data collection too onerous
- Market issues, including competition from tilapia and farmed salmon

Specific comments by individuals included:

- Bill Blue (IFQ Gear Switching Participant, written comment associated with public testimony sign up, not present for comment)
    - Recommends exempting shoreside catch monitor for EM fixed gear vessels as normally very close to ticket weight, have 100% video recording in addition to logbooks

    - Average offload time is 1-3 hours at $700 per offload and is the only IFQ boat to dock at Morro Bay
- Bob Dooley
    - Interested in seeing more granular data as a part of the review
    - One concern that is interested in is that in California, have seen a fall off in participation by small boat fleet and curious to understand impacts between large and small producers
- Jeff Lackey (F/V Seeker, F/V Miss Sue)
    - Noted that the figures presented so challenges in all the sectors
    - Has concerns about Newport, including the loss of processing for bottom trawl vessels and surimi for whiting and long term health of the community with the potential for lost infrastructure
    - Commented that the health of the mothership fishery is also important to Newport vessels
    - Acknowledged that market conditions and business economics also impact fishery and communities and that those are outside of the Council process
- Sarah Nayani (Arctic Storm Management Group)
    - Concurred with Mr. Lackey's comments about processing
    - Suggested that the best way to help the fishery is to decrease costs, regulation, or a combination of both.
    - Concerned about cost recovery and the impact to the fleet (particularly the MS sector)
    - Acknowledged that while the EDC program has collected important data, should consider changing the annual collection or decoupling from regulatory compliance (i.e. tied to permit renewal) to reduce costs to industry
    - Did recognize success of program for midwater rockfish fishery, processors finding markets for the product, and wants to see EFP moved to regulation
    - Supported the trawl participant workshop ideas presented at the April 2025 meeting
- Mike Okoniewski (Retired processor)
    - Retired, but lots of experiencing with processing
    - Noted that there is not a lot of local seafood in markets and that there are complications with supply chains
- Steve Becic (Pacific Seafoods)
    - Echoes Mr. Okoniewski's comments
    - In the end it is the consumers' decision and that they determine what stores carry, only carry what they can sell
    - Noted that educating broad consumer base is extremely expensive
    - While processors are seeing some gains on the West Coast, progress is slow

Organizations in attendance

PFMC, NMFS WCR, NMFS NWFSC, NMFS OLE, WDFW, ODFW, CDFW, PSMFC, Midwater Trawlers Cooperative, Pacific Whiting Cooperative, Pacific Seafoods, Arctic Storm, West Coast Seafood Processors Association, Northern Economics, Pacific Coast Federation of Fisherman's Association

(PCFFA), The Nature Conservancy, Environmental Defense Fund, Northwest Indian Fisheries Commission, Monterey Bay Fisheries Trust, West Coast Pelagic Conservation Group, Trident, Stantec

Attendees

Name	Affialitation
Aja Szumylo	Pacific Whiting Conservation Cooperative, Council member
Andrew Torres	NOAA Office of Law Enforcement
Bill O'Toole	Woods Hole Group
Bob Dooley	
Caroline Mcknight	California Department of Fish and Wildlife (CDFW), Council Member
Chantel Wetzel	Northwest Fisheries Science Center (NWFSC)
Christa Colway	NWFSC
Christopher Kubiak	Morro Bay Community Quota Fund
Corey Niles	Washington Department of Fish and Wildlife, Council Member
Courtney Paiva	Pacific States Marine Fisheries Commission (PSMFC)
Corey Ridings	Council member
Dan Holland	Northwest Fisheries Science Center
Darrell Brannan	Darrell Brannan Associates
Dave Kasheta	GAP
Diana Perry	Northern Economics
Emily Fitting	Northwest Indian Fisheries Commission
Erin Steiner	Northwest Fisheries Science Center
Gretchen Hanshew	National Marine Fisheries Service WCR, GMT
Harrison Ibach	GAP
Heather Hall	Washington Department of Fish and Wildlife, Council Member

