

2019 AND 2020 GROUND FISH HARVEST SPECIFICATIONS

The following tables are included in this attachment:

- Table 1. 2019 and 2020 harvest specifications (overfishing limits (OFLs in mt), acceptable biological catches (ABCs in mt), and annual catch limits (ACLs in mt)), for west coast groundfish stocks and stock complexes under preferred harvest control rules.

Table 1. 2019 and 2020 harvest specifications (overfishing limits (OFLs in mt), acceptable biological catches (ABCs in mt), and annual catch limits (ACLs in mt)), for west coast groundfish stocks and stock complexes under preferred harvest control rules (overfished stocks in CAPS; stocks with new assessments in bold; component stocks in stock complexes in italics; yelloweye ACLs are highlighted since these are preliminary preferred harvest specifications).

Stock or Stock Complex	2019			2020			Harvest Control Rule
	OFL	ABC	ACL	OFL	ABC	ACL	
REBUILDING STOCKS							
COWCOD S. of 40°10'	74	67	10	76	68	10	ABCs sum of Con. and Mont. area ABCs, ACLs projected from 2013 rebuilding analysis (SPR = 82.7% (F = 0.007)) + Mont. area ABC contrib., ACT = 4 mt
<i>COWCOD (Conception)</i>	61	56	NA	62	57	NA	ABC (P* = 0.45)
<i>COWCOD (Monterey)</i>	13.3	11.1	NA	13.3	11.1	NA	ABC (P* = 0.45)
YELLOWEYE ROCKFISH	82	74	39	84	77	40	ABC (P* = 0.4), ACL (SPR = 76.0%); this is the default HCR for the ACL; Preliminary preferred alternative
NON-OVERFISHED STOCKS							
Arrowtooth Flounder	18,696	15,574	15,574	15,306	12,750	12,750	ACL = ABC (P* = 0.4)
Big skate	541	494	494	541	494	494	ACL = ABC (P* = 0.45)
Black Rockfish (CA)	344	329	329	341	326	326	ACL = ABC (P* = 0.45)
Black Rockfish (OR)	565	516	516	561	512	512	ACL = ABC (P* = 0.45)
Black Rockfish (WA)	312	298	298	311	297	297	ACL = ABC (P* = 0.45)
Bocaccio S. of 40°10'	2,194	2,097	2,097	2,104	2,011	2,011	ACL = ABC (P* = 0.45)
Cabezon (CA)	154	147	147	153	146	146	ACL = ABC (P* = 0.45)
Cabezon (OR)	49	47	47	49	47	47	ACL = ABC (P* = 0.45)
California scorpionfish	337	313	313	331	307	307	ACL = ABC (P* = 0.45)
Canary Rockfish	1,517	1,450	1,450	1,431	1,368	1,368	ACL = ABC (P* = 0.45)
Chilipepper S. of 40°10'	2,652	2,536	2,536	2,521	2,410	2,410	ACL = ABC (P* = 0.45)
Darkblotched Rockfish	800	765	765	853	815	815	ACL = ABC (P* = 0.45)
Dover Sole	91,102	87,094	50,000	92,048	87,998	50,000	ABC (P* 0.45), ACL = 50,000 mt annually
English Sole	11,052	10,090	10,090	11,101	10,135	10,135	ACL = ABC (P* = 0.45)
Lingcod N. of 40°10'	5,110	4,885	4,871	4,768	4,558	4,541	ACL = ABC (P* = 0.45) w/ 40-10 adj. for the CA contribution to the ABC and ACL Assumes 1,000 mt and 750 mt removals for 2017 and 2018 in the north and south, respectively and full ACL attainment thereafter.
Lingcod S. of 40°10'	1,143	1,093	1,039	977	934	869	ACL = ABC (P* = 0.45) w/ 40-10 adj. Assumes 1,000 mt and 750 mt removals for 2017 and 2018 in the north and south, respectively and full ACL attainment thereafter.
Longnose skate	2,499	2,389	2,000	2,474	2,365	2,000	ABC (P* = 0.45), ACL = 2,000 mt annually
Longspine Thornyhead N. of 34°27'	4,112	3,425	2,603	3,901	3,250	2,470	ACL = 76% of coastwide ABC (P* = 0.4)
Longspine Thornyhead S. of 34°27'			822			780	ACL = 24% of coastwide ABC (P* = 0.4)
Pacific Cod	3,200	2,221	1,600	3,200	2,221	1,600	ABC (P* = 0.4), ACL = 50% of OFL
Pacific Ocean Perch N. of 40°10' N lat.	4,753	4,340	4,340	4,632	4,229	4,229	ACL = ABC (P* = 0.45)
Petrale Sole	3,042	2,908	2,908	2,976	2,845	2,845	ACL = ABC (P* = 0.45)
Sablefish N. of 36°	8,489	7,750	5,606	8,648	7,896	5,723	ACL: 40-10 rule applied to 73.8% of coastwide ABC (P* = 0.4)
Sablefish S. of 36°			1,990			2,032	ACL: 40-10 rule applied to 26.2% of coastwide ABC (P* = 0.4)
Shortbelly	6,950	5,789	500	6,950	5,789	500	ABC (P* = 0.4), ACL = 500 mt annually
Shortspine Thornyhead N. of 34°27'	3,089	2,573	1,683	3,063	2,551	1,669	ACL = 65.4% of coastwide ABC (P* = 0.4)
Shortspine Thornyhead S. of 34°27'			890			883	ACL = 34.6% of coastwide ABC (P* = 0.4)

