

Evaluating the Performance of Groundfish Fishery Management Plan (FMP) Allocations Since Implementation of the Trawl Catch Share Program

As part of its five year review of the catch share program, the Council is also initiating a review of those groundfish intersector allocations established as percentages or numbers in the groundfish FMP. Other allocations are made every two years as part of the biennial management process.

The Pacific Coast Groundfish FMP Amendment 21 (Am 21) established long-term, formal allocations to non-tribal trawl and non-trawl sectors of the groundfish fishery. Amendment 21 also included a formal within trawl allocation of trawl dominant overfished species and formally established trawl bycatch allowances for Pacific halibut, which are managed by the International Pacific Halibut Commission but allocated by the Council. The Am 21 sector allocations, designed to support the trawl catch share program, were implemented in 2011. The FMP also includes allocations that were established prior to Am 21:

- groundfish allocations between commercial limited entry and commercial open access sectors (Amendment 6),
- sablefish allocations for the tribes, open access, limited entry fixed gear, and limited entry trawl sectors; and
- allocations of whiting among trawl sectors.

For those species for which there was an Am 21 trawl/non-trawl allocation, the Am 21 allocations displaced the Am 6 allocations, such that Am 6 allocations remain in place only for those species not allocated under Am 21.

The Council scheduled a five-year review of the performance of the trawl catch share program and all intersector FMP allocations, when developing the trawl rationalization program. This paper evaluates the performance of FMP allocations by considering annual catches by sector relative to their allocations of the available harvest of FMP stocks managed with FMP allocations. The analysis and discussions of allocation issues provided in this document are meant to inform the scoping process for the five-year review of the intersector allocations that support the trawl catch share program.

Stocks Considered in This Evaluation

Stocks with FMP sector allocations include arrowtooth flounder, chilipepper rockfish south of 40°10' N lat., darkblotched rockfish, Dover sole, English sole, lingcod, longspine thornyhead north of 34°27' N lat., stocks in the Other Flatfish complex, Pacific cod, Pacific ocean perch (POP) north of 40°10' N lat., Pacific whiting, petrale sole, sablefish north of 36° N lat., sablefish south of 36° N lat., shortspine thornyhead north of 34°27' N lat., shortspine thornyhead south of 34°27' N lat., stocks in the Slope Rockfish complex north of 40°10' N lat., stocks in the Slope Rockfish complex south of 40°10' N lat., splitnose rockfish south of 40°10' N lat., starry flounder, widow rockfish,

and yellowtail rockfish north of 40°10' N lat. Additionally, as mentioned, the FMP provides a trawl bycatch allowance for Pacific halibut. Trawl/non-trawl catches (total mortality) of the FMP allocated species (other than Pacific whiting) from 2011-2014 are provided in Table 1. Pacific whiting allocations only affect the trawl sectors (off the top deductions are specified for non-trawl sectors, prior to allocation) and a separate discussion of impacts associated with within-trawl allocations is provided below. Sector allocations of Pacific whiting and sablefish north of 36° N lat. were decided prior to development of Am 21 but are included in this evaluation since they are set out in the FMP.

The following sections cover:

- Trawl/Non-trawl Allocations
- Limited Entry/Open Access Allocations (Am 6)
- Allocations of Sablefish North of 36° N lat.
- Within-Trawl Allocations
- Pacific Halibut Individual Bycatch Quota

The evaluation of these sector allocations explores the potential of stranded (i.e., unused) yield, and identifies potential choke species that impede access to target species allocations. A final section addresses some issues that might be considered in evaluating these allocations.

Trawl/Non-Trawl Allocations

The FMP allocations of groundfish stocks to non-tribal trawl and non-trawl sectors, as well as the annual allocations, impacts, and percent attainment of allocations by these sectors in aggregate during 2011-2014 are provided in Table 1. All species in Table 1 were allocated under Am 21 except sablefish north of 36° N lat., for which a trawl/non-trawl allocation was effectively established before Am 21. Sector catches for the species listed in Table 1 were provided in NMFS West Coast Groundfish Observer Program (WCGOP) groundfish total mortality reports available at https://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/data_library.cfm#groundfish. Data through 2014 inform Table 1; 2015 total catches will not be reconciled until fall of 2016 and the analysis of impacts can be extended once these data are available. The average, minimum, and maximum allocations, catches, and attainment rates for trawl and non-trawl sectors during 2011-2014 are provided in Table 2.

Evidence of Stranded Yield

Primary target stocks, such as petrale sole in the trawl fishery and sablefish in both trawl and non-trawl fisheries, have had high attainment rates since the trawl catch share program was implemented (Table 1 and Table 2). Shortspine thornyhead north of 34°27' N lat. has also experienced relatively high attainment rates, particularly for the non-trawl sector. Of the overfished species that are allocated in the FMP, darkblotched and POP have had relatively high attainment rates indicating the potential for these stocks to be choke species that can inhibit access to healthy target stocks. Both of these stocks are known to constrain some trawl fishing activities, but there have also been higher attainment rates in non-trawl fisheries, which is discussed in greater detail below.

Many of these stocks can and do constrain trawl fishing activities regardless of the sectors' attainment rates. For example, arrowtooth flounder, with an average trawl sector attainment of 31% during 2011-2014 (Table 2), has constrained individuals in the trawl fishery due to low quotas at the permit level. The constraining nature of arrowtooth to the fishery was in part due to annual catch limits (ACL) that were biased low due to overly conservative removal assumptions¹ when projecting allowable harvests in the 2007 assessment (Kaplan and Helser 2008). The Council partially mitigated this bias by requesting a catch-only update of the 2007 arrowtooth assessment with actual catches assumed removed from the population since then (see [Agenda Item I.4, Attachment 3, November 2015](#)). Other considerations for reducing unnecessary fishery constraints (arrowtooth is a healthy and abundant stock) include a change in the allocation framework to reduce the amount of stranded yield in the non-trawl allocation.