Heather Mann	Midwater Trawler Cooperative
Jahnava Duryea	National Marine Fisheries Service WCR
Jaime Diamond	Stardust Sportfishing
Jason	
Jeff Lackey	GAP
Jessi Waller	Council Staff
Justin Kavanaugh	NMFS WCR
Kate Kauer	The Nature Conservancy (TNC)
Kate Richerson	Northwest Fisheries Science Center, GMT
Katlyn Lockhart	Oregon Department of Fish and Wildlife, GMT
Kayleigh Somers	Northwest Fisheries Science Center
Keeley Kent	NMFS WCR, Council member
Kelsey Lawson	PSMFC
Leif Anderson	NMFS NWFSC
Lisa Damrosch	Pacific Coast Federation of Fisherman's Associations (PCFFA)
Lori Steele	West Coast Seafood Processors Association (WCSPA)
Lynn Massey	NMFS WCR
Lynn Mattes	ODFW, Council Member
Maggie Sommer	NMFS WCR, Council member
Marci Yaremko	CDFW, Council member
Maria McCarthy	ODFW
Meghan Roberts	NOAA Office of Protected Resources
Melissa Errend, Northern Economics	Northern Economics
Melissa Krigbaum	NMFS WCR

Melissa Mahoney	Monterey Bay Fisheries Trust
Michael Lake	Alaskan Observers
Mike Myers	Trident Seafoods, PWCC
Mike Okoniewski	West Coast Pelagic Conservation Group
Mya Brown	NOAA Affiliate
NR	
Phillip Bizzell	NMFS
Raymond Hunter	NOAA Affiliate
Rebecca Lent	Council member
S. Johnson	
Sarah Nayani	Arctic Storm Management Group, GAP
Sheila Van Hofwegen	PSMFC
Shems Jud	Environmental Defense Fund, GAP
Steve Becic	Pacific Seafoods, GAP
Susan Chambers	WCSPA, GAP
Tim Sippel	Stantec
Todd Phillips	Council staff

CATCH SHARE HEARING REPORT

The public hearing was held on April 28, 2025 at the Lloyd Bayside Astoria Hotel. Representatives on hand included:

Pacific Fishery Management Council (Council)	Aja Szmylo, Lynn Mattes, Butch Smith, Corey Niles
National Marine Fisheries Service (NMFS)	Phillip Bizzell
Council staff	Jessi Waller
Groundfish Management Team (GMT)	Katlyn Lockhart (ODFW)
Groundfish Advisory Subpanel (GAP)	Kevin Dunn

Participants

19 participants attended the hearing, including those listed above, industry members, and other agency staff. A full list of participants and organizations can be found in the appendix.

Opening Remarks

Ms. Aja Szmylo provided opening remarks for the hearing as the Council hearing officer, including comments related to the Council's interest about wanting to understand why the program isn't meeting its economic goals and objectives- particularly for the non-whiting fleet. Ms. Jessi Waller, Council Staff, provided a presentation on preliminary findings on utilization, participation and economic trends since the last catch share review.

Summary of Testimony

A total of 5 participants provided testimony with some general group discussion, main themes include:

- Consolidation across processors and vertical integration among companies
- Adaptive Management Program (AMP) and what to do with the pounds
- Increasing burdens of costs, particularly with respect to monitoring (EM versus observers)
- Need for additional flexibilities, such as fleet wide carryover
- Stock assessment results and not matching what is being seen on the grounds

Specific comments by individuals included:

- Michelle Robinson (Oceanboat Consulting on behalf of Environmental Defense Fund, EDF)
    - Overall, concerned about the future of the groundfish fishery and the impacts to coastal communities. Specifically, concerned about the consolidation of quota shares (QS) and landings as well as vertical integration amongst companies.

  - Suggests that the Council look at ways to use AMP to promote resilience in communities that rely on groundfish.
  - Data request: For the past 25 years (from 1995-present), a status report on groundfish landings by port, ownership of QS, use of quota pounds, and levels of harvesting, landing and processing infrastructure.
- Andrew Bornstein (Bornstein Seafoods)
  - Overall, the fishery is worse off each year, starting from the buyback
  - Consolidation is accelerating (and not just in the catch share program), foresees four ports in five years (Astoria, Westport, maybe Newport, likely none in CA)
  - Ownership caps should be looked at and are not being enforced
  - Increasing costs are the reason that ex-vessel prices are declining, its not just external factors. Approximately 40 percent is taken off the top from monitoring fees, cost recovery, buyback, etc before vessels even pay crew, lease fees, insurance, other costs.
  - Stock assessment issues are real
- Paul Kujala (F/V Cape Windy)
  - EM is burdensome for the non-whiting trawl fleet and would like to see NMFS relax the requirements
  - Stock assessments are not reflecting what vessels are seeing on the ground. Even with a smaller footprint, not seeing localized depletion yet assessments are saying everything is declining
  - Supportive of the carryover proposal
- Lori Steele (West Coast Seafood Processors Association)
  - Supports a lot of what Andrew said and supports the recommendations from the Trawl Stakeholder Workshop held in March (Supplemental Informational Report 3, April 2024)
  - Council should focus on program elements within its control, and do anything it can to help reduce or eliminate costs, including:
    - Changing the way shoreside processing is done, including looking at EM for shoreside processors. An EFP should be looked at and would be willing to help run (after trawl gear EFP concludes)
    - Reduce or eliminate EDC
  - Move the trawl gear EFP into regulation (this would deregulate the trawl regulations that were initially supposed to be eliminated with the program)
  - Supports the AMP recommendation in Informational Report 3, but if the Council were serious about infrastructure, would allocate AMP to processors who didn't receive non-whiting QS during the initial allocation. Could give small and medium size processor some leverage in attracting vessels to land.
  - Accumulation limits should be looked at for both vessels and QS. With respect to vessel limits, should allow vessels to be specialists and take more of a single species.
  - Overall, the Council should take care of the "low hanging fruit" where they can because there are a lot of things outside the Council's control
  - Supportive of looking at fishery level carryover as Pacific Council is the most conservative

