Appendix B
DETAILED MANAGEMENT MEASURES ANALYSIS

2011-2012 GROUNDFISH HARVEST SPECIFICATIONS
DRAFT ENVIRONMENTAL IMPACT STATEMENT

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This appendix provides detailed information surrounding the new management measures (i.e., management measures that have not previously been analyzed or implemented). Sections B.1 through B.3 detail management measures included under the Council's Final Preferred Alternative. Section B.4 details the analysis completed to date on those management measures that were considered but rejected for further analysis or for use in 2011-2012.

B.1 Deductions from the ACL

Deductions from the ACL, or off-the-top deductions, are used to account for groundfish mortality in tribal fisheries, incidental open access fisheries (e.g. non-groundfish fisheries), scientific research, and under exempted fishing permits (EFPs). Chapter 2 describes the Council's final preferred deductions from the ACLs for 2001-2012. Details behind the calculations of each portion of the off-the-top deductions are described in this section.

B.1.1 Tribal

The methods used to estimate the impacts in the tribal fisheries represent the best judgment of tribal fishery managers based on both past performance and anticipated potential impacts in the coming season(s). Though the impact estimates are divided by fishery for the sake of precision in estimating overfished species impacts, tribal managers typically manage to stay within overall projected impacts (i.e., across fisheries).

B.1.1.1 Tribal Non-overfished Species Impacts

For Dover sole, arrowtooth flounder, and longspine thornyhead the Makah Tribe has managed their fisheries with annual fleet limits for the past several years (i.e. bimonthly limits are multiplied by the number of vessels in the fleet and summed across periods to create an annual harvest target). Using cumulative limits similar to those in place in 2010 and an estimated 5 non-whiting trawl vessels, the set asides for Dover sole and arrowtooth flounder are 1,497 mt and 2,041 mt respectively. For longspine thornyhead the cumulative fleet limit would represent a significant departure from anything seen in recent years or anticipated in the next biennium. As such the fleet limit that would result from status quo bimonthly limits is reduced to 30 mt (~ 10 percent of the fleet limit). The yellowtail estimate is also based on the sum of total fleet limits for the Makah midwater fishery (Agenda Item I.4.b, Supplemental Tribal Report, April 2010).

Table B-1. Tribal set asides for 2011-2012 Fisheries.

Species	Amount (mt)
Dover sole	1,497
English sole	91
Arrowtooth flounder	2,041
Starry flounder	2
Other flatfish	60
Shortspine Thornyhead N. 34°27' N.	38
Longspine Thornyhead N. 34°27' N.	30
Minor slope north 40°10 N. lat.	36
Minor shelf north 40°10 N. lat.	9
Longnose skate	56

B.1.1.2 Tribal Overfished Species Impacts

Whiting Fishery

The GMT updated the 2010 set asides for the tribal whiting fishery at the March 2010 Council meeting. This was based on the whiting set aside amounts described in the proposed rule for 2010 Tribal Fishery for Pacific Whiting (75 FR 11829). Using the methodology described in the 2009-2010 harvest specifications and management measures EIS, the GMT calculated 4.3 mt for canary, 0 mt for darkblotched, 7.2 mt for POP, 5 mt for widow, and 0 mt for yelloweye rockfish (Table B-2). This methodology used a weighted average approach for calculating Makah's bycatch rate assuming recent years are more representative of bycatch. Those rates are tripled to provide a conservative estimate of potential bycatch for the Quileute Tribe's developing fishery.

Table B-2. Estimated bycatch (mt) in the tribal whiting fisheries for 2010.

Sector	Canary	Darkblotched	POP	Widow	Yelloweye
Makah	1.78	0.02	2.99	2.06	0.00
Quileute	2.52	0.03	4.22	2.92	0.00
Total Tribal	**4.30**	**0.05**	**7.21**	**4.99**	**0.00**

Non-Whiting Midwater Trawl Fishery

The Makah Tribe is the only tribe that conducts a midwater trawl fishery. The fishery targets yellowtail rockfish and the combined fleet is subject to a limit of 180,000 lbs/2 months. Overfished species bycatch in this fishery consists of widow and canary rockfish. Widow rockfish are subject to an annual limit of 10 percent of the weight of yellowtail landed and may be changed inseason to stay within projected impacts. This was changed from a per-landing limit in 2010 in response to increasing encounters of widow rockfish on some trips. The widow rockfish set aside of 40 mt is based on the maximum expected catch of yellowtail (490 mt) as well as recent bycatch in the fishery (Table B-3). Canary rockfish is subject to a limit of 300 lbs/trip. As reflected in Agenda Item F.9.c, Supplemental GMT Report, June 2008 the canary set aside was changed beginning in 2009:

> The GMT notes that one change in the set asides for overfished species from these fisheries compared to status quo is the increased estimate of canary rockfish in the Makah midwater trawl fishery targeting yellowtail rockfish. Due to higher encounters of canary bycatch in recent years, particularly 2007 and 2008, the Tribe has been unable to successfully prosecute the fishery while remaining within the canary estimate provided in the scorecard. The Makah Tribe is proposing a doubling of those estimated impacts (from 1.8 mt to 3.6 mt) to allow for resumption of the fishery given increased availability of canary rockfish yield in 2009-2010.

Table B-3. Catch in mt of canary, widow, and yellowtail rockfish in the Makah midwater trawl fishery for 2005-2009.

Species	2005	2006	2007	2008	2009
Canary	1.9	0.9	0.0	0.6	1.3
Widow	25.6	9.2	0.5	13.0	35.1
Yellowtail	480.0	111.2	7.3	155.5	429.1

Bottom Trawl Fishery

The Makah Tribe is also the only tribe conducting a bottom trawl fishery. Overfished species bycatch is primarily canary rockfish and POP. The Makah Tribe also targets petrale sole, which has been declared as overfished. The Makah indicated that their expected catch of petrale in 2011-2012 is 45.4 mt based on effort projections and recent catch (Table B-4). The canary set aside of 0.8 mt is based on recent average catch which has remained fairly consistent (Table B-4). The high catch in 2009 was the result of increased encounters associated with Pacific cod availability (as well as commensurate lower impacts from other Makah fisheries). POP bycatch is more variable in recent years. The set aside for POP is 3.7 mt based on the highest year of landings (2006).

Table B-4. Catch in mt of canary rockfish, Pacific ocean perch, and petrale in the Makah bottom trawl fishery for 2005-2009.

Species	2005	2006	2007	2008	2009
Canary	0.8	0.5	0.8	0.6	1.5
POP	3.2	3.7	1.8	0.6	0.2
Petrale	30	26	45	44	69

Salmon Troll Fishery

These estimates include catch from all tribes participating in the treaty troll fishery. The canary set aside of 0.5 mt is based on the highest recent landings from 2004-2005 (Table B-5). Using a similar approach for yelloweye would lead to a set aside of 0.2 mt while using the average of recent years would result in 0.1 mt. The tribes are not recommending a set aside specific to the treaty troll fishery as the scorecard currently contains a conservative estimate of yelloweye impacts (see below) for the longline fisheries for Pacific halibut and sablefish and tribes will manage all fisheries to stay within that estimate.

Table B-5. Catch in mt of canary and yelloweye rockfish in the treaty troll fishery for 2005-2009.

Species	2005	2006	2007	2008	2009
Canary	0.5	0.2	0.1	0.1	0.0
Yelloweye	0.2	0.1	0.1	0.1	0.0

Fixed Gear Fishery

The coastal tribes participate in longline fisheries for Pacific halibut and sablefish. Set asides for these fisheries are based on combined past performance of these closely related fisheries (Table B-6). The set aside for canary is 0.3 mt and is based on average historical catch from 2001-2009. An average is used for canary given they are not predictably associated with target species and the trend across this time period is generally decreasing. For yelloweye, bycatch is more strongly associated with target species, especially when they are located on the shelf. Another factor in estimating bycatch is the lack of a trip limit during open competition halibut fisheries. The set aside for yelloweye is 2.3 mt, representing the highest amount of bycatch from a year when yelloweye were classified as overfished and when the status quo halibut plan under a recent court ruling in *U.S. v. Washington* was in place (i.e., 2002). The status quo halibut plan that was in place for 2001-2003, and includes an open competition fishery, is the same plan that is in effect for the 2010 fishery and likely to be in place for 2011-2012.

Table B-6. Catch in mt of canary and yelloweye rockfish in treaty longline fisheries for 2001-2009.

Species	2001	2002	2003	2004	2005	2006	2007	2008	2009
Canary	1.1	0.3	0.5	0.5	0.2	0.2	0.0	0.1	0.1
Yelloweye	2.9	2.3	0.2	0.7	0.6	0.4	0.3	0.1	0.1

Set asides for treaty tribal fisheries were estimated based on catches of all non-overfished species and complexes in recent years (i.e., since 2004). This represents a period of time with effort levels that are expected to be similar to the next two years (i.e. 2011-2012). Recommended set asides are based on the maximum catch for this time period for all stocks except for those with specific allocations, harvest guidelines, or existing set asides (Table B-1).

B.1.2 Incidental Open Access

B.1.2.1 Incidental Open Access Non-Overfished Species Impacts

Estimates of the amount of groundfish taken in the incidental open access fisheries for establishing off-the-top deductions from 2011-2012 ACLs were taken from the highest amounts published in the 2007-2008 WCGOP Total Mortality reports (sum of California halibut, pink shrimp, remaining incidental fishery landings) (Table B-7). Prior to 2007, mortality estimates from incidental open access fisheries were not broken out by sector in the WCGOP Total Mortality Reports.

The “remaining incidental fishery landings” in the WCGOP Total Mortality Reports also include landings that occur under the non-whiting EFPs. Since the Council considers EFPs separately by specifying EFP set asides, the known EFP catches (e.g., for sablefish, chilipepper, etc.) were subtracted from the “remaining incidental fishery landings” and are presented separately (see Section B.1.4).

Table B-7. Total mortality estimates in fisheries that catch groundfish incidentally from 2007 and 2008.

Year		2008				2007			
Sector		CA Halibut	Pink shrimp	Remaining incidental fisheries landings	TOTAL:	CA Halibut	Pink shrimp	Remaining incidental fisheries landings	TOTAL:
	Pacific hake	0.0	683.7	0.1	683.9	--	2,807.8	0.1	2,807.8
	Lingcod (North of 42° N. lat.)	NA	0.1	15.7	15.7	NA	1.2	25.7	26.9
	Lingcod (South of 42° N. lat.)	0.0	0.0	6.9	7.0	0.1			0.1
	Sablefish	--	2.1	4.5	32.4	--	0.3	16.9	17.2
	Shortbelly rockfish	--	0.4	--	0.4	--	0.1	--	0.1
	Pacific cod (North of 43° N. lat.)	NA	--	0.0	0.0	NA	0.0	0.0	0.0
	Chilipepper rockfish (South of 40°10' N. lat.)	0.0	NA	4.9	4.9	--	NA	1.9	1.9
	Splitnose rockfish (South of 40°10' N. lat.)	--	NA	0.0	0.0	--	NA	0.2	0.2
	Yellowtail rockfish (North of 40°10' N. lat.)	--	0.1	0.3	0.3	NA	0.1	2.9	3.0
	Shortspine thornyhead (North of 34° 27' N. lat.)	--	0.5	0.5	1.0	--	0.5	1.3	1.8
	Shortspine thornyhead (South of 34° 27' N. lat.)	--	NA	41.3	41.6				0.0
	Longspine thornyhead (North of 34° 27' N. lat.)	--	--	0.3	0.3	--	0.0	1.0	1.0
	Longspine thornyhead (South of 34° 27' N. lat.)	--	NA	2.5	2.5				0.0
	Black rockfish (North of 46°16' N. lat.)	NA	--	--	0.0	NA	--	--	0.0
	Black rockfish (South of 46°16' N. lat.)	--	0.0	0.0	0.0	--	--	0.3	0.3
Minor rockfish (North of 40°10' N. lat.)	Minor rockfish (North of 40°10' N. lat.)	NA	25.7	1.0	26.7	NA	43.6	1.3	44.9
	Nearshore	NA	0.0	--	0.0	NA	0.2	0.1	0.3
	Shelf	NA	12.4	0.5	13.0	NA	25.4	0.7	26.0
	Chilipepper rockfish	NA	0.0	0.0	0.1	NA	0.0	--	0.0
	Bocaccio	NA	--	0.0	0.0	NA	0.0	--	0.0
	Redstripe rockfish	NA	0.0	--	0.0	NA	--	--	0.0
	Silvergray rockfish	NA	--	--	0.0	NA	--	--	0.0
	Remaining shelf rockfish	NA	12.4	0.5	12.9	NA	25.3	0.7	26.0
	Slope	NA	13.3	0.5	13.7	NA	18.0	0.5	18.5
	Sharpchin rockfish	NA	0.1	--	0.1	NA	1.3	--	1.3
	Splitnose rockfish	NA	12.8	0.0	12.8	NA	14.1	0.0	14.1
	Yellowmouth rockfish	NA	--	--	0.0	NA	--	--	0.0
	Remaining slope rockfish	NA	0.4	0.5	0.9	NA	2.7	0.5	3.2

Table B-7. Total mortality estimates in fisheries that catch groundfish incidentally from 2007 and 2008. (cont'd)

Year		2008				2007			
	Sector	CA Halibut	Pink shrimp	Remaining incidental fisheries landings	TOTAL:	CA Halibut	Pink shrimp	Remaining incidental fisheries landings	TOTAL:
Minor rockfish (South of 40°10' N. la	Minor rockfish (South of 40°10' N. lat.)	0.2	NA	25.5	25.7	0.2	NA	21.0	21.2
	Nearshore	0.2	NA	0.3	0.5	0.2	NA	1.2	1.4
	Gopher rockfish	--	NA	0.1	0.1	0.0	NA	0.2	0.2
	Remaining nearshore rockfish	0.2	NA	0.2	0.4	0.2	NA	1.0	1.3
	Shelf	0.0	NA	8.0	8.0	0.0	NA	8.6	8.6
	Yellowtail rockfish	--	NA	0.9	0.9	--	NA	1.2	1.2
	Remaining shelf rockfish	0.0	NA	7.0	7.1	0.0	NA	7.3	7.3
	Slope	--	NA	17.2	17.2	0.0	NA	11.2	11.2
	Bank rockfish	--	NA	1.3	1.3	--	NA	7.6	7.6
	Blackgill rockfish	--	NA	12.6	14.8	--	NA	3.2	3.2
	Sharpchin rockfish	--	NA	--	0.0	--	NA	--	0.0
	Remaining slope rockfish	--	NA	1.1	1.1	0.0	NA	0.4	0.4
	California scorpionfish (South of 36° N. lat.)	0.8	NA	1.0	1.8	0.5	NA	1.5	2.0
	Cabezon (South of 42° N. lat.)	--	--	0.1	0.1	0.0	--	0.2	0.2
	Dover sole	0.1	12.9	0.1	13.1	0.1	31.9	22.8	54.8
	English sole	1.8	1.3	0.1	3.2	2.3	0.5	0.9	3.7
	Petrale sole	0.2	1.4	0.1	1.7	0.4	2.3	0.1	2.8
	Arrowtooth flounder	--	30.2	0.0	30.3	--	11.1	4.4	15.5
	Starry flounder	2.6	--	0.0	2.6	4.9	--	0.1	5.0
	Other flatfish	4.7	32.8	13.4	50.9	7.2	103.0	14.6	124.8
Other groundfish	Other groundfish	56.4	5.6	105.8	167.8	54.9	4.5	43.2	102.6
	Kelp greenling	--	--	0.0	0.0	--	--	0.0	0.0
	Skates*	49.6	1.4	12.0	62.9	49.6	2.5	12.5	64.6
	Spiny dogfish	3.3	3.7	82.2	89.2	3.0	0.7	1.3	5.1
	Unspecified grenadiers	--	--	--	0.0	--	--	2.1	2.1
	Other	3.6	0.5	11.6	15.7	2.3	1.3	27.2	30.8

B.1.2.2 Incidental Open Access Overfished Species Impacts

California Halibut trawl fishery

The California halibut trawl fishery is a state-permitted fishery that operates in southern California. Commercial trawling is prohibited in all state waters except for the California halibut trawl grounds located south of Point Conception. Conservation measures such as minimum mesh sizes, minimum poundage limits, closed seasons, and Federal observer coverage have been implemented to reduce bycatch of species other than California halibut.

The GMT reviewed the Estimated Discard and Total Catch of Selected Groundfish Species in the 2008 U.S. West Coast Fisheries (hereinafter 2008 WCGOP Total Mortality report) and examined state landing receipts to determine the best estimate of overfished rockfish species impacts from this fishery. Observer data from the limited entry and open access fisheries indicate no discards of any overfished species in this fishery except canary rockfish, which was less than 0.1 mt. State landing receipts from 2004-2008 indicate trace landings of bocaccio rockfish. Impacts to overfished species are not expected in this fishery because it occurs in an area with low overfished species encounters because it takes place and over sandy bottom habitat. The best estimates of impacts to this fishery have been updated in Table B-8.

Estimates of petrale sole catch in the California halibut trawl fishery are less than 1 mt from 2004-2006.

California Gillnet Fishery

The California gillnet fishery is a state-permitted fishery that occurs in California. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004-2008 indicate small landings of bocaccio (0.3 mt) and widow rockfish (2.9 mt) in this fishery. Minimal impacts to overfished species are expected in this fishery because this gear is not allowed inside the Rockfish Conservation Areas (RCAs) and is subject to depth restrictions which preclude them from fishing in nearshore waters. The best estimates of impacts to this fishery based on state landing receipts have been updated in Table B-8.