Many of the stocks allocated under Am 21 are trawl-dominant (defined as $\geq 90\%$ of the average available historical harvest to non-tribal groundfish fisheries was caught by limited entry trawl sectors). The trawl-dominant stocks include arrowtooth flounder, darkblotched rockfish, Dover sole, English sole, longspine thornyhead north of 34°27' N lat., Pacific cod, POP north of 40°10' N lat., petrale sole, shortspine thornyhead north of 34°27' N lat., and splitnose rockfish south of 40°10' N lat.. A minimum allocation of 5 percent of the fishery harvest guideline (fishery HG) of the trawl-dominant species was allocated to non-trawl sectors under Am 21 (Table 1) in order to provide the opportunity for development of new target strategies in the non-trawl sector but also creating the potential for stranded yield.

Limited Entry/Open Access Allocations (Amendment 6)

FMP Amendment 6 (Am 6), which established the commercial non-treaty limited entry system, also established allocation procedures for any species to be newly allocated between commercial open access (including directed and incidental open access) and limited entry sectors based on catch history for the license limitation allocation period (July 11, 1984 through August 1, 1988). The species that were originally allocated by Am 6 are lingcod, chilipepper rockfish, yellowtail rockfish, the species in the rockfish complexes, and shortspine thornyhead north of the Conception area. Am 21 superseded any Am 6 allocations for affected species (i.e., lingcod, the species in the Slope Rockfish complexes north and south, and shortspine thornyhead north). The FMP also suspends such allocations for overfished species. In current practice, the Am 6 limited entry and open access allocations are rarely applied due to constraints imposed by management measures designed to rebuild overfished species. The limited entry and open access bocaccio, canary, cowcod, and yelloweye are temporarily suspended since the stocks are overfished. Further, the shelf rockfish allocations are suspended since access is limited by implementation of the Rockfish Conservation Areas (RCAs) and the need to limit overfished species catches. Nearshore rockfish allocations are also suspended due to overfished species constraints.

¹ Assessments in 2007 assumed allowable biological catch (ABC) removals (now denoted as overfishing levels, OFLs) when projecting future biomass instead of the current assumption of annual catch limits (ACL) removals.

Table 1. West coast groundfish sector allocations & catches (total mortality mt) since implementation of Am 21, 2011-2014 (highlighted cells indicate attainment rates $\geq 90\%$).

Stocks	Intersector Allocations		2011							2012						
	Trawl Sectors	Non-Trawl Sectors	Fishery HG	Trawl Sectors			Non-Trawl Sectors			Fishery HG	Trawl Sectors			Non-Trawl Sectors		
				Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.		Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.
Arrowtooth Flounder	95.0%	5.0%	13,096	12,441	2,532	20.3%	655	60	9.2%	9,971	9,472	2,394	25.3%	499	43	8.5%
Chilipepper S. of 40°10'	75.0%	25.0%	1,966	1,475	317	21.5%	492	6	1.2%	1,774	1,331	288	21.7%	444	9	2.0%
Darkblotched	95.0%	5.0%	279	265	103	38.8%	14	16	113.3%	277	263	88	33.6%	14	9	65.9%
Dover Sole	95.0%	5.0%	23,410	22,240	7,796	35.1%	1,171	7	0.6%	23,410	22,240	7,024	31.6%	1,171	10	0.8%
English Sole	95.0%	5.0%	19,661	18,678	138	0.7%	983	1	0.2%	10,050	9,548	147	1.5%	503	1	0.3%
Lingcod	45.0%	55.0%	4,154	1,869	270	14.4%	2,285	523	22.9%	4,037	1,817	358	19.7%	2,220	645	29.1%
Longspine N. of 34°27'	95.0%	5.0%	2,075	1,971	944	47.9%	104	6	6.3%	2,020	1,919	892	46.5%	101	6	5.9%
Other Flatfish	90.0%	10.0%	4,686	4,217	710	16.8%	469	101	21.5%	4,686	4,217	690	16.4%	469	96	20.6%
Pacific Cod	95.0%	5.0%	1,200	1,140	258	22.6%	60	4	6.6%	1,200	1,140	396	34.7%	60	3	4.5%
POP N. of 40°10'	95.0%	5.0%	144	137	54	39.3%	7	1	9.3%	144	137	53	38.8%	7	0	5.7%
Petrale Sole	95.0%	5.0%	911	865	810	93.7%	46	1	3.1%	1,095	1,040	1,033	99.3%	55	2	3.8%
Sablefish N. of 36° a/	52.5%	47.5%	4,941	2,597	2,399	92.4%	2,345	2,391	102.0%	4,790	2,517	2,187	86.9%	2,273	1,899	83.6%
Sablefish S. of 36°	42.0%	58.0%	1,264	531	453	85.3%	733	764	104.3%	1,224	514	223	43.3%	710	481	67.7%
Shortspine N. of 34°27'	95.0%	5.0%	1,528	1,452	730	50.3%	76	73	95.5%	1,511	1,435	711	49.5%	76	63	83.6%
Shortspine S. of 34°27'	50 mt	Remain-ing	363	50	6	12.2%	313	177	56.5%	359	50	1	1.9%	309	127	41.0%
Slope RF N. of 40°10'	81.0%	19.0%	1,092	885	235	26.6%	207	66	31.7%	1,092	885	293	33.1%	207	129	62.2%
Slope RF S. of 40°10'	63.0%	37.0%	599	377	52	13.8%	222	138	62.4%	599	377	124	32.9%	222	131	59.1%
Splitnose S. of 40°10'	95.0%	5.0%	1,454	1,381	40	2.9%	73	0	0.2%	1,531	1,454	60	4.1%	77	0	0.4%
Starry Flounder	50.0%	50.0%	1,345	673	12	1.7%	673	13	1.9%	1,353	677	8	1.2%	677	9	1.3%
Widow	91.0%	9.0%	539	491	174	35.6%	49	2	4.1%	539	491	232	47.3%	49	6	13.3%
Yellowtail N. of 40°10'	88.0%	12.0%	3,857	3,394	820	24.2%	463	54	11.7%	3,872	3,407	1,066	31.3%	465	38	8.3%