Stock or Stock Complex	2019			2020			Harvest Control Rule
	OFL	ABC	ACL	OFL	ABC	ACL	
Spiny dogfish	2,486	2,071	2,071	2,472	2,059	2,059	ACL = ABC (P* = 0.4)
Splitnose S. of 40°10'	1,831	1,750	1,750	1,810	1,731	1,731	ACL = ABC (P* = 0.45)
Starry flounder	652	452	452	652	452	452	Est. MSY from E.J.'s DBSRA analysis
Widow Rockfish	12,375	11,831	11,831	11,714	11,199	11,199	ACL = ABC (P* = 0.45)
Yellowtail N. of 40°10'	6,568	5,997	5,997	6,261	5,716	5,716	ACL = ABC (P* = 0.45)
STOCK COMPLEXES							
Nearshore Rockfish North	203	183	183	200	180	180	Sum of component species specifications
<i>Black and yellow</i>	0.0	0.0	0.0	0.0	0.0	0.0	ACL = ABC (P* = 0.45)
Blue/Deacon (CA)	31.0	28.1	28.1	32.4	29.3	29.3	ACL = ABC (P* = 0.45)
Blue/Deacon (OR)	112.3	101.5	101.5	108.8	98.4	98.4	ACL = ABC (P* = 0.45)
<i>Blue/Deacon (WA)</i>	8.7	7.3	7.3	8.4	7.0	7.0	ACL = ABC (P* = 0.45)
<i>Brown</i>	2.1	1.9	1.9	2.1	1.9	1.9	ACL = ABC (P* = 0.45)
<i>Calico</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>China</i>	28.6	26.1	26.1	27.9	25.5	25.5	ACL = ABC (P* = 0.45)
<i>Copper</i>	11.9	10.9	10.9	12.2	11.2	11.2	ACL = ABC (P* = 0.45)
<i>Gopher</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Grass</i>	0.7	0.5	0.5	0.7	0.5	0.5	ACL = ABC (P* = 0.45)
<i>Kelp</i>	0.0	0.0	0.0	0.0	0.0	0.0	ACL = ABC (P* = 0.45)
<i>Olive</i>	0.3	0.3	0.3	0.3	0.3	0.3	ACL = ABC (P* = 0.45)
<i>Quillback</i>	7.4	6.2	6.2	7.4	6.2	6.2	ACL = ABC (P* = 0.45)
<i>Treefish</i>	0.2	0.2	0.2	0.2	0.2	0.2	ACL = ABC (P* = 0.45)
Shelf Rockfish North	2,309	2,054	2,054	2,302	2,048	2,048	Sum of component species specifications
<i>Bronzespotted</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Bocaccio</i>	284.0	236.9	236.9	284.0	236.9	236.9	ACL = ABC (P* = 0.45)
<i>Chameleon</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Chilipepper</i>	199.6	190.9	190.9	189.8	181.4	181.4	ACL = ABC (P* = 0.45)
<i>Cowcod</i>	0.4	0.3	0.3	0.4	0.3	0.3	ACL = ABC (P* = 0.45)
<i>Flag</i>	0.1	0.1	0.1	0.1	0.1	0.1	ACL = ABC (P* = 0.45)
<i>Freckled</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Greenblotched</i>	1.3	1.1	1.1	1.3	1.1	1.1	ACL = ABC (P* = 0.45)
<i>Greenspotted 40°10' to 42° N. lat.</i>	9.3	8.5	8.2	9.3	8.5	8.2	ACL: 40-10 rule applied to 22.2% of northern model (CA N of 34°27' N latitude) ABC (P* = 0.45)
<i>Greenspotted N. of 42 N. lat. (OR & WA)</i>	6.1	5.1	5.1	6.1	5.1	5.1	ACL = ABC (P* = 0.45)
<i>Greenstriped</i>	1,311.4	1,197.3	1,197.3	1,314.8	1,200.4	1,200.4	ACL = ABC (P* = 0.45)
<i>Halfbanded</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Harlequin</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Honeycomb</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Mexican</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Pink</i>	0.0	0.0	0.0	0.0	0.0	0.0	ACL = ABC (P* = 0.45)