Estimates of petrale sole impacts in the California gillnet fishery are 0.1 mt.

California Sheephead Fishery

The California sheephead fishery is a state-permitted fishery that is primarily taken by trap gear in southern California. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004-2008 indicate trace amounts of bocaccio rockfish in this fishery. Impacts to overfished species are not expected in this fishery because it occurs in an area of low overall bycatch of overfished species.

Coastal Pelagic Species (CPS) – Wetfish Fishery

The CPS fishery for wetfish is a limited entry fishery that occurs coastwide. In California, this fishery primarily occurs in Monterey and southern California. CPS (sardine, anchovy, jack mackerel, Pacific mackerel) are targeted with “round-haul” gear including purse and drum seines.

In the sardine fishery, 2009 landings data indicate no catch of overfished species (however, groundfish species are not required to be landed). In California, state landing receipts from 2004 -2008 indicate trace landings of bocaccio rockfish in this fishery. In Oregon, reported logbook and observed catches of non-target species caught in the Oregon sardine fishery showed no catch of rockfish (Table 13 in PFMC 2008). Washington at-sea observer data also indicates less than 0.1 mt of bycatch. Impacts to overfished species are not expected in this fishery because it occurs in an area of low overall bycatch of overfished species.

Coastal Pelagic Species – Squid Fishery

The CPS fishery for squid is a limited entry fishery that is focused around two major fishery areas in California: northern California (Monterey Bay) and southern California (ports of Ventura, Port Hueneme, San Pedro, and Terminal Island). Targeting occurs on shallow-water spawning aggregations with "round-haul" gear similar to the CPS wetfish fishery. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004-2008 indicate trace amounts of bocaccio rockfish in this fishery. Impacts to overfished species are not expected in this fishery, because targeting occurs over sandy bottom habitat. Rocky reef areas (where many overfished groundfish species occur) are avoided due to gear conflicts. The Council's SAFE reports also have bycatch information for some of the other CPS fisheries (based on observer or logbook information). For example, the report showed that the frequency of bycatch in observed loads of California market squid (2003-2007) was less than 1 percent for bocaccio rockfish (the highest annual incidence rate was 0.8 percent).

Dungeness Crab Fishery

The Dungeness crab fishery is a restricted access fishery that occurs on the west coast. This fishery targets Dungeness crab using trap gear in shallow waters. Conservation measures such as gear modifications have been implemented to reduce bycatch, specifically crab pots are constructed with escape rings designed to let small fish and small crab escape and pots are made with a release mechanism to allow escapement of all animals that are caught by lost pots. These measures have been implemented to reduce bycatch of species other than crab. Fishermen in this fishery are not permitted to land incidental species except for octopus, so information on groundfish species is limited.

This fishery is not observed under the Federal groundfish observer program. California state landing receipts from 2004-2008 indicate trace landings of bocaccio and darkblotched rockfish in this fishery. Impacts to overfished species are not expected in this fishery due to the selectivity of the gear.

Highly Migratory Species (HMS) Fishery

The fishery for HMS is an open access fishery on the west coast, with the exception of the swordfish drift gillnet fishery off California. Targeting of tunas, sharks, billfish/swordfish, and other pelagic species occurs with a variety of gears (troll gear, drift gillnets, pelagic longline, purse seines) and in waters ranging from the nearshore to outside the 200-mile zone. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004 -2008 indicate small landings of bocaccio rockfish and trace landings of darkblotched rockfish in this fishery. Impacts to overfished species are not expected in this fishery, because most of the targeting occurs in the offshore, in the open ocean where few overfished rockfish species are expected to occur.

Ridgeback prawn Fishery

The ridgeback prawn trawl fishery is a state-permitted fishery that primarily occurs in southern California within the California halibut trawl grounds. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004-2008 indicate no landings of overfished species in this fishery. Impacts to overfished species are not expected in this fishery because it occurs in an area of low overall bycatch of overfished species and over sandy bottom habitat. The best estimates of impacts to this fishery have been updated in Table B-8.

Sea Cucumber Trawl Fishery

The sea cucumber trawl fishery is a state-permitted fishery that primarily occurs in southern California within the California halibut trawl grounds. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004-2008 indicate trace landings of bocaccio rockfish in this fishery. Impacts to overfished species are not expected in this fishery because it occurs in an area of low overall bycatch of overfished species and over sandy bottom habitat.

Estimates of petrale sole impacts in the sea cucumber trawl fishery are 0.1 mt.

Spot Prawn Fishery

The spot prawn fishery is a state-permitted fishery that is taken by trap gear in California. The fishery occurs from just north of Monterey Bay to southern California. This fishery is not observed under the Federal groundfish observer program. State landing receipts from 2004-2008 indicate no landings of overfished species in this fishery. Impacts to overfished species are not expected in this fishery because it occurs in an area of low overall bycatch of overfished species.

Pink Shrimp Trawl Fishery

The pink shrimp trawl fishery is not restricted by an RCA, but approved bycatch reduction devices or fish excluders in shrimp trawls are mandated to minimize incidental groundfish bycatch. 2007 was the first year that observer discard ratios from the pink shrimp fishery were used to estimate fleet-wide amounts of groundfish discards. The Total Mortality reports for darkblotched rockfish showed catches of 18 mt (2007) and 11 mt (2008), therefore for 2011-2012 the GMT recommends using a yearly set aside amount of 15 mt for darkblotched rockfish which is the mean of the 2007 and 2008 observed catch rounded to the nearest whole metric ton. Given the results of the 2007 and 2008 Total Mortality reports, the GMT recommends yearly set asides for POP of 0.1 mt because this is the amount caught in both 2007 and 2008 and 0.4 for canary rockfish, for which there was 0.4 mt caught in 2007 and 0.3 mt in 2008 (0.4 is the average rounded up accordingly). The best estimates of impacts to this fishery have been updated in Table B-8.

Salmon Troll Fishery

The salmon troll fishery operates all along the west coast, however, in recent years the fishery has been severely restricted because of salmon abundance and the set asides recommended by the GMT have been reduced accordingly. Currently the salmon troll fishery is exempted from RCA restrictions and groundfish species, including lingcod, are allowed to be retained while fishing in the non-trawl RCA. Salmon trollers are required to have VMS on their vessels and there are two

mandatory yelloweye rockfish conservation areas (YRCAs) and two voluntary YRCAs that apply to salmon trollers. Currently there are set aside amounts in the salmon troll fishery for canary, bocaccio, widow and yelloweye rockfish. The canary impacts that the GMT accounts for in the salmon troll fishery changed after 2005 because the salmon fishery was shifting from one with higher Chinook quotas to higher coho quotas, and canary bycatch in that fishery was most associated with Chinook targeting. The yield set asides were 1.6 mt (2005), 2 mt (2007/2008) and 0.8 mt (2009/2010). Because of the possible higher Chinook opportunities in the north for 2011-2012, the GMT recommends using 1.6 mt as the canary yield set aside in the salmon troll fishery. The other overfished species set aside amounts should remain the same as 2009/2010 because the GMT does not have any new information which would indicate a change in impacts. The best estimates of impacts to this fishery have been updated in Table B-8.

Table B-8. Final Preferred. Estimates of incidental open access projected impacts for overfished species.

Category	Bocaccio South 40'10	Canary	Cowcod	Dkbl	Petrale	POP	Widow	YE
Open Access Incidental								
--CA Halibut								
--CA Gillnet	0.3						2.9	
--CA Sheephead								
--CPS- wetfish	0.1							
--CPS- squid								
--Dungeness crab								
--HMS b/	0.1							
--Pacific Halibut								
--Pink shrimp		0.4		15		0.1	0.1	
--Ridgeback prawn								
--Salmon troll	0.2	1.6					0.3	0.2
--Sea Cucumber					0.1			
--Spot Prawn (trap)								
TOTAL	**0.7**	**2**	**0**	**15**	**1**	**0**	**3.3**	**0.2**

B.1.3 Scientific Research

Scientific research may be conducted on species during times, and within areas, that may be otherwise restricted by Federal groundfish fishing regulations (50 CFR Part 660 Subpart G). Scientific research would assess the status of groundfish stocks, both overfished and non-overfished, and provide important biological information, the results of which would be used to establish fishing and conservation management measures. The research activities would be typical of the groundfish research conducted for decades along the Pacific coast. All of the scientific research activities are designed to conserve the affected species and would include a variety of research and monitoring activities such as determining the abundance, distribution, and condition of adult and juvenile groundfish, and conducting investigations on groundfish behavior and survivability after interacting with fishing gear. The activities would be conducted by qualified researchers. Activities would include: (1) capturing fish with traps, nets, and hook-and-line gears; (2) anesthetizing fish to minimize stress due to handling; (3) handling to count fish, obtain length or weight measurements, assess general condition, and to check fish for external signs of disease, and sex; (4) rescuing or salvaging fish; (5) fish marking or tagging; (6) non-

lethal tissue sampling for genetic and diet studies; (7) lethal take for pathogen analysis, diet analysis, life history studies or contaminant accumulation analysis; and (8) testing fishing gear configurations to improve the information collected for stock assessments or to improve selectivity. Not all scientific research projects include all of these types of activities but generally would contain at least one of them. The vast majority of scientific research activities are of short duration and occur either once, biennially, or annually.

The Federal regulations, §600.310 (e)(3)(v)(C) require that fishing mortality be counted against the OY [ACL], including that resulting from bycatch, scientific research, and other fishing activities. In past years, prior to establishing harvest guidelines for fishing activities, the Council has set aside a portion of the overfished species OYs for projected impacts by vessels conducting scientific research. Consistent with the MSA and FMP Amendment 23, these types of mortality will now be deducted from the ACL as an off-the-top deduction. Best estimates of scientific take are provided by the NWFSC and NWR and reported in the WCGOP Total Mortality.

B.1.3.1 Scientific Research Non-Overfished Species Impacts

Based on the relative inability to manage scientific research catch, as well as the potential for some unreported research mortality, the Council adopted the historical maximum catch during scientific research activities, as estimated in 2005-2008, for the off-the-top deductions to the ACLs for 2011-2012.

The NMFS NWR compiled the best estimates of catch of groundfish in scientific research projects that were federally permitted from 2005-2008. For most species, mortality estimates for scientific research are those reported in the WCGOP Total Mortality reports from 2005-2008 (Table B-9). Further discussion on the research mortality estimates for sablefish (north of 36°N. latitude and south of 36° N. latitude) and the minor rockfish complex (north of 40°10' N. latitude and south of 40°10' N. latitude) are provided below. The best estimates do not include scientific research impacts to groundfish species that go unpermitted and unreported. It is most likely that these catches only occur in small amounts; however there is no way to quantify them. Most 2009 research catches have been reported to NMFS, however the data have not yet been compiled and synthesized nor have they been quality assured. No 2009 catches reported so far have caused concern that using 2005-2008 would be unrepresentative.

<u>Sablefish</u>: The WCGOP Total Mortality reports do not separate total mortality estimates for sablefish north and south of 36° N. latitude. For use in calculating set asides for the sablefish ACLs, which are stratified north and south of 36° N. latitude, NMFS provided the area-specific mortality estimates for sablefish taken in scientific research activities for 2005-2008.

<u>Minor Rockfish</u>: The scientific research catch estimates for the minor rockfish complex were accounted for differently between years in the WCGOP Total Mortality reports. Therefore, to provide the best estimates to use for determining the appropriate off-the-top amounts for the 2011-2012 harvest specifications and management measures, the scientific research catch data were reviewed to ensure that research catches of species within the minor rockfish complex were not being double counted, or not counted at all at the complex and sub-complex levels.

In 2005 minor rockfish (shelf, slope and nearshore) research catch were all made on a coastwide basis. Due to difficulties in accurately apportioning this catch north and south, the few research estimates available for 2005 were not used. Therefore, for estimating appropriate scientific research set asides for the minor rockfish complexes, data from only 2006-2008 were used.

Review of 2006-2008 research catch data revealed some inconsistencies in the reporting on research catch for the complex and sub-complexes between the Total Mortality reports and the best estimates of research catch, as depicted in Table B-10.

Table B-9. Scientific research catches in 2005-2008, as reported in the WCGOP Total Mortality Reports (except for sablefish and some of the minor rockfish complex numbers), and in the best estimates of scientific research catch as reported to NMFS.

	Species	Year			
		2008	2007	2006	2005
	Pacific hake	11.8	48.7	16.0	42.2
	Lingcod (North of 42° N. lat.)	2.5	4.0	5.3	
	Lingcod (South of 42° N. lat.)	0.4			
	Sablefish				
	Sablefish (North of 36° N. lat.)	11.8	16.4	13.6	15.6
	Sablefish (South of 36° N. lat.)	1.4	2.4	1.7	2.2
	Shortbelly rockfish	1.2	0.3		
	Pacific cod (North of 43° N. lat.)	0.1	0.1	0.2	0.2
	Chilipepper rockfish (South of 40°10' N. lat.)	4.5	6.0	8.3	
	Splitnose rockfish (South of 40°10' N. lat.)	3.2	3.0		6.6
	Yellowtail rockfish (North of 40°10' N. lat.)	3.2	4.2		
	Shortspine thornyhead (North of 34° 27' N. lat.)	3.7	4.8	4.2	3.8
	Shortspine thornyhead (South of 34° 27' N. lat.)	0.6			
	Longspine thornyhead (North of 34° 27' N. lat.)	13.4	12.1	11.6	10.3
	Longspine thornyhead (South of 34° 27' N. lat.)	1.0			
	Black rockfish (North of 46°16' N. lat.)	0.0	0.1		
	Black rockfish (South of 46°16' N. lat.)	--	0.0		
Minor rockfish (North of 40°10' N. lat.)	Minor rockfish (North of 40°10' N. lat.)	12.8	11.5	7.5	NA
	Nearshore	0.0	0.0	0.0	NA
	Shelf	0.7	2.5	2.3	NA
	Greenstriped rockfish	0.0			NA
	Chilipepper rockfish	0.1	2.0		NA
	Bocaccio	0.1	0.0		NA
	Redstripe rockfish	0.5	0.3		NA
	Silvergray rockfish	0.1	0.0		NA
	Remaining shelf rockfish	0.0	3.5		NA
	Slope	3.9	5.4	2.3	NA
	Sharpchin rockfish	2.2	0.4		NA
	Splitnose rockfish	1.6	4.8	1.4	NA
	Yellowmouth rockfish	--	0.0		NA
	Remaining slope rockfish	0.1	0.3		NA
Minor rockfish (South of 40°10' N. lat.)	Minor rockfish (South of 40°10' N. lat.)	7.8	3.8	6.0	NA
	Nearshore	0.0	0.0	0.0	NA
	Gopher rockfish	0.0			NA
	Remaining nearshore rockfish	--	0.0		NA
	Shelf	0.1	3.1	0.1	NA
	Greenstriped rockfish	not speciated			NA
	Yellowtail rockfish	0.1	0.1	0.1	NA
	Remaining shelf rockfish	--	2.9		NA
	Slope	0.3	0.7	1.3	NA
	Bank rockfish	0.0	0.0		NA
	Blackgill rockfish	0.3	0.2		NA
	Sharpchin rockfish	0.0	0.0		NA
	Remaining slope rockfish	--	0.4		NA
	California scorpionfish (South of 36° N. lat.)	--	0.1		
	Cabezon (South of 42° N. lat.)	0.0			
	Dover sole	33.0	37.6	28.8	28.1
	English sole	2.0	4.6	2.5	4.4
	Petrale sole	1.6	4.6	2.3	3.5
	Arrowtooth flounder	5.1	6.7	6.1	5.5
	Starry flounder	0.0	0.0		
	Other flatfish	11.7	11.5	11.8	13.2
Other groundfish	Other groundfish	29.8	60.7	2.6	7.9
	Kelp greenling	0.0	0.0	0.0	0.0
	Skates*	--	5.9	7.3	7.8
	Spiny dogfish	14.2	13.3	5.8	8.7
	Unspecified grenadiers	--	5.2		
	Other	15.6	36.2		

Table B-10. Considerations for the scientific research off-the-top deductions for the minor rockfish complex. Bold numbers indicate the highest catch in the 2006-2008 period.

	2008		2007		2006	
	Total Mortality Report (mt)	Best Estimate for set aside (mt)	Total Mortality Report (mt)	Best Estimate for set aside (mt)	Total Mortality Report (mt)	Best Estimate for set aside (mt)
Minor rockfish North[1]	12.8	12.8	11.5	11.8	Not reported	7.5
Nearshore	0	**0**	0	0	0	0
Shelf	13.6	1.9	6.0	3.7	4.6	**3.8**
Slope	3.9	**10.9**	5.5	8.1	2.5	3.8
Minor rockfish South[1]	7.8	7.8	3.8	5.7	Not reported	6.0
Nearshore	0	0	0	0	0	0
Shelf	0	**2.0**	3.0	1.4	3.1	0.4
Slope	0	**5.9**	0.7	4.3	1.3	5.6

The discrepancies between the Total Mortality reports and NMFS's best estimates of research catch are mostly due to how catches were incorporated into the WCGOP Total Mortality reports. The NWR has thoroughly reviewed the scientific catch information for the minor rockfish complex from 2006-2008 and presents the values in Table B-10 as the best estimates of documented catch. The maximum values recommended by the NWR for off-the-top deductions for each sub-complex are bolded.