Stocks	2013							2014						
	Fishery HG	Trawl Sectors			Non-Trawl Sectors			Fishery HG	Trawl Sectors			Non-Trawl Sectors		
		Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.		Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.
Arrowtooth Flounder	4,070	3,867	2,449	63.3%	204	28	13.7%	3,671	3,487	1,749	50.2%	184	28	15.5%
Chilipepper S. of 40°10'	1,466	1,100	393	35.7%	367	8	2.2%	1,423	1,067	312	29.2%	356	12	3.2%
Darkblotched	296	281	122	43.5%	15	4	27.0%	309	294	108	36.9%	15	5	32.9%
Dover Sole	23,410	22,240	7,956	35.8%	1,171	6	0.5%	23,410	22,240	6,455	29.0%	1,171	5	0.5%
English Sole	6,712	6,376	220	3.5%	336	1	0.2%	5,543	5,266	237	4.5%	277	0	0.1%
Lingcod	3,860	1,737	346	19.9%	2,123	878	41.4%	3,654	1,644	248	15.1%	2,010	985	49.0%
Longspine N. of 34°27'	1,963	1,865	1,056	56.6%	98	9	8.9%	1,912	1,816	884	48.7%	96	7	7.0%
Other Flatfish	4,682	4,214	810	19.2%	468	162	34.6%	4,682	4,214	841	20.0%	468	147	31.5%
Pacific Cod	1,191	1,131	154	13.6%	60	2	4.1%	1,191	1,131	166	14.7%	60	2	3.3%
POP N. of 40°10'	134	127	55	43.7%	7	0	3.9%	137	130	45	34.6%	7	0	3.6%
Petrale Sole	2,358	2,240	2,118	94.6%	118	4	3.0%	2,418	2,297	2,316	100.8%	121	2	1.4%
Sablefish N. of 36° a/	3,575	1,878	1,835	97.7%	1,696	1,354	79.8%	3,878	2,038	1,876	92.1%	1,840	1,487	80.8%
Sablefish S. of 36°	1,434	602	87	14.4%	832	525	63.1%	1,555	653	198	30.4%	902	484	53.6%
Shortspine N. of 34°27'	1,481	1,407	871	61.9%	74	59	79.5%	1,466	1,393	718	51.5%	73	53	71.7%
Shortspine S. of 34°27'	355	50	4	7.4%	305	109	35.8%	351	50	3	5.3%	301	97	32.4%
Slope RF N. of 40°10'	1,098	889	240	27.0%	209	80	38.2%	1,098	889	209	23.4%	209	50	24.0%
Slope RF S. of 40°10'	597	376	117	31.2%	221	22	10.0%	601	379	99	26.3%	222	38	17.1%
Splitnose S. of 40°10'	1,598	1,518	46	3.0%	80	0	0.1%	1,658	1,575	65	4.1%	83	0	0.5%
Starry Flounder	1,513	757	3	0.5%	757	5	0.6%	1,521	761	15	1.9%	761	11	1.4%
Widow	1,411	1,284	443	34.5%	127	20	15.6%	1,411	1,284	710	55.3%	127	20	15.7%
Yellowtail N. of 40°10'	3,677	3,236	989	30.6%	441	38	8.6%	3,681	3,239	1,205	37.2%	442	49	11.0%

a/ The Fishery HG for sablefish north of 36° N lat. is the commercial fishery HG (recreational impacts are managed as set-asides). Therefore, only commercial allocations and catches are depicted for non-trawl sectors. The allocation percentages are revised from those specified in the FMP to break down the formal allocations for trawl vs. commercial non-trawl sectors.

Table 2. Average, minimum, and maximum sector allocations, catches (total mortality), and attainment rates of formally allocated groundfish stocks during 2011-2014 (based on the data provided in Table 1). (Minimum and maximum catches and attainment rates do not necessarily occur in the same year).