Stock or Stock Complex	2019			2020			Harvest Control Rule
	OFL	ABC	ACL	OFL	ABC	ACL	
<i>Pinkrose</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Puget Sound</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Pygmy</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Redstripe</i>	269.9	225.1	225.1	269.9	225.1	225.1	ACL = ABC (P* = 0.45)
<i>Rosethorn</i>	12.9	10.8	10.8	12.9	10.8	10.8	ACL = ABC (P* = 0.45)
<i>Rosy</i>	3.0	2.5	2.5	3.0	2.5	2.5	ACL = ABC (P* = 0.45)
<i>Silvergray</i>	159.4	133.0	133.0	159.4	133.0	133.0	ACL = ABC (P* = 0.45)
<i>Speckled</i>	0.2	0.1	0.1	0.2	0.1	0.1	ACL = ABC (P* = 0.45)
<i>Squarespot</i>	0.2	0.1	0.1	0.2	0.1	0.1	ACL = ABC (P* = 0.45)
<i>Starry</i>	0.0	0.0	0.0	0.0	0.0	0.0	ACL = ABC (P* = 0.45)
<i>Stripetail</i>	40.4	33.7	33.7	40.4	33.7	33.7	ACL = ABC (P* = 0.45)
<i>Swordspine</i>	0.0	0.0	0.0	0.0	0.0	0.0	ACL = ABC (P* = 0.45)
<i>Tiger</i>	1.0	0.8	0.8	1.0	0.8	0.8	ACL = ABC (P* = 0.45)
<i>Vermilion</i>	9.7	8.1	8.1	9.7	8.1	8.1	ACL = ABC (P* = 0.45)
Slope Rockfish North	1,887	1,746	1,746	1,873	1,732	1,732	Sum of component species specifications
<i>Aurora (assuming sigma = 0.39)</i>	17.5	16.7	16.7	17.5	16.7	16.7	ACL = ABC (P* = 0.45)
<i>Bank</i>	17.2	14.4	14.4	17.2	14.4	14.4	ACL = ABC (P* = 0.45)
<i>Blackgill</i>	4.7	3.9	3.9	4.7	3.9	3.9	ACL = ABC (P* = 0.45)
<i>Redbanded</i>	45.3	37.7	37.7	45.3	37.7	37.7	ACL = ABC (P* = 0.45)
<i>Rougheye/Blackspotted</i>	217.6	198.6	198.6	219.5	200.4	200.4	ACL = ABC (P* = 0.45)
<i>Sharpchin</i>	352.8	322.1	322.1	348.0	317.7	317.7	ACL = ABC (P* = 0.45)
<i>Shortraker</i>	18.7	15.6	15.6	18.7	15.6	15.6	ACL = ABC (P* = 0.45)
<i>Splitnose</i>	1,021.0	976.1	976.1	1,009.6	965.1	965.1	ACL = ABC (P* = 0.45)
<i>Yellowmouth</i>	192.4	160.5	160.5	192.4	160.5	160.5	ACL = ABC (P* = 0.45)
Nearshore Rockfish South	1,300	1,145	1,142	1,322	1,165	1,163	Sum of component species specifications
<i>Shallow Nearshore Species</i>	NA	NA	NA	NA	NA	NA	NA
<i>Black and yellow</i>	27.5	23.0	23.0	27.5	23.0	23.0	ACL = ABC (P* = 0.45)
<i>China</i>	14.3	13.1	10.8	14.8	13.5	11.5	ACL = ABC (P* = 0.45)
<i>Gopher (N of Pt. Conception)</i>	101.0	84.2	84.2	101.0	84.2	84.2	ACL = ABC (P* = 0.45)
<i>Gopher (S of Pt. Conception)</i>	25.6	21.4	21.4	25.6	21.4	21.4	ACL = ABC (P* = 0.45)
<i>Grass</i>	59.6	49.7	49.7	59.6	49.7	49.7	ACL = ABC (P* = 0.45)
<i>Kelp</i>	27.7	23.1	23.1	27.7	23.1	23.1	ACL = ABC (P* = 0.45)
<i>Deeper Nearshore Species</i>	NA	NA	NA	NA	NA	NA	NA
<i>Blue/Deacon (N. of 34°27' N lat.)</i>	278.8	252.6	252.6	291.5	264.1	264.1	ACL = ABC (P* = 0.45)
<i>Blue/Deacon (S. of 34°27' N lat.)</i>	21.8	18.2	18.2	21.8	18.2	18.2	ACL = ABC (P* = 0.45)
<i>Brown</i>	177.9	162.4	162.4	181.9	166.1	166.1	ACL = ABC (P* = 0.45)
<i>Calico</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Copper</i>	322.1	294.1	294.1	327.3	298.8	298.8	ACL = ABC (P* = 0.45)
<i>Olive</i>	224.6	187.4	187.4	224.6	187.4	187.4	ACL = ABC (P* = 0.45)
<i>Quillback</i>	5.4	4.5	4.5	5.4	4.5	4.5	ACL = ABC (P* = 0.45)