Note that a portion of the research catch was reported as "remaining rockfish" or "other rockfish" rather than the management units (i.e. sub-complex) that they belong to. For purposes of estimating appropriate off-the-top deductions those were attributed to the minor shelf and minor slope sub-complexes pro-rata. Those conducting research in the future will be encouraged to report to these categories in the future.

B.1.3.2 Scientific Research Overfished Species Impacts

For the biennial specifications and management measures, the amounts projected to be taken in scientific research are based on the most recent years' research catch summaries and are then adjusted to account for any known changes in research activities for future years. Because the research catch amounts are projections, the catch levels have on occasion been modified during the year when the catch of a constraining overfished species was higher or lower than originally projected. In the past, modifications to these off-the-top deductions for scientific research may impact all sectors of the groundfish fishery. For example, in 2006, higher than anticipated canary rockfish catch in a scientific research survey resulted in a need for restrictions in the limited entry non-tribal whiting trawl fishery (71 FR 58289, October 3, 2006).

Through FMP Amendment 21, the ACL for many groundfish species is formally allocated between the trawl and the non-trawl sectors of the groundfish fishery after the set-asides are

[1] Rockfish reported as remaining or other rockfish were attributed to the sub-complexes on a pro-rata basis.

deducted. The trawl allocation is then divided into quota pounds. Because of the formal allocation to the trawl fishery and the conversion of that allocation to quota pounds, it is impracticable to make inseason adjustments to trawl quota pounds if the scientific research set-aside needs to be adjusted inseason. Therefore, any revision of set asides will impact non-trawl sectors disproportionately under a rationalized trawl fishery since the trawl allocation cannot be changed without recalculating quota pounds.

The Council and NMFS do not have direct management control over scientific research activities, nevertheless, the catch must be considered in the accounting of total mortality. Because of the inability to restrict scientific research impacts to overfished species, the Council's Final Preferred Alternative chose to take the maximum scientific research catch from 2005-2008, except for yelloweye rockfish, as the off-the-top deduction for scientific research in order to provide the largest buffer to prevent exceeding the ACLs for rebuilding species. For yelloweye rockfish, the Council chose to take 3.3 mt of yelloweye rockfish as an off-the-top deduction for scientific research. The Council anticipates that up to 3.3 mt of yelloweye rockfish may be taken in scientific research, annually, in 2011-2012 based on the need for improved biological information to inform the yelloweye rockfish stock assessment. Some of this anticipated research catch (1.1 mt) comes from the enhanced rockfish survey that coincides with the IPHC annual survey. These amounts of overfished species anticipated to be taken in scientific research contribute to the total off-the-top deductions that are described in this Appendix and in Chapter 2.

Table B-11 summarizes overfished rockfish groundfish species and petrale sole mortality in scientific research from 2005-2008. The Council's final preferred decision was to use the maximum annual catch as the best estimate of overfished species research impacts in 2011-2012 and 3.3 mt for yelloweye rockfish.

Table B-11. Research catches of overfished rockfish species and petrale sole (mt) from 2005-2008 and the median, average, maximum and minimum by species. Bolded values indicate the Council's final preferred off-the-top deductions for scientific research catch in 2011-2012.

Year	Bocaccio	Canary	Cowcod	Dkbl	POP	Widow	YE	Petrale
2008	1.2	1.8	0	1	1	1	1	2.0
2007	1	3	0	1	1	0	2	17.0
2006	0.2	7.2	0	0.9	1.2	0.2	0.1	2.3
2005	1.7	2.3	0.1	2.1	1.8	1.6	0.6	1.7
Median	1.1	2.7	0.0	1.0	1.1	0.6	0.8	2.2
Average	1.0	3.6	0.0	1.3	1.3	0.7	0.9	5.8
Max (FPA)	**1.7**	**7.2**	**0.1**	**2.1**	**1.8**	**1.6**	2.0 a/	**17.0**
Min	0.2	1.8	0.0	0.9	1.0	0.0	0.1	1.7

a/ The Council's final preferred decision was to use 3.3 mt for yelloweye rockfish.

B.1.4 Exempted Fishing Permits (EFPs)

For 2011-2012 it will also be necessary to estimate EFP set asides as part of the harvest specifications process. Given the need to allocate a set amount for the trawl fishery for

rationalization, the Council considered potential needs of EFP applicants as well as effects on existing fisheries in establishing these set asides. As described in Chapter 2 Section 2.3.1, the Council will be taking the EFP set asides off-the-top of the ACL.

B.1.4.1 Exempted Fishing Permit Impacts to Non-Overfished Species

Table B-12 represents the Council-adopted EFP set asides for 2011-12 which is based on recent year EFP removals. Of interest is the 26 mt of sablefish from the Morro Bay/Port San Luis Regional Fishing Association EFP. It is unclear at this point whether this EFP, should it be continued in the future would require a set aside of sablefish or whether such impacts would be accommodated within the permit holder's existing quota pounds.

Table B-12. Council adopted EFP set asides for non-overfished species.

Species/Species Group/Area	Amount (mt)
Sablefish S of 36º N. lat.	26
Yellowtail N. of 40°10' N. lat.	2
Minor Slope Rockfish North 40°10' N. lat.	2
Minor Slope Rockfish South 40°10' N. lat.	2
Minor Shelf Rockfish North 40°10' N. lat.	4
Minor Shelf Rockfish North 40°10' N. lat.	2

B.1.4.2 Exempted Fishing Permit Impacts to Overfished Species

Table B-13 represents the Council adopted EFP set asides for 2011-12 which is based on recent year EFP overfished species bycatch caps. Under the Final Preferred Alternative, the Council stated that the first priority was to accommodate scientific research, tribal fisheries, incidental open access, and directed groundfish fisheries prior to determining the EFP set aside amounts. Since yelloweye rockfish greatly limit access to commercial and recreational fisheries, the Council approved a lower EFP amount, compared to recent removals.

Table B-13. Council adopted set-asides for EFP impacts to overfished species.

Category	Bocaccio South 40'10 (mt)	Canary (mt)	Cowcod (mt)	Dkbl (mt)	Petrale (mt)	POP (mt)	Widow (mt)	YE (mt)
EFP	11	1.3	0.2	1.5	2	0.1	11	0.1

B.2 Sector Allocations

B.2.1 Minor Shelf Rockfish

In its Final Preferred Alternative under proposed Amendment 21 to the FMP, the Council chose long term allocations for trawl dominant species based on the years 2003-2005. This was used as a starting place relative to informing the Council's decision on two-year allocations for minor shelf rockfish north and south of 40°10' N. latitude. Table B-14 shows the range of allocations that the Council considered.

Table B-14. Summary of shelf rockfish catches in 2003-2007.

Shelf rockfish north of 40°10 N. lat.							
	2003	**2004**	**2005**	**2006**	**2007**	**03-05 avg**	**05-07 avg**
trawl	9.2%	27.7%	31.5%	66.1%	88.1%	22.8%	61.9%
non-trawl	90.8%	72.3%	68.5%	33.9%	11.9%	77.2%	68.5%

Shelf rockfish north of 40°10 N. lat.							
	2003	**2004**	**2005**	**2006**	**2007**	**03-05 avg**	**05-07 avg**
trawl	1.3%	4.1%	3.7%	0.0%	80.1%	3.0%	27.9%
non-trawl	98.7%	95.9%	96.3%	100.0%	19.9%	97.0%	72.1%

In addition, a one-time allocation between the non-whiting and whiting trawl sectors for initial issuance of trawl individual quotas was necessary. Table B-15 shows the history of sector catches of shelf rockfish that the Council considered in making this allocation.

Table B-15. Percent of total shoreside trawl catches caught by the whiting and non-whiting sectors, 1995-2005 (PFMC 2010).

Stocks and Stock Complexes	**Shoreside Trawl Sectors**			
	1995-05 %		**2003-05 %**	
	Non-whiting	**Whiting**	**Non-whiting**	**Whiting**
Minor Shelf RF north of 40°10 N. lat.	96.5%	3.5%	81.7%	18.3%
Minor Shelf RF South 40°10 N. lat.	100.0%	0.0%	100.0%	0.0%

The Council also considered total catch estimates from the WCGOP Total Mortality reports as another way to inform 2-year allocations for those species not formally allocated under Amendment-21. Table B-16 shows these results as well as possible percentages to inform non-whiting and whiting trawl sectors allocations for initial issuance of IQ.

Table B-16. Summary of total mortality of shelf rockfish based on Total Mortality reports.

	2005	**2006**	**2007**	**2008**	**Average**
Shelf rockfish north of 40°10 N. lat					
trawl	59.8%	66.1%	70.5%	44.4%	60.2%
non-whiting	74.0%	*96.8%*	*89.5%*	*70.0%*	*82.6%*
whiting	*26.0%*	*3.2%*	*10.5%*	*30.0%*	*17.4%*
non-trawl	40.2%	33.9%	29.5%	55.6%	39.8%
Shelf rockfish south of 40°10 N. lat					
trawl	20.6%	6.6%	9.9%	11.8%	12.2%
non-trawl	79.4%	93.4%	90.1%	88.2%	87.8%

In its Final Preferred Alternative, the Council chose the average total mortality of shelf rockfish north and south of 40°10' N. latitude from 2005-2008 as the basis for the 2011-2012 allocations and the one time within trawl allocation (Table B-16).

B.3 Detailed Analysis of New Management Measures

B.3.1 Management Measures Not Specific to a Sector

B.3.1.1 Improvements to Catch Accounting

NMFS currently relies on the individual states' catch accounting systems in order to document groundfish landings from off the coasts of Washington, Oregon and California, except the mothership and catcher/processor sectors of the Pacific whiting fishery. Because state landing regulations are not in effect until a landing occurs, the individual states are unable to gather landing data from vessels that land catch in Mexico or Canada. At the Council's April 2010 meeting the Enforcement Consultants (Agenda Item I.4.b., Supplemental EC Report, April 2010) expressed its concern to the Council regarding the transport of groundfish into Canada and Mexico without adequate catch accounting. The primary catch accounting concern expressed by the Enforcement Consultants was the risk of vessels circumventing the catch accounting requirements and impairing the Council's ability to track landings of groundfish relative to the ACLs, particularly overfished species. Following consideration of the Enforcement Consultants recommendations, the Council recommended that an analysis be conducted on the development of Federal regulations to prohibit the landing of groundfish directly managed under the groundfish FMP to be landed into Canada or Mexico without catch accounting. The transfer of catch at-sea to a transport vessel is currently prohibited under the groundfish regulations at 50 CFR 660.306 (a)(12)[2].

These types of groundfish mortality are currently going unreported; there is very little information to determine the magnitude of the number of vessels that may be doing these types of activities, and there is no information to determine the magnitude of groundfish catch that may be going unreported because the fish or fish product is leaving the EEZ unreported.

Alternative Actions

The Enforcement Consultants recommended that all federally managed groundfish be accounted for before they are removed from the Exclusive Economic Zone (EEZ) (Agenda Item B.3.b, Supplemental EC Report, June 2010) and analyzed the following alternatives to accomplish this objective.

No Action – No Amendment 20
If no action is taken, NMFS will continue to rely on the individual states' catch accounting systems in order to document groundfish landings from off the coasts of Washington, Oregon and California, except the mothership and catcher-processor sectors of the Pacific whiting fishery. This means that both the individual states and NMFS will continue to be unable to gather catch data from vessels that land groundfish catch from off the coasts of Washington, Oregon and California into Mexico or Canada.

No Action – With Amendment 20

[2] Transfer fish to another vessel at sea unless a vessel is participating in the primary whiting fishery as part of the mothership or catcher-processor sectors, as described at §660.373(a)

FMP Amendment 20 requires that vessels in the trawl fishery land their IFQ in the states of Washington, Oregon, or California. If no additional action is taken through the biennial specifications and management measures, NMFS will continue to rely on the individual states catch accounting systems in order to document groundfish landings in the non-trawl fishery from off the coasts of Washington, Oregon and California. This means that both the individual states and NMFS will continue to be unable to gather catch data from non-trawl vessels that land groundfish catch from off the coasts of Washington, Oregon and California into Mexico or Canada.

Alternative 1 – Vessel Activity Report (VAR)
Prohibiting species managed under the PCFMP from being exported without adequate catch accounting could be addressed by developing regulations to require a Federal vessel activity report similar to those used by NMFS Alaska Region[3]. Similar reporting and recordkeeping requirements could be implemented for the Pacific Coast groundfish fisheries. This reporting mechanism could be implemented to ensure that the catch data (on fish that will not be landed in Washington, Oregon, or California) is captured in PacFIN.

The following recommendations is in the form of draft regulatory language from the Council and its advisory bodies pertain directly to revisions to the recordkeeping and reporting requirements, currently found at 660.303 of the Federal regulations.

(x) U.S. vessel activity reporting requirements

(1) Submit a Vessel Activity Report (VAR). The owner and operator of a catcher vessel, a catcher/processor, or a mothership engaged in fishing for or carrying on board Pacific Coast groundfish managed by the Council and carrying must complete and submit a vessel activity report (VAR), unless that vessel meets the exception requirements in paragraph (3) of this section

(i) Submit the VAR by facsimile or electronic file to Office of Law Enforcement, Seattle, WA (Fax # 206-526-6528) before the vessel crosses the seaward boundary of the EEZ off the West Coast or crosses the international boundaries between Washington and Canada or California and Mexico.

(2) Revised VAR. If groundfish or fish products are landed at a port other than the one specified on the VAR, the operator must submit a revised VAR showing the actual port of landing before any fish are offloaded.

(3) Exemption: A VAR is not required if a vessel is carrying groundfish or fish product that has been landed or reported in compliance with any other applicable Federal requirements, or state requirements in Washington, Oregon or California, or with applicable U.S. treaties.

(4) Information required

(i) Whether original or revised VAR.

(ii) Name and Limited Entry permit number of vessel or state permit number.

(iii) Type of vessel (whether catcher vessel, catcher/processor, or mothership).

(iv) Name, daytime telephone number (including area code), and facsimile number and COMSAT number (if available) of representative.

(v) Depart report. “Depart” means leaving the EEZ or territorial sea off West Coast States. If the vessel is crossing the seaward boundary of the EEZ and moving out of the EEZ or crossing the international boundary between Washington and Canada or California and Mexico into foreign waters, indicate a “depart” report and enter:

[3] 50 CFR Subpart A, Section 679.5 (k)

(A) The intended port of landing and country if outside the United States;
(B) Estimated date and time (hour and minute, local time) the vessel will cross the boundary; and
(C) The estimated position coordinates in latitude and longitude where the vessel will cross.

(vi) Groundfish or fish products. For all groundfish or fish products on board the vessel, enter:

(A) Harvest zone code; (as described in the table below in Part 660, Subpart G)
(B) Species;
(C) Product codes (if applicable); and
(D) Estimated fish product weight in lbs or mt

(vii) Cancel report. Each operator wanting to cancel a previous report may do so by sending a revised report, and inserting the word "CANCEL" in front of the previous report's vessel name, date, and time. The message must be transmitted and delivered prior to the date and time of the event in the original message.

Prohibition(s) at 660.306(b)

Fail to submit a Vessel Activity Report (VAR) as required.

Harvest zone	Description
A1	U.S. EEZ off Washington
A2	U.S. EEZ off Oregon
A3	U.S. EEZ off California
W	State waters of Washington
O	State waters of Oregon
C	State waters of California

Alternative 2 – Adjustments for catch accounting uncertainty

Groundfish catch that may be going unreported is an important consideration when incorporating catch accounting uncertainty into setting harvest specifications and developing fishery management measures. The Enforcement Consultants considered that estimates for fish that are caught and removed from the EEZ could be accounted for in the setting of ACLs or accountability measures.

Alternative 3 - Additional state fish ticket reporting

The Enforcement Consultants considered developing a state fish receiving ticket system that could potentially address these issues. However, the State jurisdiction for fish tickets is imparted when the fish are landed in the state. In this case, the fish would not be landed in the states of Washington, Oregon, or California, and so this alternative method of catch reporting does not meet the purpose and need. Therefore, the Enforcement Consultants eliminated this alternative from further consideration.

Alternative 4 - Prohibit landing outside of Washington, Oregon, California

In April 2010 the Washington Department of Fish and Wildlife (WDFW) requested that the Council consider changes to the Federal groundfish regulations that would "require groundfish caught in the west coast EEZ to be landed in one of the three west coast states unless specifically exempted" (Agenda Item I.4.b, Supplemental GMT Report 2, April 2010). During initial scoping of this issue, the Enforcement Consultants was discovered that it would not be within the state or Federal government purview to require that groundfish fished within the EEZ be landed to either

Washington, Oregon, or California (unless the vessel is exempted). Therefore, Enforcement Consultants eliminated this alternative from further consideration.

Analysis

FMP Amendment 20 requires that vessels in the trawl fishery land their IFQ in the states of Washington, Oregon, or California. Therefore, the concern for unreported catches lies in the non-trawl fisheries. It is likely that the risk of this unreported catch exceeding an ACL will be higher for some species than for others. The incentive for fishing on groundfish to occur when a vessel is leaving the EEZ is highest for those species that are of highest value in the non-trawl fishery, in particular those species which could be sold outside Washington, Oregon, or California. Relative to overfished species, the greatest concern would be for those species that co-occur with sablefish.

Based on anecdotal information, very few vessels are suspected of these types of activities (Deputy Chief Cenci, WDFW, Personal Communication, July 4, 2010). However, there is a concern that, with no explicit regulations that prohibit these activities, it may become more common. Even if the number of vessels is low, a single vessel operating in this manner could catch a large amount of some of the most constraining groundfish species, though it may go unreported.