Stocks	Average 2011-2014						Minimum Catches and Attainment Rates By Sector, 2011-2014				Maximum Catches and Attainment Rates By Sector, 2011-2014			
	Trawl Sectors			Non-Trawl Sectors			Trawl Sectors		Non-Trawl Sectors		Trawl Sectors		Non-Trawl Sectors	
	Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.	Catch	% Attain.	Catch	% Attain.	Catch	% Attain.	Catch	% Attain.
Arrowtooth Flounder	7,317	2,281	31.2%	385	40	10.3%	1,749	20.3%	28	8.5%	2,532	63.3%	60	15.5%
Chilipepper S. of 40°10'	1,243	328	26.4%	414	9	2.1%	288	21.5%	6	1.2%	393	35.7%	12	3.2%
Darkblotched	276	106	38.2%	15	9	58.6%	88	33.6%	4	27.0%	122	43.5%	16	113.3%
Dover Sole	22,240	7,308	32.9%	1,171	7	0.6%	6,455	29.0%	5	0.5%	7,956	35.8%	10	0.8%
English Sole	9,967	185	1.9%	525	1	0.2%	138	0.7%	0	0.1%	237	4.5%	1	0.3%
Lingcod	1,767	305	17.3%	2,159	758	35.1%	248	14.4%	523	22.9%	358	19.9%	985	49.0%
Longspine N. of 34°27'	1,893	944	49.9%	100	7	7.0%	884	46.5%	6	5.9%	1,056	56.6%	9	8.9%
Other Flatfish	4,216	763	18.1%	468	127	27.0%	690	16.4%	96	20.6%	841	20.0%	162	34.6%
Pacific Cod	1,136	244	21.4%	60	3	4.6%	154	13.6%	2	3.3%	396	34.7%	4	6.6%
POP N. of 40°10'	133	52	39.1%	7	0	5.7%	45	34.6%	0	3.6%	55	43.7%	1	9.3%
Petrale Sole	1,611	1,569	97.4%	85	2	2.6%	810	93.7%	1	1.4%	2,316	100.8%	4	3.8%
Sablefish N. of 36° a/	2,258	2,074	91.9%	2,039	1,783	87.5%	1,835	86.9%	1,354	79.8%	2,399	97.7%	2,391	102.0%
Sablefish S. of 36°	575	240	41.8%	794	563	71.0%	87	14.4%	481	53.6%	453	85.3%	764	104.3%
Shortspine N. of 34°27'	1,422	757	53.3%	75	62	82.7%	711	49.5%	53	71.7%	871	61.9%	73	95.5%
Shortspine S. of 34°27'	50	3	6.7%	307	128	41.6%	1	1.9%	97	32.4%	6	12.2%	177	56.5%
Slope RF N. of 40°10'	887	244	27.5%	208	81	39.0%	209	23.4%	50	24.0%	293	33.1%	129	62.2%
Slope RF S. of 40°10'	377	98	26.0%	222	82	37.2%	52	13.8%	22	10.0%	124	32.9%	138	62.4%
Splitnose S. of 40°10'	1,482	53	3.5%	78	0	0.3%	40	2.9%	0	0.1%	65	4.1%	0	0.5%
Starry Flounder	717	10	1.3%	717	9	1.3%	3	0.5%	5	0.6%	15	1.9%	13	1.9%
Widow	887	390	43.9%	88	12	13.7%	174	34.5%	2	4.1%	710	55.3%	20	15.7%
Yellowtail N. of 40°10'	3,319	1,020	30.7%	453	45	9.9%	820	24.2%	38	8.3%	1,205	37.2%	54	11.7%

Allocation of Sablefish North of 36° N lat.

Sablefish north of 36° N lat. were allocated many years before Am 21 was implemented. Regulatory actions were taken to implement trawl/fixed gear and tribal allocations and then, in 1994, Amendment 6 established an open access limited entry split. The current allocation scheme is provided in Figure 1. However, as with all intersector allocations established in the FMP, the Council intended a full review at this juncture. The allocations, estimated mortality, and percent of the annual allocation attained of sablefish north of 36° N lat. by the non-tribal commercial sectors of the groundfish fishery during 2011-2014 are provided in Table 3.

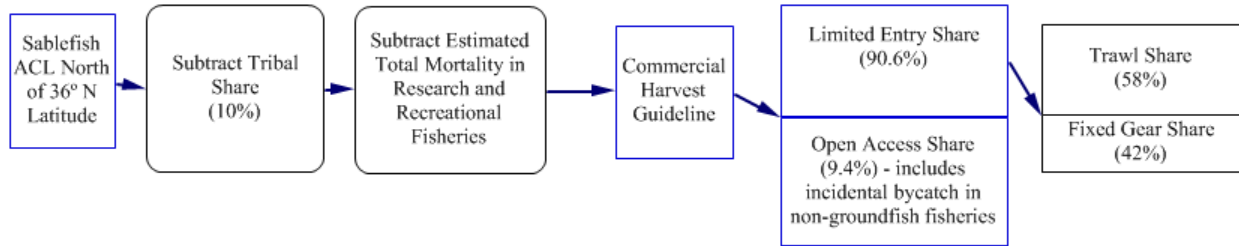


Figure 1. Fixed intersector allocations of sablefish north of 36° N latitude.

Table 3. Annual allocations and catches of sablefish north of 36° N lat. for non-tribal commercial sectors, 2011-2014 (highlighted cells indicate attainment rates $\geq 90\%$).

Year	Comm. HG	LE Trawl			LEFG			OA		
		Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.	Alloc.	Catch	% Attain.
2011	4,941	2,597	2,399	92.4%	1,880	1,954	103.9%	464	437	94.0%
2012	4,790	2,517	2,187	86.9%	1,823	1,625	89.1%	450	273	60.6%
2013	3,575	1,878	1,835	97.7%	1,360	1,199	88.1%	336	155	46.0%
2014	3,878	2,038	1,876	92.1%	1,476	1,221	82.7%	365	265	72.7%

Within-Trawl Sector Allocations

The limited entry trawl allocation of some of the Am 21 stocks are further allocated between the three trawl sectors (Shoreside IFQ, Catcher-Processors, and Motherships). The stocks managed with within-trawl allocations are currently canary rockfish, darkblotched rockfish, POP north of 40°10' N lat., widow rockfish, and Pacific whiting.² Table 4 depicts the trawl sector allocations,