- Lynn Langford Walton
    - Need to figure out way to reduce costs for monitoring- can still have conservation benefits at lower levels
    - Changes needed to EDC program. Time intensive and there are issues with how the program is run, issues with non-groundfish participants, the manner in which data is collected (i.e., not issuing licenses and aggressiveness of staff calling about reports).

Organizations in attendance

PFMC, ODFW, PWCC, Ocean Conservancy, West Coast Seafoods Producers Association, NMFS, Bornstein Seafoods, Oregon Sea Grant

Attendees

Name	**Affialition**
Michele Conrad	Ocean Beat Consulting/Environmental Defense Fund
Kelsey Lawson	PSMFC
Natalie Rowell	PSMFC
Lynn Langford-Walton	American Harvester
Lori Steele	West Coast Seafood Producers Association
Paul Kujala	F/V Cape Wendy
Sheryl Flores	ODFW
Kevin Dunn	F/V Iron Lady
Phillip Bizzell	NMFS
Andrew Bornstein	Bornstein Seafoods
Amanda Gladics	Oregon Sea Grant
Randy and Fawn Layman	F/V Fate Hunter
Corey Niles	WDFW
Katlyn Lockhard	ODFW/GMT
Lynn Mattes	ODFW

Butch Smith	Council member (WA)
Jessi Waller	Council staff
Aja Szumylo	Council member (WA)

CATCH SHARE HEARING REPORT

The public hearing was held on July 17, 2025 at the Red Lion Hotel in Eureka, CA. Representatives on hand included:

Pacific Fishery Management Council (Council)	Corey Ridings
National Marine Fisheries Service (NMFS)	
Council staff	Jessi Waller
Groundfish Management Team (GMT)	
Groundfish Advisory Subpanel (GAP)	Travis Hunter

Participants

3 participants attended the hearing, including those listed above, industry members, and other agency staff. A full list of participants and organizations can be found in the appendix.

Opening Remarks

Ms. Corey Ridings provided opening remarks for the hearing as the Council hearing officer, including comments related to the Council's interest about wanting to understand why the program isn't meeting its economic goals and objectives- particularly for the non-whiting fleet. Ms. Jessi Waller, Council Staff, provided a presentation on preliminary findings on utilization, participation and economic trends since the last catch share review.

Summary of Testimony

A total of two participants provided testimony and general group discussion, conversation, and questions were held throughout the staff presentation. Comments and themes included:

- Lack of processing capacity in the Eureka area
- In terms of whether or not participants would be better off without the catch share program, both participants recognized that pre-catch shares management (e.g., trip limits) wasn't working but some things could have been done differently. .
- Costs are incredibly high in the program, but were told that profitability and revenue would increase with the program. There was recognition that catch share programs were expensive, but the higher ex-vessel value that was anticipated has not materialized along with the costs.
    - Furthermore, the DTS market has dropped off since the catch share program started
- Most issues that are affecting the trawl program are outside of the catch share program itself, although reduction in costs (such as reduced monitoring) would be supported.
- One stakeholder mentioned support of the ideas from the trawl stakeholder report (Supplemental Informational Report 3 from April 2025), specifically including monitoring that follows more of an "audit" model.

- Increasing vessel-level carry over was noted, although legality due to current court proceedings may mean this option isn't feasible right now.