Alternative 1 – Vessel Activity Report (VAR)
Adding new VAR reporting requirements into Federal regulations means that additional measures will need to be taken to ensure compliance with the Paperwork Reduction Act and other applicable laws. Estimates of the number of vessels for which this new reporting requirement will affect will be necessary, as well as the average number of hours, annually, that will be spent by a vessel to ensure compliance with these new reporting regulations. Estimates of the anticipated effect to state tax revenues will be necessary. Also, NMFS is affected by the cost to develop and administer the new reporting requirements.

Alternative 2 – Adjustments for catch accounting uncertainty
Estimates for fish that are caught and removed from the EEZ could be accounted for in the setting of ACLs or accountability measures. However, there is no information with which to estimate the magnitude of catch that is going unreported during these types of activities. Therefore, there is a huge level of uncertainty if deductions of unreported catch are to be made to harvest specifications, and no management measures would be implemented to inform the magnitude of the unreported catches. If the deductions are too high, fish that are important to local economies will go unharvested, and we will fail to meet the FMP objective of attaining but not exceeding the ACL. If the deductions are too low, non-trawl fisheries will have to be restricted in an effort to keep total mortality below the ACLs, or the ACLs may be exceeded.

B.3.1.2 Evaluate Gear Stowage for Non-trawl Vessels Transiting the RCA

Current Federal groundfish regulations at 50 CFR 660.306 (h) relative to fishing in conservation areas, prohibit the operation of a vessel with longline and/or trap gear onboard in an applicable GCA (50 CFR 660.382(c)), except for purposes of continuous transiting, with all groundfish longline and/or trap gear stowed. In addition Regulations at 50 CFR §§660.382(c)(11)(ii) and 660.383(c)(12)(ii) prohibit vessels using non-trawl gears from transiting through the non-trawl RCAs unless "all groundfish non-trawl gear is stowed either: below deck; or if the gear cannot readily be moved, in a secured and covered manner, detached from all lines, so that it is rendered unusable for fishing." Stowage requirements for non-trawl (limited entry fixed gear and open

access) vessel were implemented in 2008 through a rulemaking required the use of vessel monitoring system (VMS) transmissions of vessel locations relative to groundfish conservation area restrictions (Final Rule 72 FR 69162, December 7, 2007). Groundfish conservation areas are defined at 50 CFR 660.302. Similar gear stowage requirements have been in place for trawl vessels since 1997 (62 FR 27519, May 20, 1997).

Deep-water fisheries on the slope and nearshore fisheries have been permitted in areas seaward or shoreward of the RCAs. Vessels intending to fish in the deep-water slope fisheries seaward of the westernmost boundary of an RCA are allowed to transit through the closed areas, providing their gear is properly stowed. Various state-managed fisheries, including those using gear that would be considered legal groundfish non- trawl gear, targeting species other than groundfish where groundfish are incidentally have continued to occur in the RCA.

In 2009, the VMS Committee (VMSC) met to discuss potential changes to VMS regulations. The VMSC report (Agenda Item G.9.b, VMSC Report, November 2009) identified VMS issues that the Council could consider for further evaluation. Within the list of issues was consideration for analysis-specific vessel activities that would be allowed while transiting a closed area and could be allowed within the gear stowage requirements. Examples specifically discussed by the VMSC and by the Council during the 2011-2012 Harvest Specifications and Management Measures process included baiting or untangling fixed gear.

Changes to gear stowage requirements in the limited entry trawl fishery were not considered because of the differences in gear type and method of preparation for deployment. Fishers using baited gears must take time to bait their gear, whereas trawl gear may take much less time to prepare for deployment so the gear stowage requirements are not causing similar in-efficiency problems due. Therefore, no changes to trawl gear stowage requirements are recommended.

Alternative Actions

The Enforcement Consultants considered and analyzed the following alternatives.

Alternative 1: non-trawl vessels that retain groundfish and have VMS would have more liberal gear stowage requirements when transiting the non-trawl RCA.

The change would allow the following specific non-fishing activities to occur while the vessel was transiting through the non-trawl RCA in route to fishing grounds or while returning to port: untangling and cleaning gear; baiting gear.

The Enforcement Consultants recommended and the Council approved the following language to allow Option 1:

“Buoy line and anchors must be visible and stowed on the deck, and transit through RCA’s must remain continuous. With these two provisions, baiting and un-baiting of fixed gear could be authorized.”

These changes to gear stowage requirements are intended to only apply to vessels fishing with non-trawl gears that have active VMS units. The actual regulatory language may vary slightly from that described above in order to carry this intent into the regulations in a consistent manner.

This measure would liberalize the gear stowage requirements for all non-trawl groundfish vessels required by regulations at 50 CFR 660.306(j) to a VMS unit.

Alternative 2: Allow more liberal gear stowage requirements only when a vessel has observer coverage.

The Enforcement Consultants considered proposing an exempted fishing permit to some vessels that would allow those vessels to bait, un-bait, or untangle their non-trawl gears while transiting in the RCA with the requirement that the vessels that are doing these activities must have an observer on board.

Analysis

Because the pool of non-trawl vessels that are subject to the transiting and gear stowage restrictions may not be identical to the pool of non-trawl vessels that are required to have VMS, the regulations that liberalize the gear stowage requirements should only apply to vessels that have active VMS units. This will ensure that the vessels with more liberal gear stowage still have a deterrent from fishing within the non-trawl RCA of a VMS.

Biological Impacts:
The RCAs are closed to groundfish fishing to promote the rebuilding of overfished species. To maintain the intent of the RCAs, fishing must not occur within the RCAs. If fishing were to occur within the RCA, where there is a higher risk of increased bycatch rates of overfished species. If illegal fishing were to occur within the RCA, it is likely that overfished species that are caught incidentally would be underestimated by fishery impact models, because those models assume that fishing effort occurs in the open areas outside of the RCAs. Therefore, if fishing were to occur in the RCA it would likely lead to higher mortality rates of overfished species and increase the risk of exceeding the ACLs for rebuilding species. Therefore, there is a very important need to ensure the integrity of these closed areas, given the Council's risk-averse policies on rebuilding overfished groundfish species.

Currently, VMS tracks vessels relative to their location, speed and trajectory. VMS does not directly measure whether or not a vessel is "fishing." Primarily, VMS provides Enforcement with information regarding the relative location of a fishing vessel in relation to the closed areas that apply to that vessel, including the RCA. Therefore, regulations that allow vessels to cross the RCA must be explicit relative to the pertinent factors that current VMS requirements are informative to Enforcement.

The Enforcement Consultants believe that allowing some specific gear stowage flexibility would not be a major setback to enforcement of the RCA transiting regulations (Agenda Item B.3.b, Supplemental EC Report, June 2010), as vessels with active VMS units will still be tracked on their speed and trajectory. The gear stowage requirements for non-trawl gears may be less deterring for fishing in closed areas when compared to the deterrent of VMS units that are tracking vessel speed and trajectory relative to the closed areas.

Socio-economic Impacts:
Some non-trawl vessels subject to the transiting and gear stowage requirements may have lower operational efficiency because they are not allowed to bait gear or do other gear maintenance (that is not fishing) while transiting. Allowing non-trawl vessels that have VMS to bait their gear while transiting to the fishing grounds would likely save them some of the additional time that they take upon reaching the fishing grounds to bait their gear. This would improve efficiency.

B.3.1.3 Define Sablefish Dressed Weight in the Groundfish Regulations

Federal groundfish regulations at 50 CFR 660, Subpart G generally require all catch to be accounted for in "round weights" (as defined in 50 CFR 600.10 as "the weight of the whole fish before processing or removal of any part"), unless otherwise specified. Therefore, most Federal groundfish regulations (trip limits, tier limits, allocations, etc.) are given in round weights and are enforced as such. However, Federal and state regulations do not necessarily require that all groundfish be landed in a condition that is considered "round weight." For most fisheries and species, the Federal regulations defer to state requirements on what condition the fish must be in for landing and then a weight conversion is applied to calculate round weight equivalents. It is a common misconception that Federal groundfish regulations prohibit heading and gutting (not considered processing) and processing of groundfish prior to landing. Based on a review of Federal regulations, heading and gutting is not prohibited for any species, and processing (as defined at 50 CFR 660.10) is prohibited only in the limited entry primary sablefish fishery and in the Pacific whiting fishery (see 660.306). The definition of processing also explicitly says that "heading and gutting" is not considered processing unless additional preparations are done.

Section 660.370 describes how weight limits and conversions are generally established by the state where the fish is or will be landed and how the weight conversions provided in Federal regulations are those conversions currently in use by the States of Washington, Oregon and California and may be subject to change by those states.

Federal groundfish regulations allow for heading and gutting to occur in fisheries even if processing is prohibited, as these activities do not meet the definition of "processing" in 50 CFR 660.10. Therefore, heading and gutting is allowed in the sablefish tier fishery prior to landing, as long as a conversion rate is applied to those "dressed" fish prior to applying the round weight tier limit.

Current regulations at 660.370(h)(5)(iii) describe the weight conversion factor for commercially caught sablefish as "…[for] headed and gutted (eviscerated) sablefish the weight conversion factor is 1.6 (multiply the headed and gutted weight by 1.6 to determine the round weight)."

Under the current regulations described above, the methods used for heading and gutting sablefish may not be consistent among all landings, though they may meet the legal definition. While this allows for some flexibility to fishermen and fish buyers, it is problematic because there is ambiguity in regulations, and there have been differing interpretations on whether or not "headed and gutted" allows for the collar to be removed before it constitutes "processing" as defined in 660.10. Since Federal regulations prohibit processing at-sea in the limited entry sablefish tier fishery, there is a need to clarify the regulations regarding exactly what "headed and gutted" means.

NMFS Northwest Region requested that the Enforcement Consultants and the GMT work to establish and explicit definition of "dressed" sablefish, such that the method of "heading and gutting" is explicitly defined.

Alternative Actions

Alternative 1: Define sablefish heading and gutting practices with the collar removed as "dressed weight."

Most sablefish delivered on the West Coast are landed with the head removed just behind the collar bone, or "collar off" and eviscerated or "gutted." This fashion of heading and gutting is commonly referred to as the "Eastern J-cut."

The Enforcement Consultants proposed, and the Council recommended, a definition for dressed sablefish to clarify that sablefish landed with the collar removed still met the definition of headed and gutted, and did not cross over into the realm of "processing." The definition would not require a change in the fashion of heading and gutting that is used for most of the landed sablefish in recent years.

Therefore, a new definition would be needed at 50 CFR 660.10:
Dressed sablefish means sablefish that have been eviscerated, and the head removed just behind the collar bone. Dressing by this definition does not constitute processing (see "processing" or "to process").

For consistency, regulations at 660.370(h)(5)(iii) that describe the weight conversion factor for commercially caught sablefish, would also need to be revised:
Sablefish. The following conversion applies to both the limited entry and open access fisheries when trip limits or sablefish primary seasons tier limits are in effect for those fisheries. For dressed sablefish the weight conversion factor is 1.6 (multiply the dressed (headed and gutted) weight by 1.6 to determine the round weight).

This is the preferred alternative, as it would not require a change in the fashion of heading and gutting that is used for most of the sablefish landed in recent years.

Alternative 2: Define sablefish heading and gutting practices with the collar on as "dressed weight."

There is some variation among the methods used to "dress" sablefish off the west coast. The Enforcement Consultants considered whether or not a collar is part of the head, or if it is part of the fish. The collar could be considered part of the fish, and therefore should not be removed during "heading and gutting" when dressing sablefish at sea. Regardless of the number of dressing variations, acceptable practice should only be that which can be concisely defined. While defining sablefish "dressed weight" as "eviscerated, and the head removed in front of the collar bone, or collar on" would be explicit, it may require a change in the most predominant dressing method that has been used for sablefish in recent years; the Eastern J-cut (that is considered under Alternative 1).

Analysis

Federal groundfish regulations (trip limits, tier limits, allocations, etc.) are given in round weights and are enforced as such. However, Federal and state regulations do not necessarily require that all groundfish be landed in a condition that is considered "round weight." The current state and Federal weight conversion from "headed and gutted" sablefish to calculate the round weight is 1.6. How the new regulations define "headed and gutted" may affect the accuracy of the 1.6 conversion factor. Keeping the sablefish conversion factor the same means that the condition the fish must be in for landing when the weight conversion is applied should be as similar to current dressing practices as possible. If the definition of "headed and gutted" requires a change in method of dressing sablefish, then the conversion factor of 1.6 should be reconsidered and perhaps revised to the most appropriate conversion factor for the new method of dressing, as defined.

No changes to Federal regulations regarding processing prohibitions are intended through this regulatory change.

B.3.1.4 Review Federal Definition Regarding Ice and Slime

Federal groundfish regulations at 660.10 specify that round weight does not include the contributing weight of any ice, water, or slime. Since all groundfish trip limits are specified in round weight, ice, water and slime should not count towards a trip limit. Therefore, deductions for these types of substances must be made to groundfish landings so that the catch is accurately counted toward the trip limit. However, ice and slime deductions are not standardized for federally managed groundfish species. Therefore, there have been differential payments occurring by buyer because of the way ice and slime deductions were treated.

Alternative Actions

No Action – No Amendment 20
The International Pacific Halibut Commission (IPHC) regulations establish deductions for ice and slime for recording landed halibut weights. If no action is taken, there will be no standard ice and slime deductions for federally managed groundfish species.

No Action – With Amendment 20
Under FMP Amendment 20, the catch monitoring program that is in development for the rationalized trawl fishery that will accurately account for ice, water and slime deductions in a consistent manner between fish buyers.

The Council recommends postponing analysis of standard deductions for ice, water and slime for the non-trawl sectors, pending information that will be gained from the new trawl catch accounting in 2011-2012.

Alternative 1 – Standardize ice and slime deductions in Federal regulations
The groundfish regulations do not include standard deductions for ice, water, and slime for groundfish. Therefore, fish buyers may differ in how they treat ice and slime on fish tickets. The Enforcement Consultants recommended that a consistent approach to ice and slime reductions for non-trawl fisheries be considered for Federal regulations (Agenda Item I.4.b, Supplemental EC Report, April 2010).

Analysis

Where quotas or other catch limit constraints exist, variations in how ice and slime weight is accounted for is an important consideration in catch estimation and the enforcement of trip limits. Variations in how ice and slime are accounted for can also affect ex-vessel transactions.

B.3.1.5 Revise Coordinates to RCAs as Necessary for Trawl and Non-Trawl Gears

Staff from Oregon and California reviewed selected RCA coordinates and proposed changes that more closely approximate the RCA boundaries with depth contours, which should result in better estimates of overfished species bycatch and provide improved and more efficient access to target species while protecting overfished species.

OREGON

Modification of the 125 fm RCA at the southwest corner of Heceta Bank

Oregon proposes a modification of the 125 fm RCA near the southwest corner of Heceta Bank (Table B-17; Figure B-1). This adjustment would primarily impact Oregon fixed gear fishermen (limited entry and open access) who fish the seaward side of the 125 fm RCA. This proposed change would enable this RCA to better approximate the 125 fm contour. In addition, even though the projected impacts to yelloweye rockfish are not quantifiable with current information, commercial fishermen have reported catches of yelloweye rockfish seaward of the current "125 fm RCA" in this area where depths may be shallower than 75 fm (Figure B-1). This modification would reduce harvest opportunities for target species and may also offer additional protection for yelloweye rockfish off Oregon. The Council adopted these modifications under the Final Preferred Alternative.

Table B-17. ODFW- changes to 125 fm RCA lines off the southwest corner of Heceta Bank.