² The specific within trawl allocations are as follows: **Canary Rockfish:** Decided in the biennial specifications process. **Darkblotched Rockfish:** Allocate 9% or 25 mt, whichever is greater, of the total LE trawl allocation of darkblotched rockfish to the whiting fisheries (at-sea and shoreside combined). The distribution of the whiting trawl allocation of darkblotched to individual whiting sectors will be done pro rata relative to the sectors' whiting allocation. **Pacific Ocean Perch:** Allocate 17% or 30 mt, whichever is greater, of the total LE trawl allocation of Pacific ocean perch to the whiting fisheries (at-sea and shoreside combined). The distribution of the whiting trawl

catches, and allocation attainment percentage by sector and year of these stocks since implementation of the trawl catch share program. Yellowtail rockfish are included in Table 4 since this stock is a major target for the Shoreside IFQ sector and can be caught in significant amounts in the at-sea whiting fishery (discussed in more detail below). **Pacific Whiting:** The nontribal commercial share of whiting is allocated to LE whiting trawl sectors as follows: 42% for the shoreside whiting sector, 24% for the at-sea mothership whiting sector, and 34% for the at-sea catcher-processor whiting sector

allocation of POP to individual whiting sectors will be done pro rata relative to the sectors' whiting allocation. **Widow Rockfish:** Initially allocate 52% of the total LE trawl allocation of widow rockfish to the whiting sectors if the stock is under rebuilding or 10% of the total LE trawl allocation or 500 mt of the trawl allocation to the whiting sectors, whichever is greater, if the stock is rebuilt. If the stock is overfished when the initial allocation is implemented, the latter allocation scheme automatically kicks in when it is declared rebuilt. The distribution of the whiting trawl allocation of widow to individual whiting sectors will be done pro rata relative to the sectors' whiting allocation.

Table 4. West coast groundfish trawl sector allocations and impacts (in mt) since implementation of Amendment 21 (highlighted cells indicate attainment rates $\geq 90\%$).

Stocks	Shoreside IFQ			Catcher-Processors				Motherships			
	Alloc.	Catch	% Attain.	Initial Alloc.	Final Alloc. a/	Catch	% Attain.	Initial Alloc.	Final Alloc. a/	Catch	% Attain.
2011											
Pacific Whiting	92,817.8	91,185.8	98.2%	75,138.0	NA	71,522.4	95.2%	53,039.0	NA	50,049.8	94.4%
Canary Rockfish	25.9	3.7	14.3%	4.8	8.1	0.5	5.6%	3.4	0.1	0.1	78.6%
Darkblotched Rockfish	250.8	90.9	36.2%	8.5	12.8	10.3	80.4%	6.0	1.7	1.7	100.0%
Pacific Ocean Perch	119.6	46.7	39.0%	10.2	16.7	6.5	39.0%	7.2	0.7	0.7	94.6%
Widow Rockfish	342.7	137.6	40.2%	86.7	135.0	24.1	17.8%	61.2	12.9	12.8	99.6%
Yellowtail Rockfish b/	3,094.2	738.6	23.9%	NA	NA	14.6	NA	NA	NA	66.7	NA
2012											
Pacific Whiting	68,661.9	65,661.5	95.6%	55,584.0	NA	55,694.6	100.2%	39,235.0	NA	38,215.5	97.4%
Canary Rockfish	25.9	7.2	27.6%	4.8	NA	0.3	5.6%	3.4	NA	0.2	4.4%
Darkblotched Rockfish	248.9	85.7	34.4%	8.5	NA	1.4	16.9%	6.0	NA	1.3	21.0%
Pacific Ocean Perch	119.5	48.6	40.7%	10.2	NA	3.2	31.0%	7.2	NA	1.4	19.0%
Widow Rockfish	342.7	152.6	44.5%	86.7	NA	42.0	48.4%	61.2	NA	37.3	61.0%
Yellowtail Rockfish b/	3,107.4	963.3	31.0%	NA	NA	32.0	NA	NA	NA	11.0	NA
2013											
Pacific Whiting	98,296.9	97,621.3	99.3%	79,573.0	NA	78,041.0	98.1%	56,170.0	NA	52,522.3	93.5%
Canary Rockfish	39.9	10.2	25.6%	7.4	NA	0.2	2.4%	5.2	NA	0.5	9.2%
Darkblotched Rockfish	266.7	116.0	43.5%	8.6	NA	2.1	24.2%	6.1	NA	4.2	69.6%
Pacific Ocean Perch	109.4	50.0	45.7%	10.2	NA	4.3	41.9%	7.2	NA	1.1	15.8%
Widow Rockfish	994.0	411.6	41.4%	170.0	NA	15.7	9.3%	120.0	NA	15.5	13.0%
Yellowtail Rockfish b/	2,935.8	719.3	24.5%	NA	NA	78.5	NA	NA	NA	190.9	NA
2014											
Pacific Whiting	127,835.0	98,714.0	77.2%	103,486.0	NA	103,266.3	99.8%	73,049.0	NA	62,038.3	84.9%
Canary Rockfish	41.1	10.5	25.5%	7.6	NA	0.3	3.7%	5.4	NA	0.4	6.5%
Darkblotched Rockfish c/	278.4	97.8	35.1%	9.0	6.0	3.4	56.8%	6.3	9.3	7.2	77.5%
Pacific Ocean Perch	112.3	41.0	36.5%	10.2	NA	0.3	3.1%	7.2	NA	3.6	50.0%
Widow Rockfish	994.0	654.3	65.8%	170.0	NA	16.6	9.7%	120.0	NA	39.6	33.0%
Yellowtail Rockfish b/	2,939.3	1,163.3	39.6%	NA	NA	0.0	NA	NA	NA	41.9	NA