Stock or Stock Complex	2019			2020			Harvest Control Rule
	OFL	ABC	ACL	OFL	ABC	ACL	
<i>Treefish</i>	13.2	11.0	11.0	13.2	11.0	11.0	ACL = ABC (P* = 0.45)
Shelf Rockfish South	1,919	1,625	1,625	1,919	1,626	1,625	Sum of component species specifications
<i>Bronzespotted</i>	3.6	3.0	3.0	3.6	3.0	3.0	ACL = ABC (P* = 0.45)
<i>Chameleon</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Flag</i>	23.4	19.5	19.5	23.4	19.5	19.5	ACL = ABC (P* = 0.45)
<i>Freckled</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Greenblotched</i>	23.1	19.3	19.3	23.1	19.3	19.3	ACL = ABC (P* = 0.45)
<i>Greenspotted</i>	78.3	71.5	70.9	78.1	71.3	70.7	ACL: 40-10 rule applied to 77.8% of northern model (CA N of 34°27' N latitude) ABC plus the southern model ABC (P* = 0.45)
<i>Greenstriped</i>	240.6	219.6	219.6	241.2	220.2	220.2	ACL = ABC (P* = 0.45)
<i>Halfbanded</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Harlequin</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Honeycomb</i>	9.9	8.2	8.2	9.9	8.2	8.2	ACL = ABC (P* = 0.45)
<i>Mexican</i>	5.1	4.2	4.2	5.1	4.2	4.2	ACL = ABC (P* = 0.45)
<i>Pink</i>	2.5	2.1	2.1	2.5	2.1	2.1	ACL = ABC (P* = 0.45)
<i>Pinkrose</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Pygmy</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Redstripe</i>	0.5	0.4	0.4	0.5	0.4	0.4	ACL = ABC (P* = 0.45)
<i>Rosethorn</i>	2.1	1.8	1.8	2.1	1.8	1.8	ACL = ABC (P* = 0.45)
<i>Rosy</i>	44.5	37.1	37.1	44.5	37.1	37.1	ACL = ABC (P* = 0.45)
<i>Silvergray</i>	0.5	0.4	0.4	0.5	0.4	0.4	ACL = ABC (P* = 0.45)
<i>Speckled</i>	39.4	32.8	32.8	39.4	32.8	32.8	ACL = ABC (P* = 0.45)
<i>Squarespot</i>	11.1	9.2	9.2	11.1	9.2	9.2	ACL = ABC (P* = 0.45)
<i>Starry</i>	62.6	52.2	52.2	62.6	52.2	52.2	ACL = ABC (P* = 0.45)
<i>Stripetail</i>	23.6	19.7	19.7	23.6	19.7	19.7	ACL = ABC (P* = 0.45)
<i>Swordspine</i>	14.2	11.9	11.9	14.2	11.9	11.9	ACL = ABC (P* = 0.45)
<i>Tiger</i>	0.0	0.0	0.0	0.0	0.0	0.0	ACL = ABC (P* = 0.45)
<i>Vermilion</i>	269.3	224.6	224.6	269.3	224.6	224.6	ACL = ABC (P* = 0.45)
<i>Yellowtail</i>	1,064.4	887.7	887.7	1,064.4	887.7	887.7	ACL = ABC (P* = 0.45)
Slope Rockfish South	856	744	744	855	743	743	Sum of component species specifications
<i>Aurora</i>	74.6	71.0	71.0	74.6	71.0	71.0	ACL = ABC (P* = 0.45)
<i>Bank</i>	503.2	419.7	419.7	503.2	419.7	419.7	ACL = ABC (P* = 0.45)
Blackgill	174.0	158.9	158.9	174.0	158.9	158.9	ACL = ABC (P* = 0.45)
<i>Pacific ocean perch</i>	-	-	-	-	-	-	ACL = ABC (P* = 0.45)
<i>Redbanded</i>	10.4	8.7	8.7	10.4	8.7	8.7	ACL = ABC (P* = 0.45)
<i>Rougheye/Blackspotted</i>	4.4	4.1	4.1	4.5	4.1	4.1	ACL = ABC (P* = 0.45)
<i>Sharpchin</i>	88.2	80.5	80.5	87.0	79.4	79.4	ACL = ABC (P* = 0.45)
<i>Shortraker</i>	0.1	0.1	0.1	0.1	0.1	0.1	ACL = ABC (P* = 0.45)
<i>Yellowmouth</i>	0.8	0.7	0.7	0.8	0.7	0.7	ACL = ABC (P* = 0.45)
Other Flatfish	8,750	6,498	6,498	8,202	6,041	6,041	Sum of component species specifications
<i>Butter sole</i>	4.6	3.2	3.2	4.6	3.2	3.2	ACL = ABC (P* = 0.4)