Fathom Line	Proposed Coordinates					Action	Long Change	Original Coordinates Published in the Federal Register			
	Point	Lat		Long				Lat		Long	
		Deg	Min	Deg	Min			Deg	Min	Deg	Min
125-fm	133	44	1.14	124	56.07	Retain	None	44	1.14	124	56.07
125-fm	134					**Delete**		43	57.49	124	56.78
125-fm	A	43	59.431	124	57.217	Add	Seaward				
125-fm	B	43	57.491	124	57.313	Add	Seaward				
125-fm	C	43	55.728	124	55.407	Add	Seaward				
125-fm	D	43	54.74	124	53.145	Add	Seaward				
125 fm	135	43	54.58	124	52.18	Retain		43	55.74	124	55.34

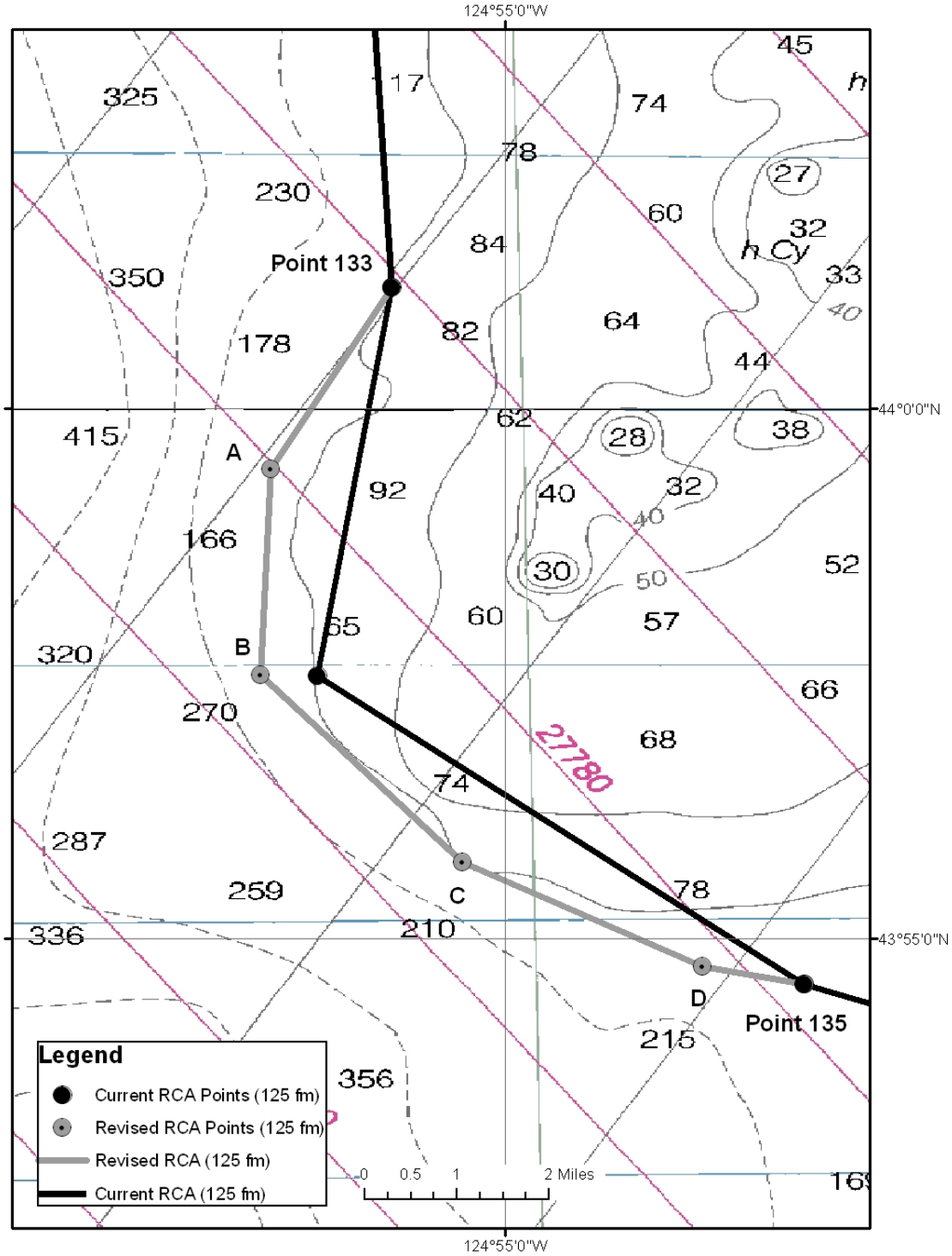


Figure B-1. ODFW changes to the 125-fm RCA line off the southwest corner of Heceta Bank. Black solid line = original 125-fm RCA; Gray solid line = revised 125-fm RCA and points. Units are in fathoms.

Modification of the 100 fm RCA at the southwest corner of Heceta Bank

Oregon proposes modifications to the 100 fm RCA near the southwest corner of Heceta Bank (Table B-18 and Figure B-2). This adjustment would primarily impact Oregon fixed gear fishermen (limited entry and open access) who may fish the seaward side of the 100 fm RCA. This proposed change would enable the RCA to better approximate the 100 fm contour to reduce the risk of impacts to overfished species (i.e., yelloweye rockfish). The "100 fm RCA" is the preferred alternative seaward RCA boundary for fixed gear in this area beginning 2011. Note that the original "100 fm RCA" in this area is shallower than 70 fm in many areas (Figure B-2). The southwest corner of Heceta Banks is known for yelloweye rockfish concentrations. Hence, in the event that a 100 fm RCA is utilized in this area, this modification may offer additional protection for yelloweye rockfish relative to the current (= original) "100 fm RCA." The Council adopted these modifications under the Final Preferred Alternative.

Table B-18. ODFW changes to 100 fm RCA line off the southwest corner of Heceta Bank.

Fathom Line	Proposed Coordinates					Action	Long Change	Original Coordinates Published in the Federal Register			
	Point	Lat		Long				Lat		Long	
		Deg	Min	Deg	Min			Deg	Min	Deg	Min
100-fm	117	44	12.92	124	56.28	Retain	None	44	12.92	124	56.28
100-fm	118					**Delete**		44	0.14	124	55.25
100-fm	119					**Delete**		43	57.68	124	55.48
100-fm	120					**Delete**		43	56.66	124	55.45
100-fm	A	44	2.340	124	55.455	Add	Seaward				
100-fm	B	43	59.175	124	56.944	Add	Seaward				
100-fm	C	43	56.738	124	56.738	Add	Seaward				
100-fm	D	43	55.764	124	55.764	Add	Seaward				
100-fm	E	43	55.406	124	52.205	Add	Seaward				
100-fm	F	43	54.622	124	48.229	Add	Seaward				
100-fm	G	43	55.901	124	41.112	Add	Seaward				
100-fm	H	43	57.359	124	38.681	Add	Shoreward				
100-fm	121	43	56.47	124	34.61	Retain	None	43	56.47	124	34.61

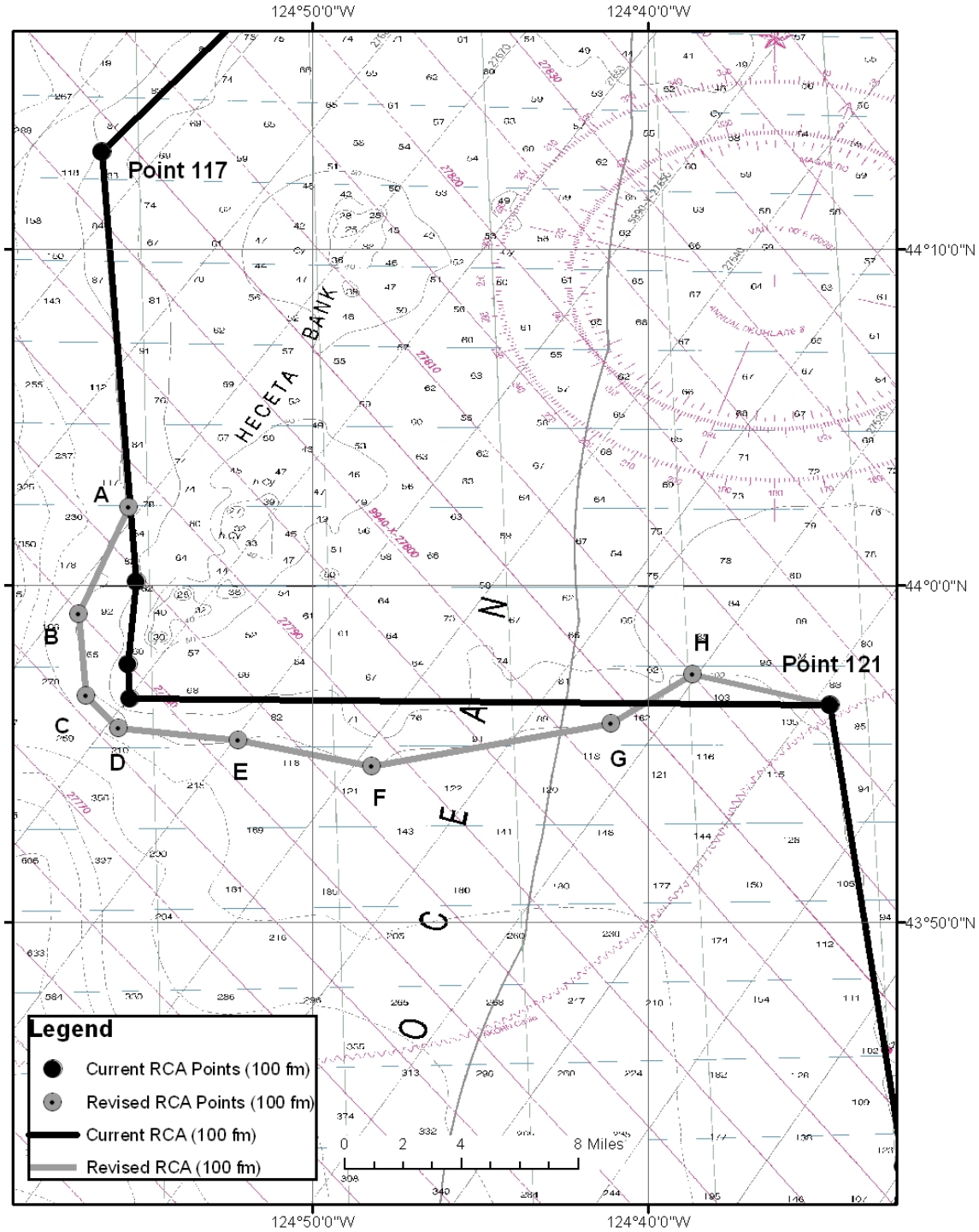


Figure B-2. ODFW changes to 100-fm RCA line off the southwest corner of Heceta Bank. Black solid line = original 100-fm RCA; Gray solid line = revised 100-fm RCA and points. Units are in fathoms.

Modification of the 200 fm petrale trawl RCA near Heceta Bank

Oregon proposes to modify the 200-fm petrale RCA near Heceta Bank (Table B-19 and Figure B-3). This adjustment will affect Oregon limited entry non-whiting trawl fishermen who fish seaward of the RCA. Currently, the modified 200 fm petrale RCA line is deeper than the 250-fm RCA, and in some cases extends across the 400 fm depth contour (Figure B-3). The fishing industry has requested to modify the 200-fm petrale RCA at this location so it is not deeper than the 250 fm RCA in this area. Two points would be removed from the current modified 200-fm petrale RCA (points 84 and 85) and two points would be added (A and B, which are the same as points 79 and 80 in the current modified 250-fm petrale RCA). This modification may increase opportunities for Dover sole while having minimal additional impact petrale sole. We note that some areas seaward of the proposed RCA are as shallow as 100 fm whereas others remain as deep as 300 fm due to the steep topography of this area. The Council adopted these modifications under the Final Preferred Alternative.

Table B-19. ODFW changes to the 200-fm petrale RCA near Heceta Bank.

Fathom Line	Proposed Coordinates					Action	Long Change	Original Coordinates Published in the Federal Register			
	Point	Lat		Long				Lat		Long	
		Deg	Min	Deg	Min			Deg	Min	Deg	Min
200-fm petrale	83	44	13.19	124	58.66	Retain	None	44	13.19	124	58.66
200-fm petrale	84					**Delete**		44	8.3	124	58.72
200-fm petrale	85					**Delete**		43	57.37	124	58.71
200-fm petrale	A	43	57.88	124	58.25	Addition	Shoreward				
200-fm petrale	B	43	56.89	124	57.33	Addition	Shoreward				
200-fm petrale	86	43	52.32	124	49.43	Retain	None	43	52.32	124	49.43

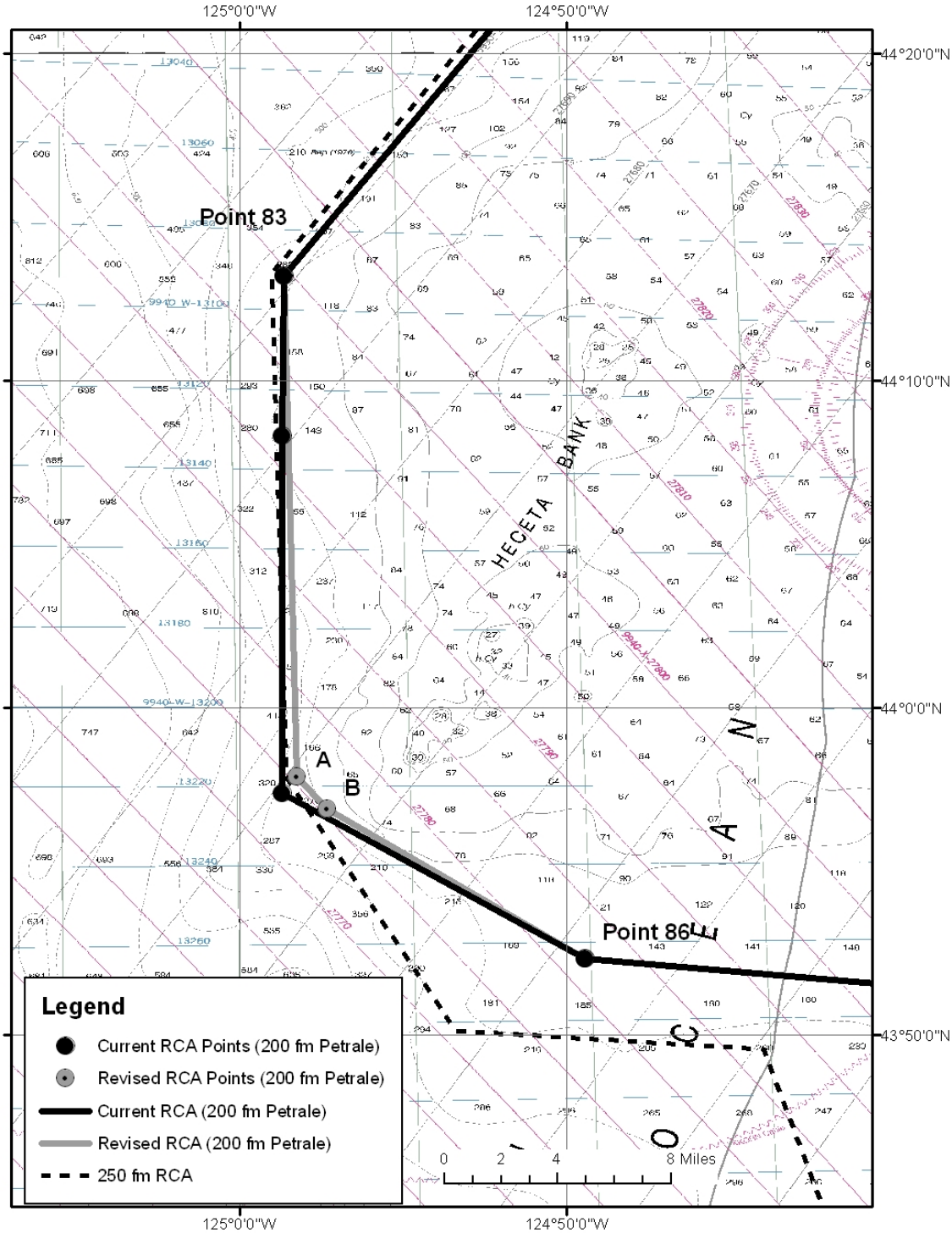


Figure B-3. ODFW changes to 200-fm petrale RCA near Heceta Bank. Black Solid Line = original 200-fm petrale RCA; Gray Solid Line = revised 200-fm petrale RCA; Dashed Line = 250-fm RCA.

CALIFORNIA

Adjustments to trawl and non-trawl RCA latitude and longitude lines in California are being proposed by industry and CDFG. Industry requests were made to modify the 200 fm trawl line in the Cape Mendocino area and the 60 fm non-trawl line in the San Diego area to better approximate depth contours or better align the RCAs to Essential Fish Habitat (EFH) boundaries. All proposed changes have been reviewed by CDFG Enforcement and verified that they do not conflict with existing EFH boundaries. CDFG does not anticipate additional impacts to overfished species since the proposed adjustments occur in areas of low bycatch. Adjustments are necessary because discrepancies exist between current and proposed depth contours, resulting in lost fishing ground and differences in actual versus predicted bycatch. Under the Final Preferred Alternative, the Council adopted these modifications.

Changes to Trawl RCAs in the Cape Mendocino Area

Table B-20 and Figure B-4 outlines the original coordinates and proposed coordinates for changing the RCA in the Cape Mendocino Area.

Changes to the 100 fm line: Revisions to the 100 fm line are required to eliminate cross-overs caused by industry proposed changes to the 200 fm line.

Changes to the 125 fm line: Revisions to the 125 fm line are required to eliminate cross-overs caused by industry proposed changes to the 200 fm line.

Changes to the 150 fm line: Revisions to the 150 fm line are required to eliminate cross-overs caused by industry proposed changes to the 200 fm line.

Changes to the 180 fm line: Revisions to the 180 fm line are required to eliminate cross-overs caused by industry proposed changes to the 200 fm line.

Changes to the 200 fm line: Revisions to the 200 fm line are proposed by industry and modified by CDFG to better approximate depth contours resulting in more accurate bycatch information by depth strata and to better align with EFH boundaries.

Table B-20. Final Preferred RCA. RCA Changes in the Cape Mendocino Area.