Stocks	Shoreside IFQ			Catcher-Processors				Motherships			
	Alloc.	Catch	% Attain.	Initial Alloc.	Final Alloc. a/	Catch	% Attain.	Initial Alloc.	Final Alloc. a/	Catch	% Attain.
2015											
Pacific Whiting	124,607.3	58,383.7	46.9%	100,873.0	NA	68,483.9	67.9%	71,204.0	NA	27,660.4	38.8%
Canary Rockfish	47.3	44.8	94.8%	8.0	NA	0.1	0.9%	5.7	NA	0.1	2.5%
Darkblotched Rockfish	285.5	122.4	42.9%	9.2	NA	5.6	60.4%	6.5	NA	2.4	36.6%
Pacific Ocean Perch	118.5	49.9	42.1%	10.2	NA	7.0	68.2%	7.2	NA	1.7	24.2%
Widow Rockfish	1,306.2	814.6	62.4%	170.0	NA	17.4	10.3%	120.0	NA	17.2	14.3%
Yellowtail Rockfish b/	4,592.8	1,449.9	31.6%	NA	NA	0.5	NA	NA	NA	86.3	NA

a/ In some years allocations were reapportioned inseason after an at-sea sector declared they were done fishing for the year. There has been reapportionment of unused tribal Pacific whiting yield to all trawl sectors in some years. The final annual Pacific whiting sector allocations are depicted in the initial allocation column for at-sea sectors (and in the Allocation column for the shorebased IFQ sector).

b/ Yellowtail rockfish is managed as a set-aside species for the at-sea whiting trawl sectors (i.e., Catcher-Processors and Motherships) with an annual set-aside amount of 300 mt for both sectors combined.

c/ The original allocation of darkblotched to the Mothership sector (6.3 mt) was increased to 9.3 mt with a transfer of yield from the Catcher-Processors sector by automatic action on October 17, 2014.

Darkblotched Rockfish and Pacific Ocean Perch Set-Asides

The within-trawl allocation framework for darkblotched rockfish and POP north of 40°10' N lat. may change due to an ongoing Council consideration. In June the Council decided a preliminary preferred alternative to status quo management by specifying yield set-asides, from the trawl allocation, of darkblotched and POP for the at-sea whiting sectors rather than hard allocations managed as bycatch caps. This proposal mitigates increasing bycatch issues with both stocks in the at-sea whiting fleets. The management response to exceeding a hard bycatch cap is closure of the fishery before the Pacific whiting allocation is harvested. There is no management response to exceeding a set-aside unless there is a risk of exceeding an ACL. The proposed set-aside amounts would be the same as would be specified in the current allocation scheme, so this action will not directly impact the amount of fish allocated to the Shoreside IFQ sector. The Council is scheduled to take final action on this at its September 2016 meeting in Boise, Idaho.

Within Trawl Harvest Distribution of Yellowtail Rockfish

Yellowtail rockfish is not currently subject to within-trawl allocations since it is managed as a set-aside species in the at-sea whiting fishery. Yellowtail rockfish, similar to widow rockfish and canary rockfish at times, is a pelagic species that can aggregate in large schools in the water column. They can be caught in significant amounts in whiting fisheries. They are also an important target in midwater trawl efforts in the Shoreside IFQ fishery.

Midwater targeting of yellowtail and widow rockfish in the Shoreside IFQ fishery is on the rebound since that fishing strategy was preempted by widow rockfish rebuilding. Now that widow rockfish and canary rockfish are rebuilt, it is expected that there will be increasing targeting of yellowtail in the Shoreside IFQ fishery with a consequent increase in the attainment rate of the sector's allocations. This trend is already evidenced in the time series of yellowtail catches by this sector since implementation of the catch share program (Figure 2).

Yellowtail impacts by the at-sea whiting sectors is managed with a 300 mt yield set-aside that is deducted from the trawl allocation of yellowtail (Shoreside IFQ is allocated the remainder). This amount of yield set aside to accommodate yellowtail bycatch has been sufficient since the set-aside was first specified in 2011 (Table 5). However, that bycatch is highly variable with annual attainment rates of the set-aside varying between 14% and 90% during 2011-2015.

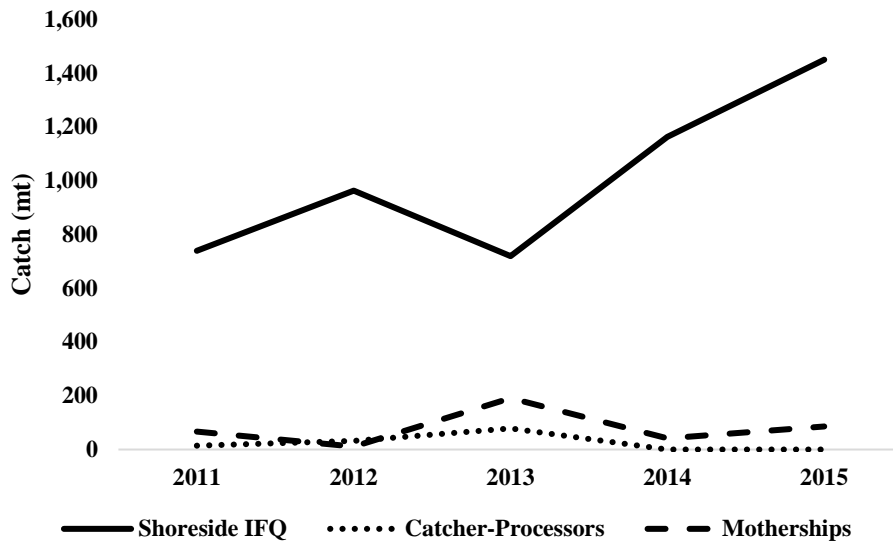


Figure 2. Time series of catch (landings + dead discards) of yellowtail rockfish north of 40°10' N lat. by trawl sector, 2011-2015.

Table 5. Yellowtail rockfish north of 40°10' N lat. catch accounting: comparing annual at-sea sector impacts to the 300 mt set-aside.

Year	At-Sea Sectors Combined		
	Set-Aside	Catch	% Attain.
2011	300	81.2	27.1%
2012	300	43.0	14.3%
2013	300	269.4	89.8%
2014	300	42.0	14.0%
2015	300	86.8	28.9%

Within-Trawl Intersector Quota Trading

All of the stocks allocated among the trawl sectors are important to each sector either as a primary target stock (e.g., Pacific whiting) or because the allocated amounts can disrupt access to healthy target stocks. The only target stock for the at-sea whiting sectors is Pacific whiting; the other allocated stocks are managed with bycatch caps and can constrain access to whiting. These same stocks are either important targets for the Shoreside IFQ sector (e.g., widow rockfish) or stocks that constrain access to target opportunities (e.g., canary, darkblotched, and POP).