Stock or Stock Complex	2019			2020			Harvest Control Rule
	OFL	ABC	ACL	OFL	ABC	ACL	
<i>Curlfin sole</i>	8.2	5.7	5.7	8.2	5.7	5.7	$ACL = ABC (P^* = 0.4)$
<i>Flathead sole</i>	35.0	24.3	24.3	35.0	24.3	24.3	$ACL = ABC (P^* = 0.4)$
<i>Pacific sanddab</i>	4,801.0	3,331.9	3,331.9	4,801.0	3,331.9	3,331.9	$ACL = ABC (P^* = 0.4)$
<i>Rex sole</i>	3,061	2,550	2,550	2,513	2,093	2,093	$ACL = ABC (P^* = 0.4)$
<i>Rock sole</i>	66.7	46.3	46.3	66.7	46.3	46.3	$ACL = ABC (P^* = 0.4)$
<i>Sand sole</i>	773.2	536.6	536.6	773.2	536.6	536.6	$ACL = ABC (P^* = 0.4)$
Other Fish	480	420	420	465	406	406	Sum of component species specifications
<i>Cabezon (WA)</i>	5.5	4.6	4.6	5.4	4.5	4.5	$ACL = ABC (P^* = 0.45)$
<i>Kelp greenling (CA)</i>	118.9	99.2	99.2	118.9	99.2	99.2	$ACL = ABC (P^* = 0.45)$
<i>Kelp greenling (OR)</i>	180.9	171.1	171.1	166.5	157.5	157.5	$ACL = ABC (P^* = 0.45)$
<i>Kelp greenling (WA)</i>	7.1	5.9	5.9	7.1	5.9	5.9	$ACL = ABC (P^* = 0.45)$
<i>Leopard shark</i>	167.1	139.4	139.4	167.1	139.4	139.4	$ACL = ABC (P^* = 0.45)$