Fathom Line	Proposed Coordinates					Action	Long Change	Original Coordinates Published in the Federal Register			
	Point	Lat		Long				Lat		Long	
		Deg	Min	Deg	Min			Deg	Min	Deg	Min
100	156	40	30.37	124	37.30	crossover	shoreward	40	30.00	124	38.13
100		40	28.48	124	36.95	add					
125	180	40	30.35	124	37.52	crossover	shoreward	40	29.88	124	38.09
125		40	28.39	124	37.16	add					
150	157					delete		40	30.00	124	38.50
150	158	40	30.30	124	37.63	crossover	shoreward	40	29.76	124	38.13
180	159	40	30.22	124	37.80	crossover	shoreward	40	30.00	124	38.50
180		40	27.29	124	37.10	add					
200	**133**	**40**	**30.16**	**124**	**37.91**	**revision**		**40**	**30.00**	**124**	**38.15**
200	**136**	**40**	**22.34**	**124**	**31.22**	**revision**		**40**	**22.22**	**124**	**31.85**
200		**40**	**14.40**	**124**	**35.82**	**add**					

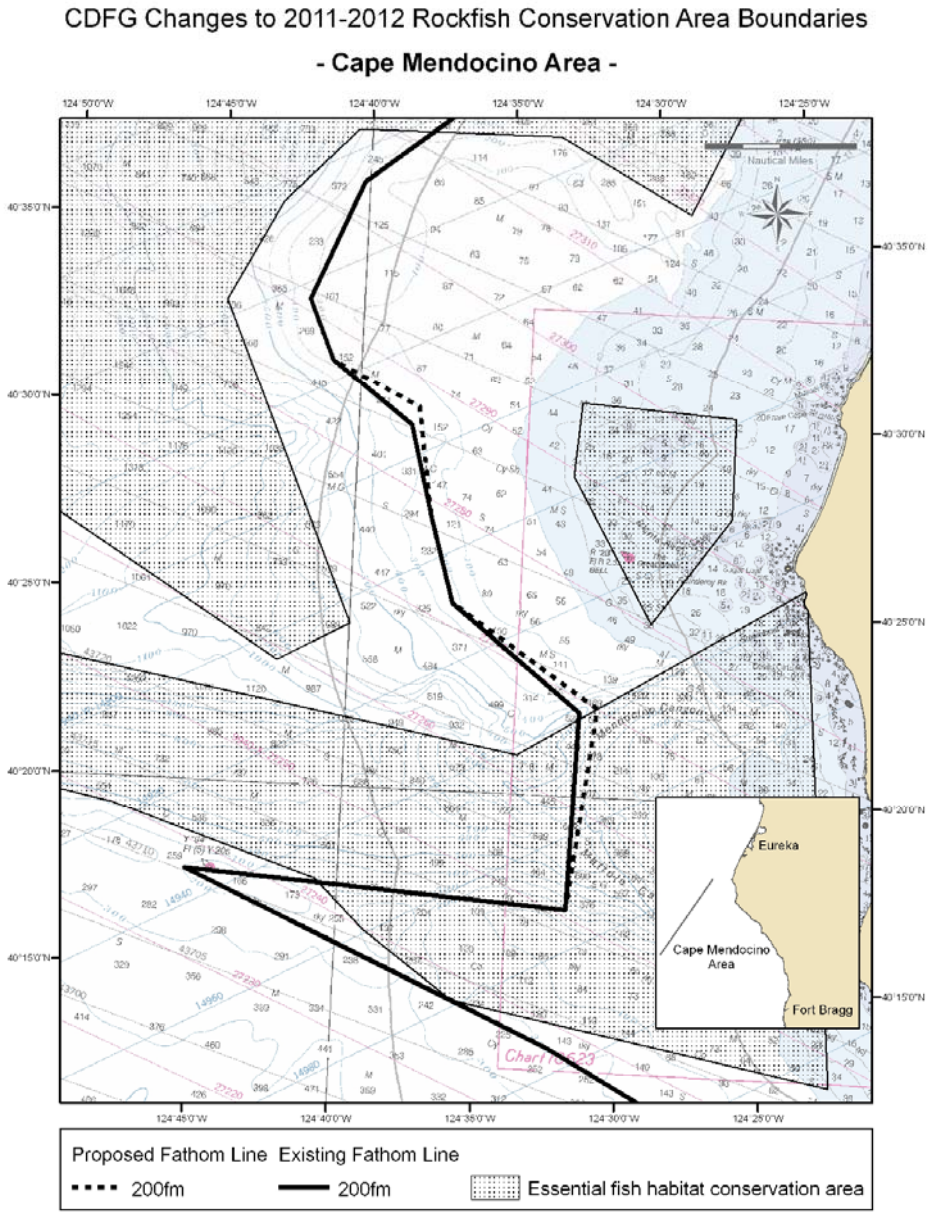


Figure B-4. CDFG proposed changes to the Cape Mendocino RCA boundaries.

Changes to the RCAs in the Big Sur Area

Table B-21 and Figure B-5 outlines the original coordinates and proposed coordinates for changing the RCA in the Big Sur Area.

Changes to the 40 fm line: Changes to the 40 fm line in the Big Sur area are proposed to better approximate depth contours resulting in more accurate estimates of actual bycatch.
Changes to the 50 fm line: Revisions to the 50 fm line are required to eliminate cross-overs caused by proposed changes to the 40 fm line.
Changes to the 60 fm line: Revisions to the 60 fm line are required to eliminate cross-overs caused by proposed changes to the 40 fm line.
Changes to the 75 fm line: Revisions to the 75 fm line are required to eliminate cross-overs caused by proposed changes to the 40 fm line.

Table B-21. Final Preferred. Changes to the RCA in the Big Sur Area.

Fathom Line	Proposed Coordinates					Action	Long Change	Original Coordinates Published in the Federal Register			
	Point	Lat		Long				Lat		Long	
		Deg	Min	Deg	Min			Deg	Min	Deg	Min
40	149	36	18.40	121	57.93	revision	seaward	36	17.52	121	57.33
40		36	16.80	121	59.97	add					
40	150	36	15.67	121	55.96	revision	seaward	36	15.90	121	57.00
40		36	15.67	121	54.41	add					
50		36	18.40	121	58.97	add					
50		36	18.40	122	0.35	add					
50	121	36	16.02	122	0.35	crossover	seaward	36	17.10	122	0.53
50		36	15.67	121	58.53	add					
50		36	15.67	121	56.53	add					
50		36	14.79	121	54.41	add					
60	140	36	16.80	122	1.76	crossover	seaward	36	17.3	122	1.55
60		36	14.33	121	57.80	add					
60		36	14.67	121	54.41	add					
75	181	36	17.49	122	3.08	crossover	seaward	36	18.23	36	18.23
75	182	36	14.21	121	57.80	crossover	seaward	36	14.21	36	14.21
75	183	36	14.53	121	54.99	crossover	seaward	36	14.68	36	14.68

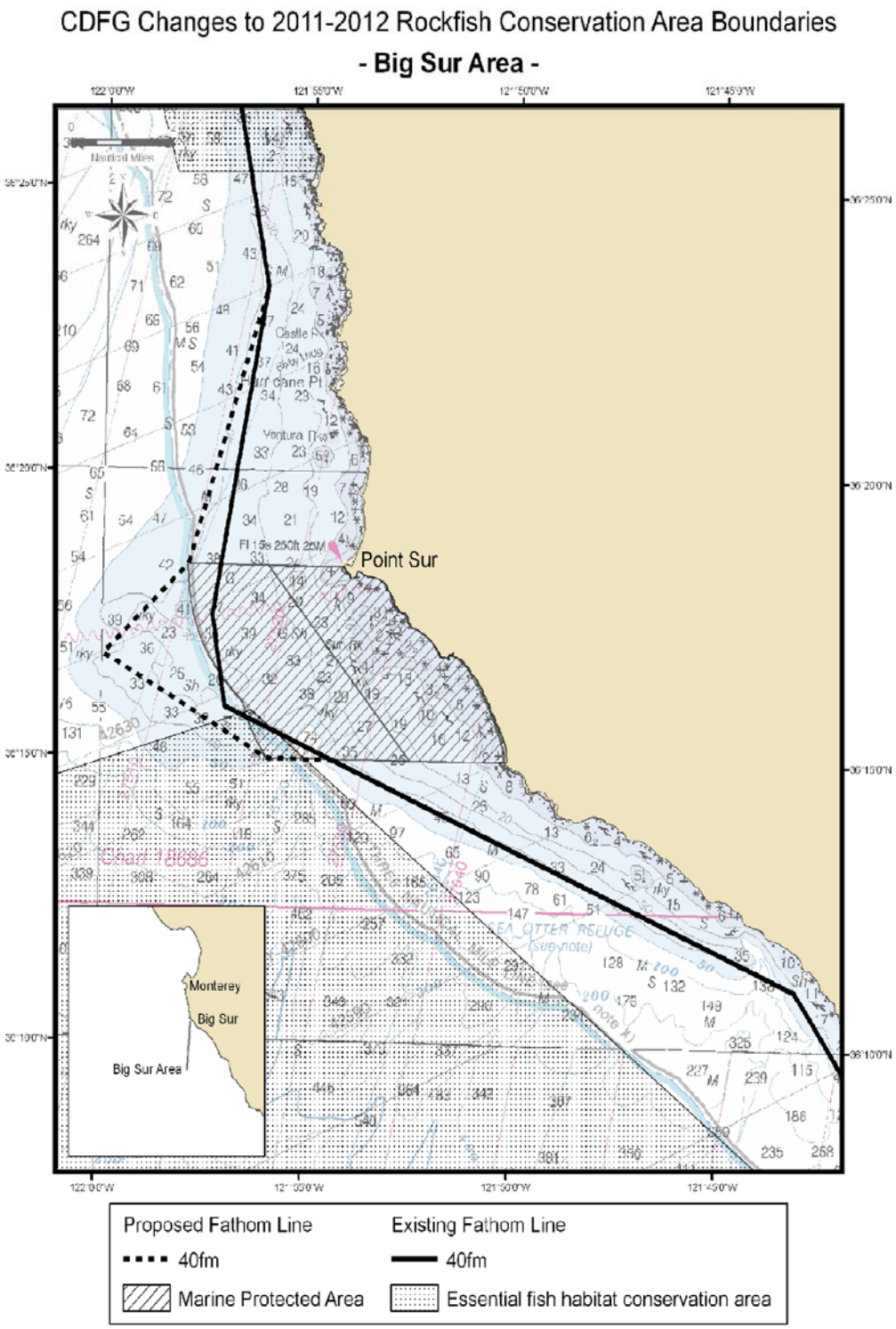


Figure B-5. CDFG proposed changes to the RCA in the Big Sur Area.

Changes to Non-Trawl RCAs in San Diego Area -

Table B-22 and Figure B-6 outlines the original coordinates and proposed coordinates for changing the RCA in the San Diego Area.

Changes to the 50 fm line: Revision to the 50 fm line in the San Diego area is required to eliminate a crossover.

Changes to the 60 fm line: Revision to the 60 fm line in the San Diego area is proposed by industry and modified by CDFG to better approximate depth contours resulting in more accurate bycatch information by depth strata.

Table B-22. Final Preferred. Changes to the RCA in the San Diego Area.

Fathom Line	Proposed Coordinates					Action	Long Change	Original Coordinates Published in the Federal Register			
	Point	Lat		Long				Lat		Long	
		Deg	Min	Deg	Min			Deg	Min	Deg	Min
50	188	32	55.35	117	18.65	crossover	shoreward	32	55.71	117	18.99
60	**198**					**delete**		**32**	**56.11**	**117**	**18.41**

CDFG Changes to 2011-2012 Rockfish Conservation Area Boundaries

- San Diego Area -

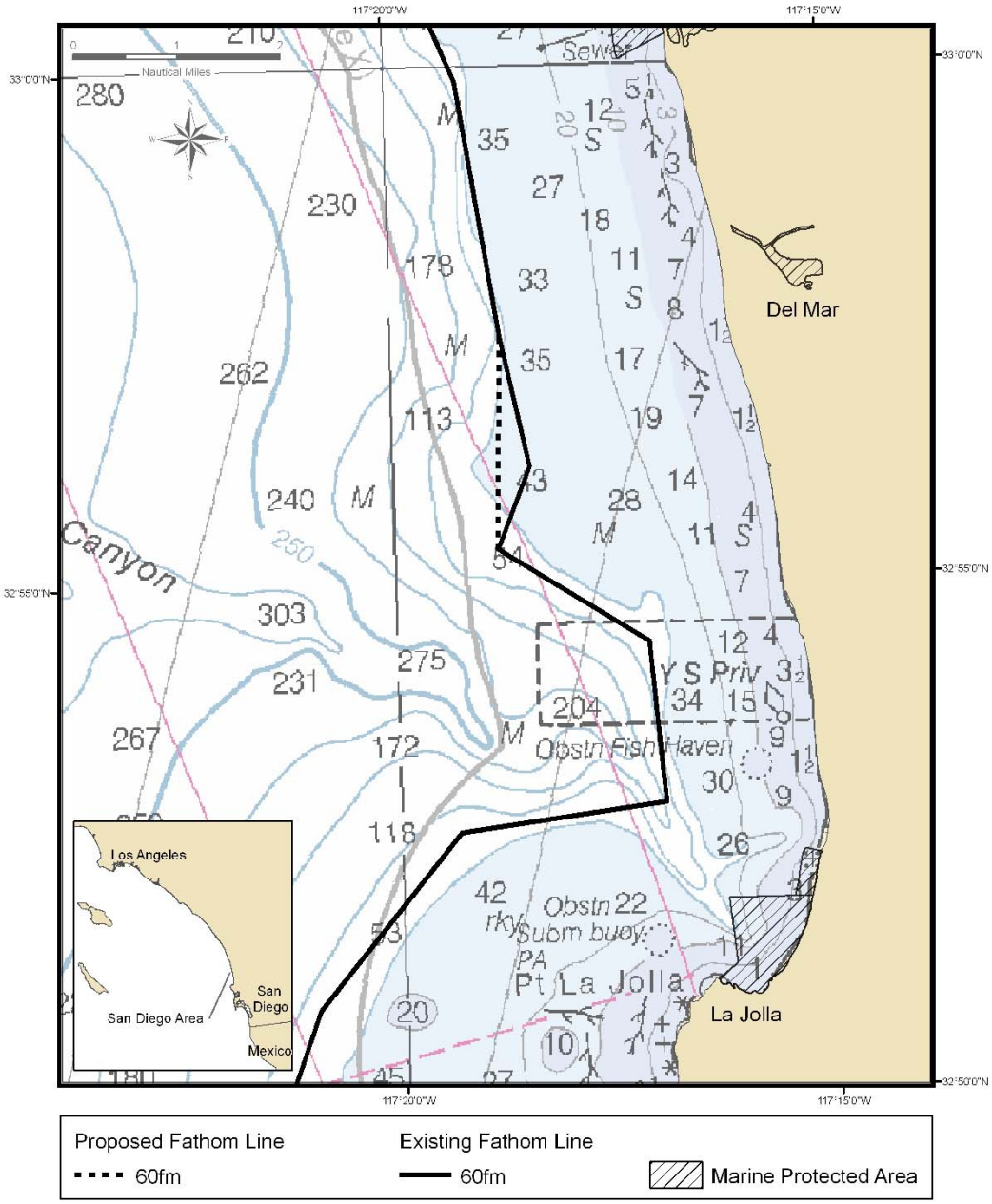


Figure B-6. CDFG proposed changes to the RCA in the San Diego Area.

B.3.2 Fishery Specific Management Measure Analysis

B.3.2.1 Limited Entry Non-Whiting Trawl Fishery

The following management measures were analyzed for use under a rationalized trawl fishery structure: trip limits for those species that are not managed under IFQs and an RCA configuration that applies to vessels harvesting QP with trawl or fixed gear. No new management measures (i.e., non-routine) were analyzed for the limited entry non-whiting trawl fishery under the cumulative trip limit management regime.

IFQ Incidental Trip Limits

Under Amendment 20: Trawl Rationalization, the Council opted to manage the following species within the shoreside sector (whiting and non-whiting) with trip limits, instead of individual fishing quotas: minor nearshore rockfish north and south, black rockfish, cabezon (46°16' N. to 42° N. latitude[4] and south of 42° N. latitude), California scorpionfish, spiny dogfish, longspine thornyhead south of 34°27' N. latitude, shortbelly rockfish, remaining fish (for the purposes of trip limits includes longnose skate, big skate, California skate, California scorpionfish, leopard shark, soupfin shark, finescale codling, Pacific rattail (grenadier), ratfish, kelp greenling, shortbelly, cabezon in Washington). The purpose of allowing trip limits for these species is to allow incidental catch to be landed and for the fishermen to be paid for those landings. Not having a trip limit would not prevent the fish from being caught. Rather, these species are caught incidentally regardless of whether there is a trip limit in place for them or not. When there is no trip limit, the fish must be discarded ("regulatory discard") or forfeited to the state at the time of landing.

To explore trip limits that would strike this balance, monthly landings in the limited entry non-whiting and whiting trawl fishery from 2008 and 2009 were compared to existing trip limits. Under Amendment 20, vessels with limited entry trawl permits have the ability to also use fixed gear (i.e., gear switching). The trip limit recommendations provide for incidental landing allowances and are implemented when vessels are using trawl or fixed gears to harvest the IFQ species with a limited entry trawl permit. These incidental trip limits were included as management measures under a rationalized fishery structure in the Council's Final Preferred Alternative.

Minor nearshore rockfish and black rockfish north and south of 40°10' N. latitude
For minor nearshore rockfish and black rockfish, no limited entry trawl vessel achieved the existing cumulative limits specified in regulation (300 lbs/month). The highest monthly landings were between 150-200 pounds; the majority of the landings were less than 50 pounds. In a rationalized trawl fishery, the GMT does not anticipate increases to minor nearshore rockfish and black rockfish landings, given existing state regulations. Generally speaking, state regulations are as follows:

- WA: commercial fishing with either trawl or fixed gear (including pots) in nearshore waters (0-3 miles) is prohibited.
- OR: Vessels must hold a state fixed gear nearshore permit to land targeted amounts of nearshore rockfish. Incidental amounts of nearshore rockfish are allowed by trawlers and

[4] The GMT notes that in 2010 the other fish category includes cabezon coastwide, while in 2011-2012 cabezon will be managed separately north of 42° N. latitude but with the other fish category in the south. As such, the GMT provides for the first time a cabezon trip limit for the limited entry trawl shoreside sector.

by fixed gear vessels without nearshore permits, however 2010 state trip limits for these species are more restrictive than the 2010 Federal trip limits.