One consideration for mitigating the negative effects of managing the allocation of constraining or “choke” species in trawl fisheries is to allow intersector trading of trawl quota which is currently prohibited. There have been proposals to allow some intersector trading. For example, the Council considered a proposal to allow entities who have quota in both the Shoreside IFQ and Mothership sectors to trade darkblotched and POP quota from their Shoreside IFQ accounts to their Mothership accounts to avert a bycatch problem. For the near term, the Council may decide that managing at-sea sector impacts of these two stocks with set-asides is preferred over intersector trading, however, the Council will be scoping intersector quota trading at its September 2016 meeting.

Pacific Halibut Individual Bycatch Quota

The trawl catch share program was designed to minimize Pacific halibut bycatch in limited entry trawl fisheries. Pacific halibut bycatch in the IFQ fishery north of 40°10' N lat. is managed under a system of individual bycatch quotas (IBQ) where the dead discarded catch of Pacific halibut (Pacific halibut is a prohibited species in the trawl fishery) in the fishery is debited against the permit's IBQ quota pounds. The FMP sets the trawl bycatch mortality limit at 15 percent of the Area 2A total constant exploitation yield (TCEY) for legal size (i.e., $\geq 32''$) halibut (net weight), not to exceed 130,000 pounds (59 mt) annually for legal size halibut (net weight) for 2012 through 2014 and, beginning in 2015, not to exceed 100,000 pounds annually for legal size halibut (net weight). These legal sized dressed weight mortality limits are converted to all size round pound limits to determine the amount of IBQ quota pounds that will be issued. After this conversion 10 mt is deducted from the limit to accommodate other trawl sector Pacific halibut bycatch in the IFQ fishery south of 40°10' N lat. and in the at-sea whiting fisheries.

The IBQ values in Table 6 are the quota pounds (converted to mt) of Pacific halibut IBQ (converted to round weight of legal + sublegals) issued to the IFQ fishery north of 40°10' N lat. (available at <https://www.webapps.nwfsc.noaa.gov/ifq/>). The total estimated mortality of Pacific halibut in trawl fisheries was obtained from annual Pacific halibut mortality reports from the NMFS WCGOP available at https://www.nwfsc.noaa.gov/research/divisions/fram/observation/data_products/data_library.cfm#pacific-halibut.

The percent attainment of Pacific halibut limits (IBQ + set-asides) in trawl fisheries has ranged from 23% to 38% during 2011-2014 (Table 6). As can be seen in Figure 3, the total mortality of Pacific halibut incidentally caught in west coast limited entry trawl fisheries has decreased dramatically since implementation of IBQ management in 2011; the 2011-2014 average trawl mortality is 16% of the 2002-2010 average.

Table 6. Bycatch limits and total mortality of Pacific halibut in the limited entry trawl fishery by sector and year, 2011-2014.

Year	Shorebased IFQ				At-Sea Whiting		Total LE Trawl		
	IBQ	Set-Aside a/	Tot. Mort.	% Attain.	Set-Aside	Tot. Mort.	IBQ+Set-Asides	Tot. Mort.	% Attain.
2011	116.8	5	33.3	27.3%	5	0.6	126.8	33.9	26.7%
2012	105.6	5	43.4	41.1%	5	0.6	115.6	44.0	38.1%
2013	107.3	5	33.0	30.7%	5	1.1	117.3	34.1	29.0%
2014	107.3	5	27.5	25.6%	5	0.0	117.3	27.5	23.4%

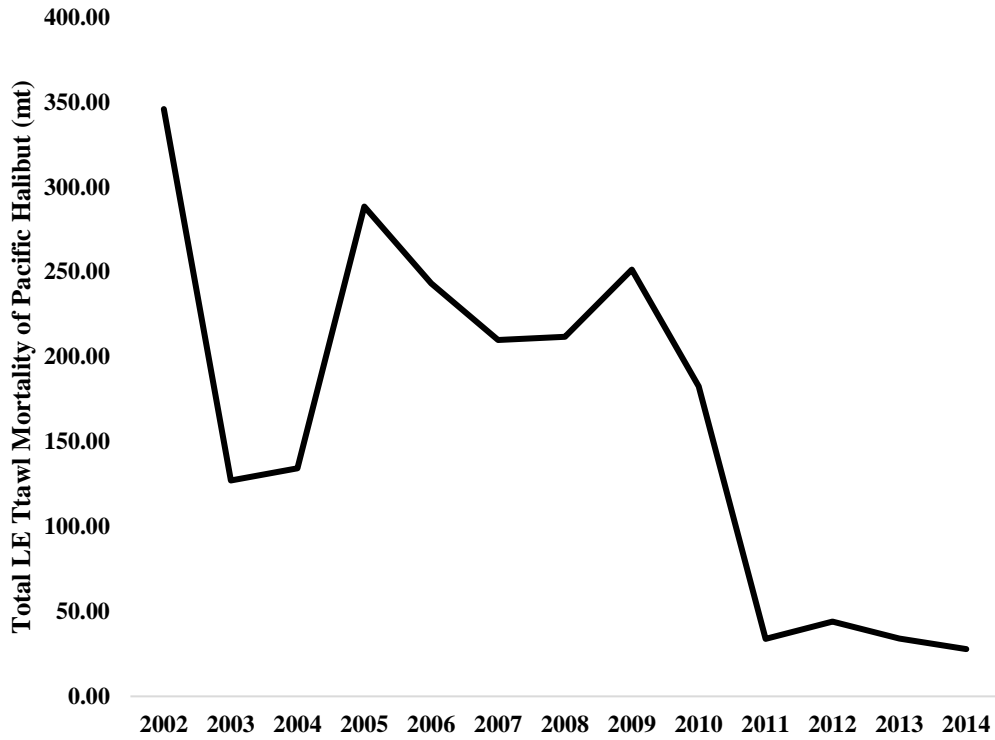


Figure 3. Total mortality of Pacific halibut in west coast limited entry groundfish trawl fisheries, 2002-2014.