Organizations in attendance: CDFW, PFMC

Attendees

Name	**Affialition**
Jeremiah Plass-Johnson	CDFW
Travis Hunter	
Ian Roberts	
Corey Ridings	
Jessi Waller	PFMC

CATCH SHARE HEARING REPORT

The public hearing was held on July 21, 2025 at the Best Western Agate Inn in Newport, OR. Representative on hand included:

Pacific Fishery Management Council (Council)	Christa Svensson, Lynn Mattes
National Marine Fisheries Service (NMFS)	
Council staff	Jessi Waller
Groundfish Management Team (GMT)	Katlyn Lockhart
Groundfish Advisory Subpanel (GAP)	Poggy Lapham, Steve Becic

Participants

12 participants attended the hearing, including those listed above, industry members, and other agency staff. A full list of participants and organizations can be found in the appendix.

Opening Remarks

Ms. Christa Svensson provided opening remarks for the hearing as the Council hearing officer, including comments related to the Council's interest about wanting to understand why the program isn't meeting its economic goals and objectives- particularly for the non-whiting fleet. Ms. Jessi Waller, Council Staff, provided a presentation on preliminary findings on utilization, participation and economic trends since the last catch share review.

Summary of Testimony

A total of 8 participants provided testimony with some general group discussion, main themes include:

- Catch share program itself doesn't have much to do with issues the fishery is facing, but rather markets and results of stock assessments.
- Costs are incredibly high with buyback, monitoring, and cost recovery and the Council needs to figure out ways to lower costs.
- Loss of markets overall, and specifically in Oregon.
- Lots of concerns about the Economic Data Collection (EDC) data and what is being shown from the data
- How the Council and stakeholders could impact factors outside of the catch share program through the Executive Order upcoming item in September 2025

Specific comments by individuals included:

- Heather Mann (MTC)

  - Council put a lot of time and and energy into MS utilization issue, but feedback from organizations vessels is that it has not resulted in any changes in attainment. Suggests exploring a management measure where MSCVs could take whiting catch shoreside (but would need to cover any bycatch with IFQ pounds). This could help when there is no MS market or if MS stays in Alaska to act as a CP for pollock.
  - EM has really benefited whiting, but not so much for the non-whiting. It is a pain in the behind, but more cost effective than human observers. Without lowering cost of program will collapse under its own weight
- Gary Ripka
  - Participants do all of the work for management (such as managing the QP trades, etc) so the program basically runs itself, but cost recovery keeps going up.
  - Observer costs are incredibly high, and not just for days fishing, have to take into account transit time to and from the port. The observer bill last month for one boat was $13,000.
- Mark Cooper
  - Need to reduce costs as there continues to be loss of participants. 12% of gross income is taken off the top (buyback, monitoring, cost recovery).
  - AMP should go away and just be given to IFQ accounts.
  - Carryover should be allowed to be the maximum amount of what's left in the VA at the end of year (compared to 10% limit).
  - MSCVs should be allowed to deliver SS when needed.
- John Moody, Pacific Seafood
  - Five years ago, Pacific Seafood had three plants cutting flatfish, not just one.
  - Catch monitor program is very expensive
  - Newport used to have year-round processing of groundfish, not anymore
  - Loss of processors not reflected in the data

- Steve Becic, Pacific Seafood
  - Markets being impacted by imports- specifically, rockfish and flatfish
  - While the catch share program is working, its being impacted by costs and choke species

- Kimberlee Cochran
  - Disagrees with the definition of profitability. It needs to include generational fisheries, continuing to fishing/processing.
  - Need more surveys to inform stock assessments.
  - Anything left in VA should be allowed to be carried over.
  - EDC forms do not capture costs accurately- needs to be repeatable, across all boats. Supportive of having good economic data.

Organizations in attendance
PFMC, ODFW, MTC

Attendees

Name	Affialition
Mark Cooper	Cooper Fishing
Heather Mann	Midwater Trawlers Cooperative
Poggy Lapham	Carlton Fishing
Kimberlee Cochran	Marathon, New Life, Bay Islander Fisheries
Steve Becic	Pacific Seafoods
John Moody	Pacific Seafoods
Gary Ripka	Fisherman
Justin Johnson	F/V Pegasus

CATCH SHARE HEARING REPORT

The online public hearing was held on July 29, 2025. Representatives on hand included:

Pacific Fishery Management Council (Council)	Lynn Mattes, Aja Szumylo
National Marine Fisheries Service (NMFS)	Melissa Krigbaum, Erin Steiner, Ray Hunter, Justin Kavanaugh, Emily Sellinger, Abigail Golden
Council staff	Jessi Waller
Groundfish Management Team (GMT)	Katlyn Lockhart, Whitney Roberts
Groundfish Advisory Subpanel (GAP)	Susan Chambers, Steve Becic, Sarah Nayani

Participants

31 participants attended the hearing, including those listed above, industry members, and other agency staff. A full list of participants and organizations can be found in the appendix.