- CA: Vessels must hold a state nearshore permit to land any nearshore rockfish.

Further, the trawl sector will receive a relatively small yelloweye rockfish allocation and the yelloweye rockfish bycatch rates are the highest in the nearshore. As such, it appears the risk of targeting nearshore rockfish is too high and it is unlikely such events will occur. That is, with individual accountability and the anticipated high cost of yelloweye rockfish quota pounds it seems unlikely that targeting nearshore rockfish would occur. As such, the Council-preferred Alternative recommends that the minor nearshore rockfish and black rockfish incidental landing limits for vessels using trawl or fixed gears to harvest IFQ species with a limited entry trawl permit north and south of 40°10' be specified at 300 lbs/month for periods 1-6, which would accommodate the landings seen in the last 2 years.

Cabezon (46°16' N. to 42° N. latitude[5] and south of 42° N. latitude)
Recent cabezon landings by the limited entry trawl fleet were infrequent and the majority was below 20 pounds. Under the Final Preferred Alternative, the Council recommended that the cabezon incidental landing limits for vessels using trawl or fixed gears to harvest IFQ species with a limited entry trawl permit be specified at 50 lbs/month for periods 1-6, which would accommodate the landings seen in the last two years.

Spiny Dogfish
Trip limits for spiny dogfish were implemented on March 1, 2006 and have generally stayed at the same levels since that time. The limits currently specified in regulation are 200,000 lbs/2 months Jan-Apr; 150,000 lbs/2 months May-Jun; 100,000 lbs/2 months Jul-Dec. In recent years, no limited entry trawl vessels attained or came close to reaching the spiny dogfish cumulative limits specified in Federal regulation.

Under a rationalized fishery, an IQ holder could target spiny dogfish with either trawl gear or fixed gear. There is available data to inform potential bycatch interactions while targeting spiny dogfish with trawl gear. With fixed gear, it is anticipated that yelloweye rockfish would constrain access to spiny dogfish. Feedback from industry indicates that the highest concentration of dogfish is near the 100 fm line, an area with a moderate bycatch rate of yelloweye. Similar to the discussion under minor nearshore rockfish, under a rationalized trawl fishery it is anticipated that the risk of yelloweye rockfish bycatch to an individual would likely outweigh the value of targeting spiny dogfish.

Under the Final Preferred Alternative, the Council recommends that the spiny dogfish incidental landing limits for vessels using trawl or fixed gears to harvest IFQ species with a limited entry trawl permit north and south of 40°10' be specified at 60,000 pounds/month, which would accommodate all monthly landings seen in recent years.

Longspine Thornyhead south of 34°27' N. latitude
Under the proposed Amendment 21 to the GFMP, the Council chose not to make a trawl/non-trawl allocation for longspine thornyhead south of 34°27' N. latitude. Under the proposed Amendment 20 to the GFMP, the Council chose to manage longspine thornyheads south of

[5] In 2010 the other fish category includes cabezon coastwide, while in 2011-2012 cabezon will be managed separately north of 42° N. latitude but with the other fish category in the south. As such, the GMT provides for the first time a cabezon trip limit for the limited entry trawl shoreside sector.

34°27’ N. latitude with trip limits, while longspine thornyhead in the north are managed with IFQ. This decision was a result of the limited catch history of longspine thornyhead by the trawl fishery south of 34° 27’ N. latitude. From 1995-2005, the trawl fishery harvested <0.1 of the longspine thornyhead OY. Additionally, total mortality by all fleets in recent years has been well below the OY; in 2008 4 percent of the OY was harvested. Feedback from industry indicates that longspine thornyhead is not typically targeted; it is caught in association with shortspine thornyhead, a higher valued, more marketable species and/or Dover sole and sablefish. Under a rationalized trawl fishery, it is possible that a fishery will evolve south of 34°27’ N. latitude either with trawl gear or fixed gear. Given the low exploitation of longspine thornyhead south of 34°27’ N. latitude, the existing trip limits could remain in place under a rationalized fishery. Under the Final Preferred Alternative, the Council recommends that south of 34°27’ N. latitude, the longspine thornyhead incidental landing limits for vessels using trawl or fixed gears to harvest IFQ species with a limited entry trawl permit be specified at 24,000 lbs/2 months, which is the limit currently specified in regulation for limited entry trawl gears.

Remaining fish

Currently, there are no limits imposed on the catch of species within the “other fish” complex for any of the commercial fisheries (limited entry trawl, limited entry fixed gear, or open access). The GMT recommends that this category be named “remaining fish” since the “other fish” definition for harvest specifications includes different species than the intent of the remaining fish incidental trip limits. For example, longnose skate was removed from the “other fish” harvest specifications category, yet for the purposes of the incidental IFQ trip limits longnose skate should be grouped with other skates. For the purposes of the incidental IFQ trip limits, other fish is to include: longnose skate, big skate, California skate, California scorpionfish, leopard shark, soupfin shark, finescale codling, Pacific rattail (grenadier), ratfish, kelp greenling, shortbelly, cabezon in WA.

The 2008 and 2009 limited entry trawl landings of the species that comprise the newly proposed remaining fish incidental trip limit were analyzed. Grenadier makes up the largest component of the remaining fish landings in the trawl fishery and most landings were less than 8,000 pounds with a few landings as high as 12,000 pounds. Historically, there was some buying/selling of grenadier in an attempt to develop a market, however recent year landings of grenadier likely represent incidental catch while targeting the DTS strategy. The remaining fish landings were less than 1,500 pounds with most monthly landings less than 1,000 pounds. Big skate and California skate also comprise the other fish category. In recent years, there has been interest in targeting and marketing skates. In recent years catches have been below the Council’s final preferred ACL decision for other fish.

Under the Final Preferred Alternative, the Council recommends that the remaining fish incidental landing limit for vessels using trawl or fixed gears to harvest IFQ species with a limited entry trawl permit remain unlimited. Should increased landings occur, the Council could implement the trip limits analyzed during this SPEX process and implement them through routine inseason action.

RCA Configurations for Vessels Harvesting QP with Trawl gear or Fixed Gear

RCAs are by far the most extensive and complex closed areas used in groundfish management. First implemented in 2002 as part of an in-season management action, RCAs extend from the Canadian border to the Mexican border of U.S. west-coast waters. The RCAs were implemented to reduce bycatch of overfished species, which may concentrate within specific depth ranges. Based on analysis of West Coast Groundfish Observer Data and vessel-logbook data, the boundaries of the RCAs were set to prohibit groundfish fishing within a range of depths where

encounters with overfished species were most likely to occur. In order to make enforcement possible, in most cases the actual isobaths—lines of equal depth—are approximated by straight lines between published waypoints. The depths included in RCAs vary by season, latitude, and regulatory sector. Boundaries for limited entry trawl vessels are different than those for the limited entry fixed-gear and open access sectors.

Trawl RCA boundaries and cumulative limits are routinely adjusted inseason based upon fishery performance. Managers structure catch limit opportunities and closed areas with several objectives in mind including protecting rebuilding species while simultaneously providing for a year round fishing opportunity. While many adjustments to catch limits and trawl RCA boundaries are relatively minor, in recent years some of these adjustments have been relatively extreme and have closed fishing opportunity for wide areas of the coast mid-season. For example, in 2004 an unexpected amount of darkblotched rockfish catch occurred in the fishery leading to a large expansion of the trawl RCA and elimination of several target species opportunities, including petrale sole—one of the most important target species to bottom trawlers. In January and February of 2006, unseasonably favorable weather occurred making it easy for vessels to target petrale sole during their aggregation period. This led to a catch of petrale sole during the first 2-month cumulative trip limit period that was nearly twice the expected amount. This caused managers to eliminate petrale sole opportunities at the end of the year in an attempt at preventing overfishing of the stock in that year. In 2008, the area north of Cape Alava (48.10° N. latitude) was closed (RCA extended to the shore) in order to reduce canary rockfish impacts. IN. later years, this closure remained in place in order to reduce trawl impacts to yelloweye rockfish.

Non-whiting groundfish vessels fish in depths as shallow as 10 fm and as deep as 600 fm; in recent years the largest volume of retained catch has come from deeper than 250 fm. In recent years, the trawl RCA north of 40°10’ N. latitude has varied from a boundary line approximating the 75 fm depth contour (75 fm line) to the 100 fm line shoreward and 150 to 200 fm seaward. Most often, the shoreward boundary has been specified at 75 fm in an effort to reduce canary rockfish catch. The seaward line has varied from 150 fm, 200 fm, and 250 fm.

South of 40°10’ N. latitude, the RCA has remained at 100 fm to 150 fm to reduce bocaccio, canary, and cowcod encounters.

Under current management of the trawl fishery (i.e., No Action Alternative), catch projections (and estimates of total catch inseason) are made using what is often described as the “trawl bycatch model.” This model uses discard estimates from the WCGOP data and logbook information to develop temporal and spatially stratified bycatch rates for overfished species. The bycatch model can be used to estimate both target species and overfished species catch based on a proposed set of management measures (2-month cumulative trip limits and RCA configurations).

Under a rationalized fishery, individuals will be held accountable for their bycatch; however there is still a risk of exceeding the trawl allocation since overfished species interactions can be unpredictable. As such, the Council may wish to maintain a core RCA structure which would continue to close the area where encounters with overfished species are considered most likely. It is our understanding that the type of gear employed determines the RCA structure. As such vessels who harvest IFQ species with trawl gear will be held to the trawl RCA while vessels with fixed gear will be held to the fixed gear RCA.

The decision on where to set the shoreward and seaward boundaries of the trawl RCA is largely a risk call based on available data that, under a rationalized fishery, is not something that can be evaluated within the trawl model. That is, the bycatch rates that are used in the trawl model (See

Appendix A Table A.1) inform the potential risk of allowing fishing opportunity in certain depths, however the trawl model calculus (e.g., trip limits, assumptions of effort distribution, RCA, etc.) will no longer be applicable under trawl rationalization. The boundaries of the non-trawl RCA are recommended by the Council based on overfished species impacts predicted by the fixed gear models (nearshore and non-nearshore).

Reviewing the current trawl bycatch data by depth and season is still useful to inform a core trawl RCA structure for a rationalized trawl fishery (See Appendix A Table A.1). It is important to note that there is no way to know if the historical bycatch rates will be representative of a rationalized fishery, since rationalization has not yet occurred. However, these rates provide a starting point for considering RCA structures.

In addition to maintaining the core RCA structure, the Council has expressed the desire to use RCA adjustments inseason in order to prevent exceeding the trawl allocation for overfished species. For example, should the trawl sector attain its allocation of yelloweye rockfish, the available bycatch rate data suggests that moving the shoreward boundary to shore (i.e., close trawling shoreward of the RCA) would largely reduce further yelloweye rockfish impacts, while still allowing other species to be harvested on the seaward side of the RCA (Figure B-7, Figure 5). Should the canary rockfish allocation be attained, the seaward boundary could be set at 150 fm which would prevent reduce canary rockfish impacts substantially relative to shallower depths while still allowing other species to be harvested. Similarly, should the petrale sole allocation be attained midyear, the seaward RCA could be set at 250 fm in order to provide access to deep water stocks while preventing petrale sole impacts (Figure 8). These are only a few examples of the variety of inseason adjustments that can be made to the RCA to keep the trawl sector within their allocation, as seen in the figures.

Shoreward RCA Considerations

Shoreward of the RCA and north of 40°10’ N. latitude, yelloweye and canary rockfish interactions constrain access to target species. For yelloweye rockfish, the high bycatch rates occur in waters less than 100 fm (Figure 4). It appears that trawl catch of yelloweye rockfish shoreward of a 50 fm RCA would result in lowest impacts north and south, especially during the 1st, 2nd, and 6th periods. This would also limit access to target species, however, and may cause conflicts with open access and limited entry fixed gear fishermen. Yelloweye rockfish have a patchy distribution and as such using fleetwide bycatch rates over a large area (north and south of 40°10’ N. latitude) as currently implemented may be overly constraining, especially under the auspices of individual accountability. That is, in a rationalized fishery, the individual has the incentive to avoid the patchy areas of known yelloweye rockfish concentrations to minimize that individual’s bycatch rate and thereby maximizing their harvest of target species. It is still anticipated that individuals will encounter yelloweye rockfish unexpectedly, and thus, the Council may consider setting the shoreward RCA at either 75 or 100 fm and evaluate / refine the RCA structure as each year progresses, if data exists. Note that north of Cape Alava, yelloweye bycatch rates are lowest inside of the 60 fm line; bycatch rates would increase substantially if shoreward RCAs were moved from the 60 fm line to the 75 fm line (Figure 5).

For canary rockfish north of 40o 10’ N. latitude, bycatch rates increase when the shoreward RCA is specified at 100 fm relative to the 75 fm line and shallower depths (Figure 6), especially during the winter and spring months (Periods 1, 2, and 6) in the north. As such, if the Council desires to implement a 100 fm RCA boundary for the rationalized trawl fishery in the north to provide more fishing opportunities while reducing the risk of encounters with canary rockfish, it might consider doing so during Periods 3, 4, and 5 when canary-bycatch rates are lowest (Figure 6). It is

important to realize, however that most spring/summer/fall bycatch rates are collapsed across periods 3–5 because of sample-size limitations, hence, the GMT does not have bycatch rate information for the individual periods in the spring/summer/fall. This problem makes it impossible to differentiate differences in bycatch rates among periods. Industry feedback indicates potential target species (e.g., sanddabs) could be accessed between 75 and 100 fm with low bycatch interactions (e.g., sanddabs) (Brad Pettinger, personal communication). Note that north of Cape Alava, RCAs would need to be set at the 75 fm line to minimize canary rockfish interactions as bycatch rates increase dramatically deeper than 75 fm (Figure 7).

Canary, cowcod, and bocaccio constrain access to target species shoreward of the RCA south of 40°10' N. latitude. For canary rockfish, the bycatch rates are lower when the shoreside RCA is set at 60 fm, compared to 75 fm (Figure 6). Similar to the northern bycatch rates, there is seasonal variation in bycatch rates. However, similar to the north, highest canary bycatch rates were observed in the south during the winter periods (1, 2, and 6). Cowcod bycatch rates are highest shoreward of 75 fm and 100 fm lines relative to shallower RCAs (i.e., < 60 fm; Figure 9). For bocaccio rockfish, bycatch rates are typically high only near the 100 fm line during winter months; rates are relatively low for this species at all other depths and during periods 3, 4, and 5 (Figure 10).

The southern shoreward RCA has been set at 100 fm in the past, and this action appears to have been successful in keeping bycatch of canary, cowcod, and bocaccio within acceptable limits. Hence, south of 40o 10' N, maintaining the 100 fm RCA may provide access to target species while minimizing impacts to overfished species.

RCA structures for widow rockfish are clear north of 40°10' N. latitude; seaward RCAs less than 60 fm are most protective for all seasons (Figure 11). Note that widow rockfish encounters are extremely low for all depths during periods 3, 4, and 5 relative to periods 1, 2, and 6. South of 40° 10' N. latitude widow rockfish bycatch remains fairly constant when the RCA is set at 150, 180 or 200 fm. These depths also represent the highest widow rockfish bycatch rates.

Seaward RCA Considerations

Darkblotched rockfish and POP constrain access to target stocks along the northern coast of the western U.S. For darkblotched rockfish, there is a significant change in the bycatch rate at 38° N. latitude and as such, rates are stratified at 38° rather than 40°10' N. latitude. A seasonal trend in darkblotched bycatch rates is apparent when the RCA is set at either 150 fm or 180 fm; rates are highest during winter months (periods 1 and 6). Darkblotched rockfish bycatch can be significantly reduced by moving the RCA deeper than the 200 fm line, while maintaining access to the DTS complex (Figure 12).

For POP, bycatch rates are highest when the RCA is specified at the150 fm or 180 fm line relative to deeper RCA options (Figure 13). The rates are the highest when the line is specified at 150 fm in periods 3 and 4.

Petrale Sole

Petrale sole exhibits distinct seasonal depth migrations. Hence, RCA structures for this species should vary seasonally. The general pattern for petrale sole is a shallower depth distribution during periods 3 and 4 and a deeper depth distribution during periods 1 and 6. Petrale sole are typically in transition as they migrate between shallow and deeper depths during periods 2 and 5.