Policy Issues for Possible Consideration

This section presents issues that the Council may want to explore as part of, or subsequent to, the review of intersector allocations. The possible considerations raised in this section are not inclusive; other issues associated with FMP allocations may arise in the scoping process.

Amendment 21 and the Five Percent Allocations for Trawl Dominant Species

One approach to addressing the fish stranded by the 5 percent non-trawl allocations for trawl-dominant species might be to manage the non-trawl impacts of trawl-dominant stocks using off-the-top deductions. Off-the-top deductions are generally based on projected harvests for a sector. After the off-the-top deduction is taken off of the ACL the remaining fishery harvest guideline (HG) would then be allocated to trawl sectors. Non-trawl sectors would still be able to develop new target strategies for trawl dominant species but amounts of fish set aside for an off-the-top deduction would initially be less than the current 5 percent allocations. This would decrease the potential of stranding yield that could otherwise be utilized in the trawl fishery. Managing stock impacts with sector allocations implies limits to their take and a management response to maintain sector impacts within allocations. When there is a low level of truly incidental bycatch of such stocks, it might make sense to specify set-asides, which can be changed every two years in the specifications process. The amount of yield taken off-the-top to accommodate bycatch in non-trawl fisheries can be specified every two years to react to fishery observations and to consider the relative risk of overfishing any of these stocks. If a target fishery begins to develop and expands to the point that off-the-top deductions are no longer appropriate, then an allocation could be developed through the biennial specifications or as a FMP allocation. This adaptive management strategy may be preferable to formal allocations established in the FMP

Non-trawl off-the-top deductions might also be considered for arrowtooth flounder, Dover sole, English sole, longspine thornyhead north of 34°27' N lat., petrale sole, POP north of 40°10' N lat., and splitnose rockfish south of 40°10' N lat. since these stocks are caught incidentally and not targeted by non-trawl gears. Shortspine thornyhead north of 34°27' N lat. might also be considered for off-the-top deductions in non-trawl fisheries. However, there is a successful target fishery for shortspine thornyhead south of 34°27' N lat. using non-trawl gears. If this becomes more a non-trawl target stock in the north, then off-the-top deductions may not be appropriate.

The Need to Continue Amendment 6 Allocations

As part of the five-year review, one question may be whether the Am 6 allocations of species in the Nearshore and Shelf Rockfish complexes (the remaining stocks affected by Am 6) should remain in the future. Nearshore rockfish allocations are managed by state policies and nearshore FMPs in California and Oregon. Access to shelf rockfish is severely affected by species' rebuilding plans and Am 6 allocations of shelf rockfish unless RCAs are substantially reduced (while there is an ongoing consideration to relax the trawl RCAs, such a reduction in the non-trawl RCA is not currently being contemplated). It might be appropriate to consider the relevance of these Am 6 allocations since they have not been used since the RCAs were implemented at the end of 2002 and are based on catch history from the 1980s and therefore may not reflect the current fishery.

Sablefish Management Line at 36°N. Lat.

One issue with the sablefish north allocation is the management line at 36° N lat. The allocation was decided in an era when the sablefish assessment only assessed the portion of the stock north of 36° N lat. since the surveys then only extended that far south on the west coast. However, as is made clear in the last full sablefish assessment (Stewart, *et al.* 2011), the 36° N lat. line “does not likely correspond to any meaningful biological boundary” and Pt. Conception at 34°27’ N lat. is a more reasonable biogeographic break for west coast sablefish. For many years, there has been a post-stratification of the assessed biomass using trawl survey data to apportion stock biomass north and south of 36° N lat. to determine the current allocations.

Changing the management boundary from 36° N lat. to 34°27’ N lat. could be done without going through a reallocation process. For example, the current allocation scheme (Figure 1) could be recalculated for the portion of the stock north of 34°27’ N lat. by adding the average proportion of the trawl survey biomass between 34°27’ N lat. and 36° N lat. and recalculating the sector allocation percentages north and south. However, there could be issues with the participants in the LE fixed gear sector who fish south of 36° N lat. and north of 34°27’ N lat. for sablefish. These individuals would not have qualified for a northern sablefish endorsement and therefore might become subject to more conservative sablefish trip limits than status quo if their fishing area became part of the northern area. There is an automatic way to recalculate quota shares for IFQ fishermen with a shift in the management line. The Council and NMFS could also reconsider all the sablefish sector allocations with a line shift. However, reconsidering sablefish north allocations was explicitly rejected in the Am 21 process given the contentious nature of that allocation.

Within Trawl Yellowtail Rockfish

Given the trend in trawl sectors toward taking greater portions of their yellowtail rockfish allocations, one consideration for managing yellowtail rockfish north of 40°10’ N lat. might be to allocate quota to all three trawl sectors and manage the stock as a bycatch cap species in the at-sea whiting fisheries. It may make sense to manage the aggregating midwater rockfish stocks that commingle with whiting (i.e., canary, widow, and yellowtail) since there can be large magnitude bycatch events of all three stocks. This would likely impose a cost on the at-sea sectors in that these sectors are less efficient at attaining their whiting quotas when there are more stocks that constrain access to whiting.

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