Opening Remarks

Ms. Lynn Mattes provided opening remarks for the hearing as the Council hearing officer, including comments related to the Council's interest about wanting to understand why the program isn't meeting its economic goals and objectives- particularly for the non-whiting fleet.. Ms. Jessi Waller, Council Staff, provided a presentation on preliminary findings on utilization, participation and economic trends since the last catch share review.

Summary of Testimony

A total of 10 participants, provided testimony, about five main themes:

- Cost recovery
- Cost of catch monitoring
- The Economic Data Collection Program, specifically the time and costs to submit annually and how the data is used. New concern about new questions on boat loans
- Access to fish stocks

Specific comments by individuals included:

- Aja Szumylo, PWCC
    - Interested in changes that reduce costs of the IFQ program and increase access to fish
    - While recognize that limited things can be done, should look at adjusting cost recovery requirements, particularly at regional level
    - Should look at things that increase revenue, such as increase access through area management (ex. EFP for whiting processing south of 42 N. lat.)

  - Support looking at changes to area management lines to align with distribution of stocks
  - Also, continued interest in "spex flex" and the idea of set-aside species management/adjusting where quota is accounted for in IFQ system
- Sarah Nayani, Arctic Storm
  - Catch share program is the "Cadillac" of catch share programs in the country, but don't think its needed.
  - The level of data collected is too much given that there is 15 years of data available now, specifically in regards to how it goes towards cost recovery. There is not consideration or accounting for how much time and logistics are required to participate. Should be thoughtful on the level of information that is needed to implement these fisheries and what is necessary to be provided to NMFS EDC
  - Any follow on actions should focus on how to simplify program, including monitoring costs and reduced frequency or elimination of EDC program
  - Biggest area of concern is cost recovery and there needs to be better way to implement and have oversight. The MS sector is paying 3 percent as of this year although manages itself and should reconsider how its calculated.
- Heather Mann, MTC
  - Struggling with the EDC and level of information that it collects and then the information that it provides back to us. Some of the topline assumptions being made are inaccurate and not reflective of what is happening.
  - Catch share review is showing a snap shot in time, ends in 2023. 2024 saw upheaval in many ways, and is not being included. While data not analyzed, but there is anecdotal evidence is there- such as there is no filleting of groundfish in Newport anymore.
  - With regards to cost recovery, how are NMFS workforce reductions going to affect it? Participants are not getting responses and service from NMFS.
  - Need to have core services to have in order to fish, which Seafood Harvesters of America is fighting for in DC
  - EDC program- Spending time on EDC doesn't seem like a wise use of resources and will be recommending elimination of EDC. Any time spent by industry on EDC should reduce time for cost recovery.
  - Recommends looking at allowing MS catcher vessels to deliver whiting shoreside if no processors on annual basis
- Juan Delgado
  - Lack of canary affecting shoreside whiting processing, resulting in 150 people without work who were brought in on H1 Visa in the previous years.
  - With drought of petrale, everyone is trying to save up petrale pounds until after shrimp season where normally see landings at beginning of year.
  - Want to grow and need to train people, but if don't have the resources, hard to do.
  - Plants facing several challenges with shut downs in Newport and Brookings, due to wastewater, rainwater issue in addition to choke species.
  - Catch monitor program is monitoring twice and results in a lot of costs.

    - Looking to export to other countries, bring more to US. However, difficulty in investing in equipment when dont know what quotas will be
- Lori Steele, WCSPA
    - Emphasize shoreside processing sector concerns in this fishery and that the decline in non-whiting processors and lack of profitability should be really alarming to the Council
    - Doesn't understand how EDC data can show no loss of processing in Oregon.
        - EDR data–how can it show no loss in processing in OR.
            - Need to do a deep dive in processors that can process multiple millions of pounds of fish a year
            - Not a lot of them, dont need an EDC program to identify
            - Not only are they not profitable, but they are on the decline
            - They support the infrastructure to support fisheries
            - Threshold for volume for processors
    - Hopes the Council can take a step back from managing the minutia of this fishery and micromanaging to death and look at can be done for big picture changes and focus on reducing costs. Specifically, recommends that the Council prioritize reducing costs and increasing flexibility by having better access to fish and allowing vessels to specialize. Supports Supplemental Informational Report 3 from April 2025. Other recommendations include reducing the shoreside monitoring and eliminating the EDC program.
    - Non-whiting fishery has not been profitable in last 15 years and need to right it for the volume for processors
- Lisa Damrosch, PCFFA
    - Need to look at micromanagement of this fishery.
    - Reduce costs and increase flexibility
    - The presentation and all of the data is impressive and complex. But it looking at data from 2023 and living in 2025, taking actions later than that. Doing the review and actions all on old data, is problematic. Know fishery is changing and need to figure out how to change that
    - All of the issues are exponentially worse in California, with all of the vessel owners are doing the work (e.g., processing) themselves.
- Brian Blake–Ocean Gold
    - The 200 percent monitoring of shoreside processing is excessive and a huge cost. Should allow folks to train employees to do SS catch monitoring, get certified.
    - Reducing the EDC program, it is intrusive and excessive, would significantly reduce costs for us
- Mike Okoniewski
    - This program is a business proposition. May not have started that way. Some people had ideas on who profitable this program might be. Participants were supposed to be able to go fishing anytime they want because they own the fish- but didn't take into account how much was going to be fresh product (which is where the money was.)
    - Marketing doesn't just happen, have to spend money and time on it

  - Is there a better way to redesign the program, because it isn't working. If it continues on, the only boats that are going to be able to continue is the ones who can sell their own fish
  - No motivation to keep putting money out there (for processors)
  - Economic data is great and interesting but wont get us to finish line and program everyone wanted it to be.
- Jiri Nozicka
  - Comments are all of distress. We are staring at the barrel of the gun. Didn't want this program, but was put on it anyway and would have been better off without the catch share program.
  - Profits are taken up by catch share program costs.
  - Has avoided half of the coast due to various species with low limits and unsure what next year's choke species will be.
  - 13 years ago talked to Will Steele about observer issues, and would make the California trawl fishery go away. In response, he "Said this was the purpose of the program, to make boats go away". Eventually big boats will go away too
  - Hopes the Council can take recommendations from the March trawl industry workshop and add urgency to it. Need to eliminate things that have been piled up on us, monitoring, surveys, etc. and leave just the essential elements
  - EDC program is intrusive and wants to consider scrapping the program
  - Few people own majority of quota, and now can't afford to buy any more quota.

Organizations in attendance

PFMC, NMFS WCR, NMFS NWFSC, WDFW, ODFW, PSMFC, Oregon State Police Marine Fisheries Team, Midwater Trawlers Cooperative, Pacific Whiting Cooperative, Pacific Seafoods, Arctic Storm, West Coast Seafood Processors Association, Northern Economics, Pacific Coast Federation of Fisherman's Association (PCFFA), The Nature Conservancy, Ocean Gold Seafoods, F/V San Giovanni LLC, Marathon, New Life, and Bay Islander Fisheries

Attendees

Name	Affialitation
Abigail Golden	NWFSC
Aja Szumylo	Pacific Whiting Conservation Cooperative
Brian Blake	Ocean Gold Seafoods, Westport, WA
Darrell Brannan	Brannan Consulting
Emily Sellinger	NWFSC

Emma Scalisi	Arctic Storm Management Group
Erin Steiner	NMFS Northwest Fisheries Science Center
Dave Colpo	unaffiliated
Greg Schaugnessey	Ocean Gold
Heather Mann	MTC
Jiri Nozicka	F/V San Giovanni LLC
Juan Delgado	Pacific Seafood
Justin Kavanaugh	NMFS
Kate Kauer	TNC
Katlyn Lockhart	ODFW
Kimberlee Cochran	Marathon, New Life, Bay Islander Fisheries
Lisa Damrosch	Pacific Coast Federation of Fisherman's Associations
Lori Steele	West Coast Seafood Producers
Lynn Mattes	ODFW
Melissa Krigbaum	NMFS
Mike Okoniewski	unaffiliated
Natalie Rowell	PSMFC Catch Monitor Program
Paul M	
Ray Hunter	NMFS
Ryan Keeler	Oregon State Police, Marine Fisheries Team
Sarah Nayani	Arctic Storm Management Group
Susan Chambers	West Coast Seafood Processors
Steve Becic	Pacific Seafoods
S. Johnson	
Whitney Roberts	WDFW