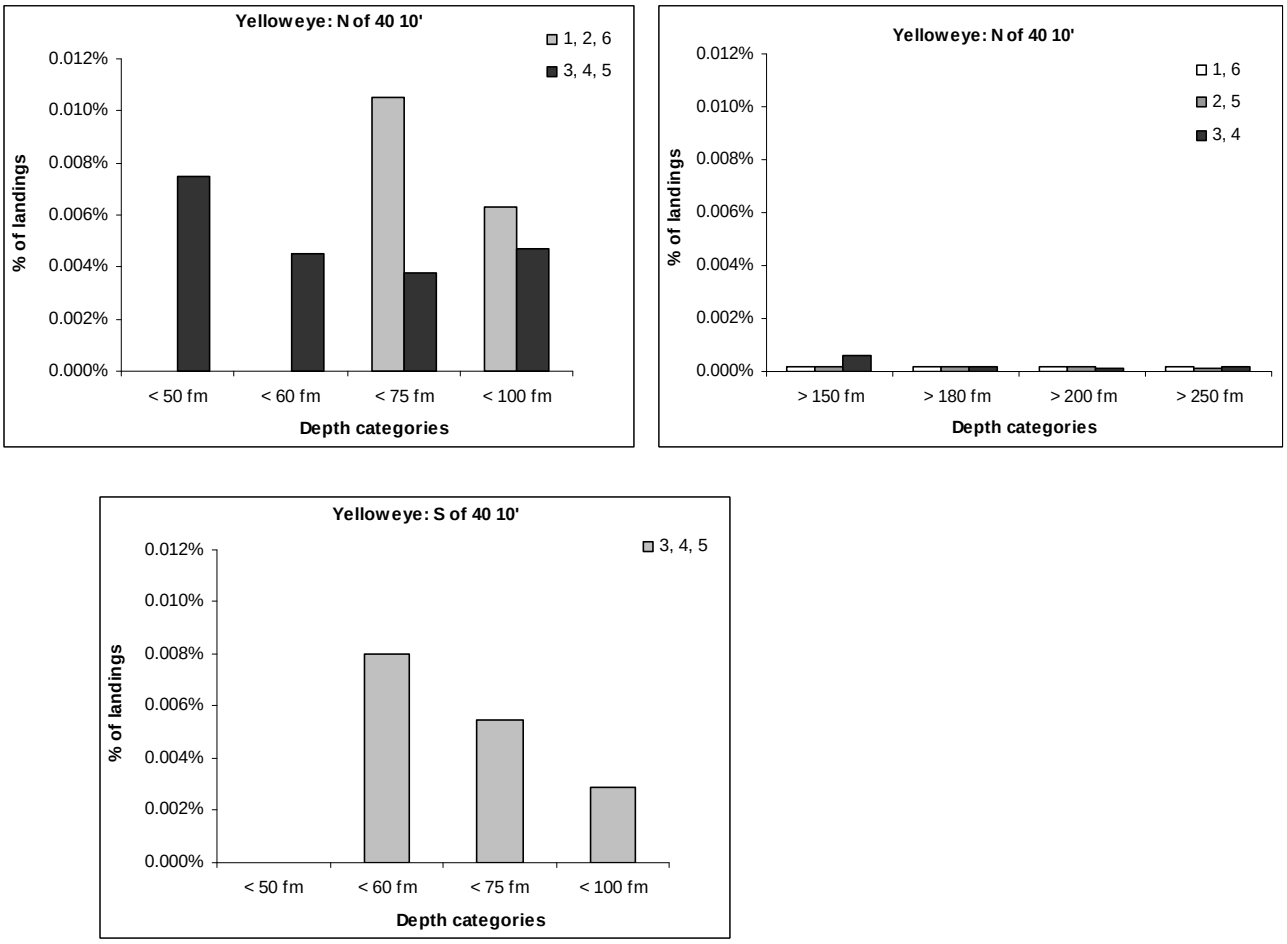


Figure B-7. Bycatch rates (OFS catch / landed species catch) of yelloweye rockfish north and south of 40° 10' by calendar period and depth category; north of Cape Alava closed.

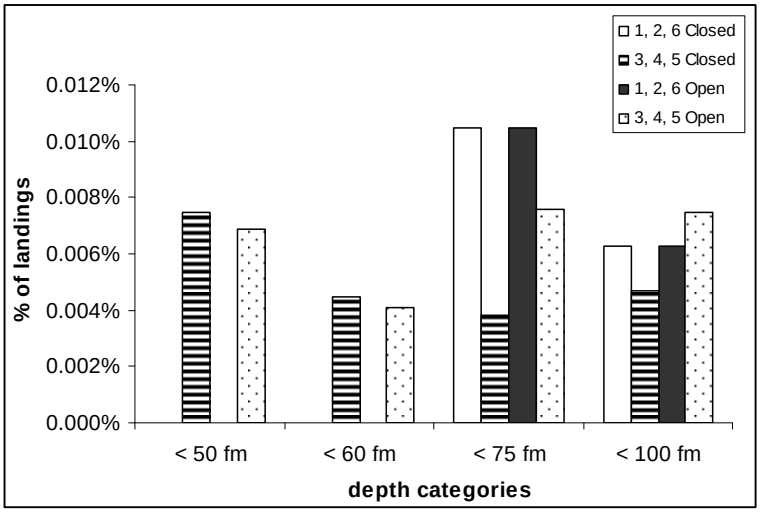


Figure B-8. Bycatch rates (OFS catch / landed species catch) of yelloweye rockfish north of 40° 10' by calendar period and depth category; north of Cape Alava open.

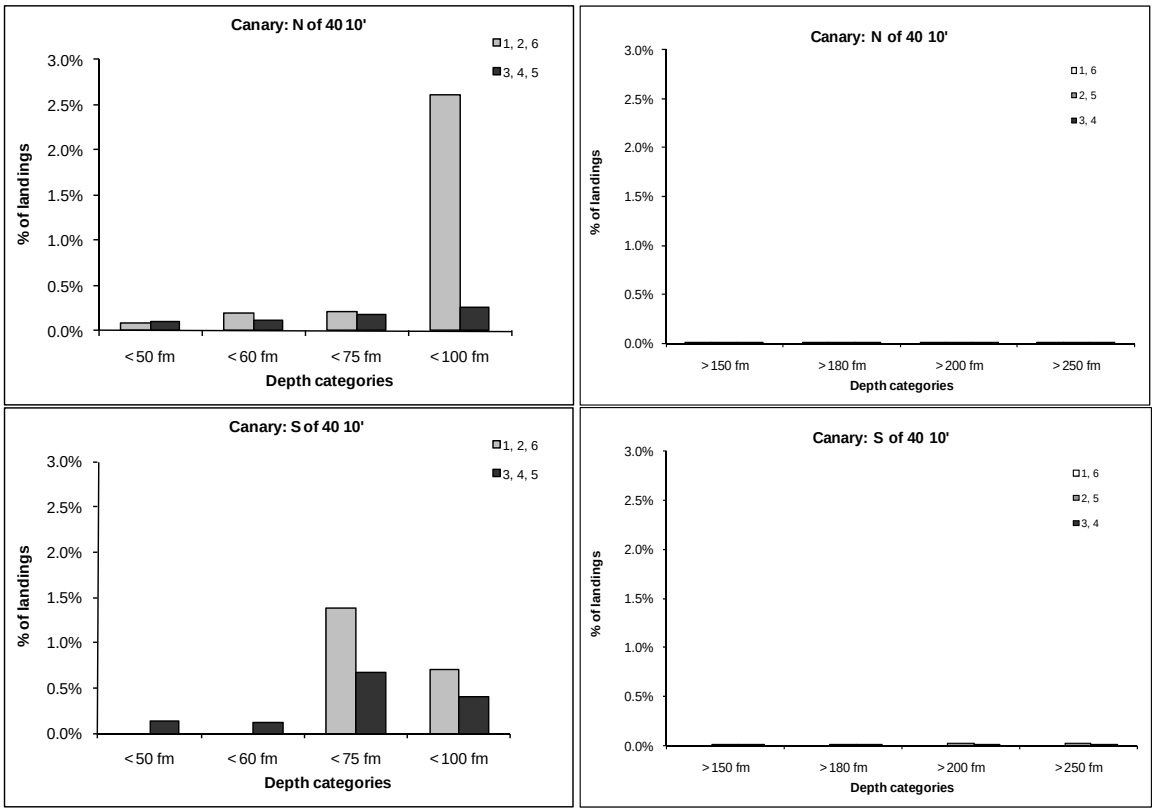


Figure B-9. Bycatch rates (OFS catch / landed species catch) of canary rockfish north and south of 40° 10' by calendar period and depth category, with area north of Cape Alava closed.

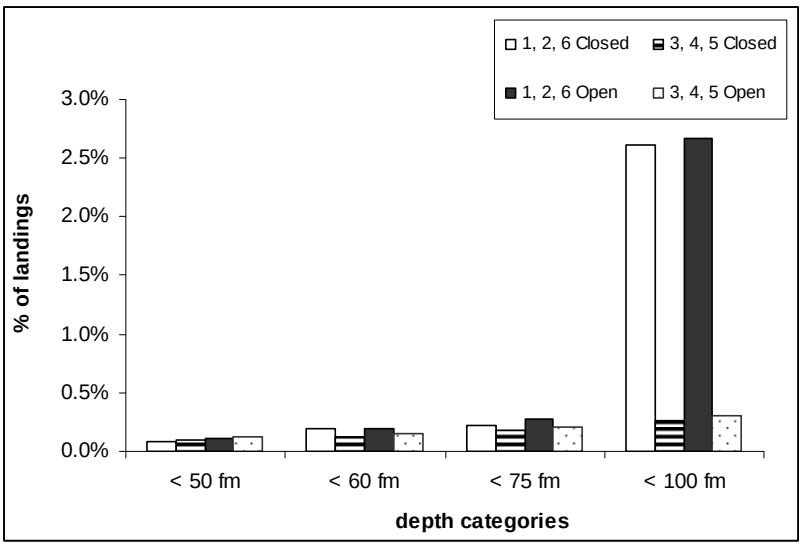


Figure B-10. Bycatch rates (OFS catch / landed species catch) of canary rockfish of 40° 10' by calendar period and depth category, with area north of Cape Alava open.

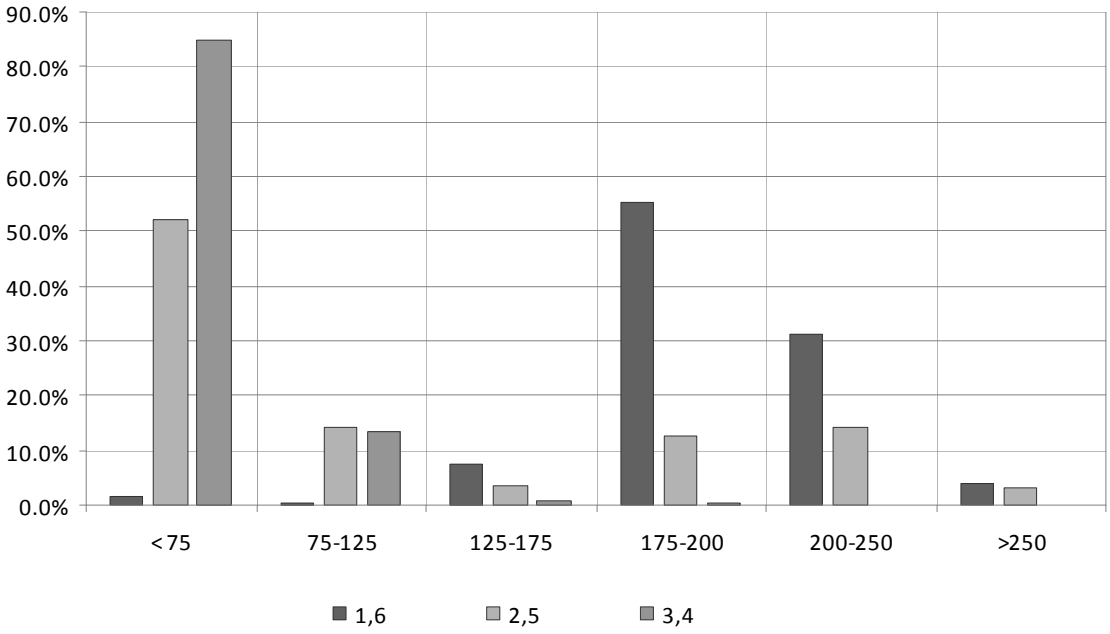


Figure B-101. Bycatch rates (OFS catch / landed species catch) of petrale sole by calendar period and depth category.

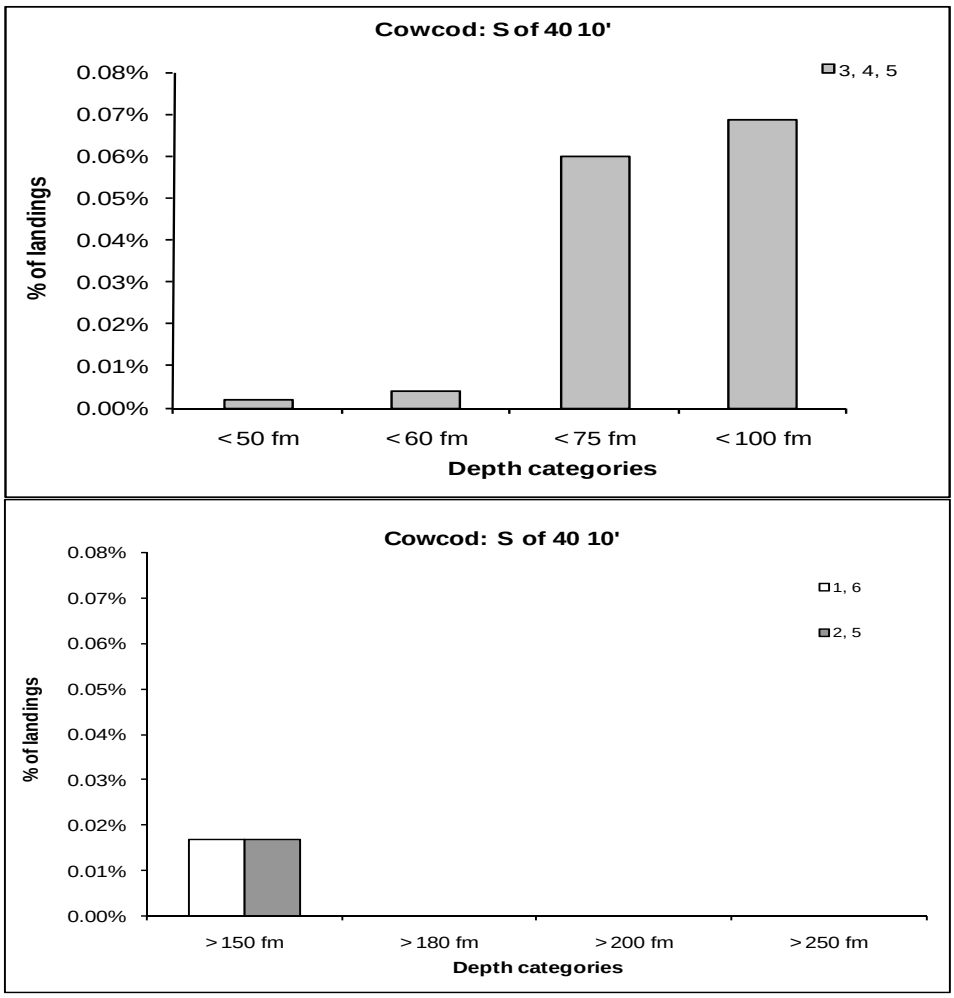


Figure B-11. Bycatch rates (OFS catch / landed species catch) of cowcod south of 40° 10' by calendar period and depth category.

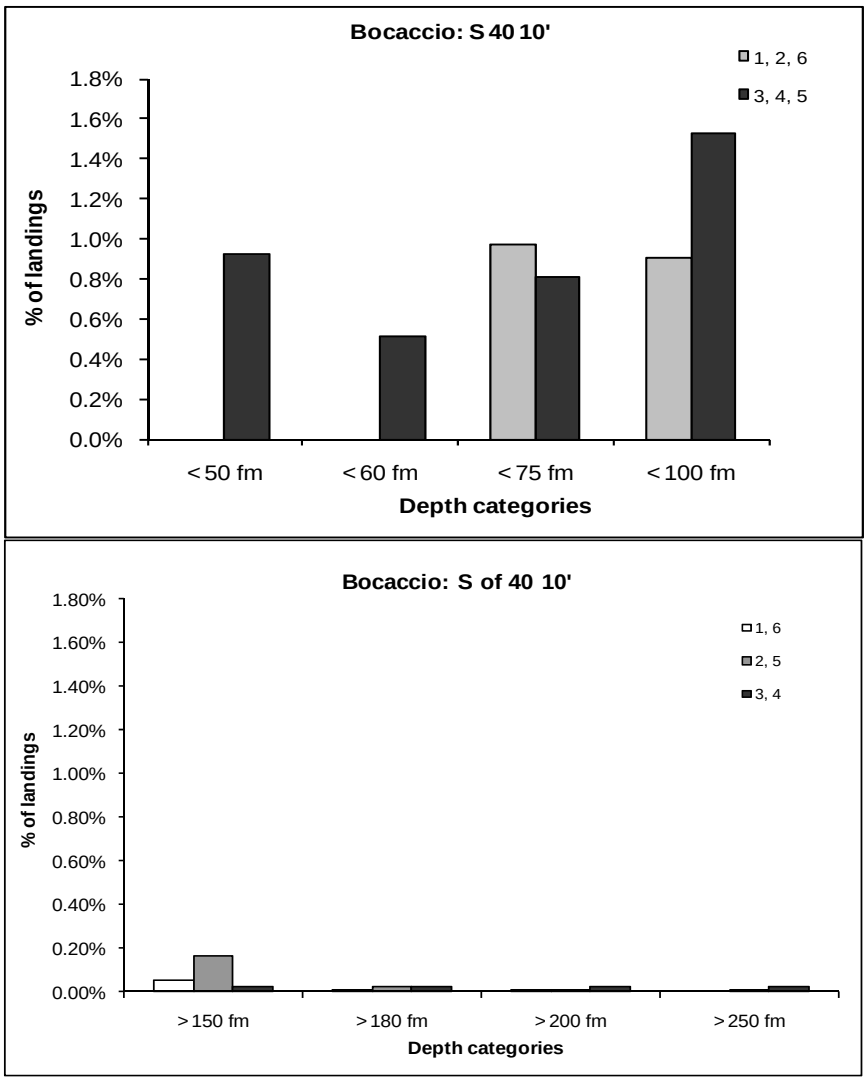


Figure B-12. Bycatch rates (OFS catch / landed species catch) of bocaccio rockfish south of 40° 10' by calendar period and depth category.

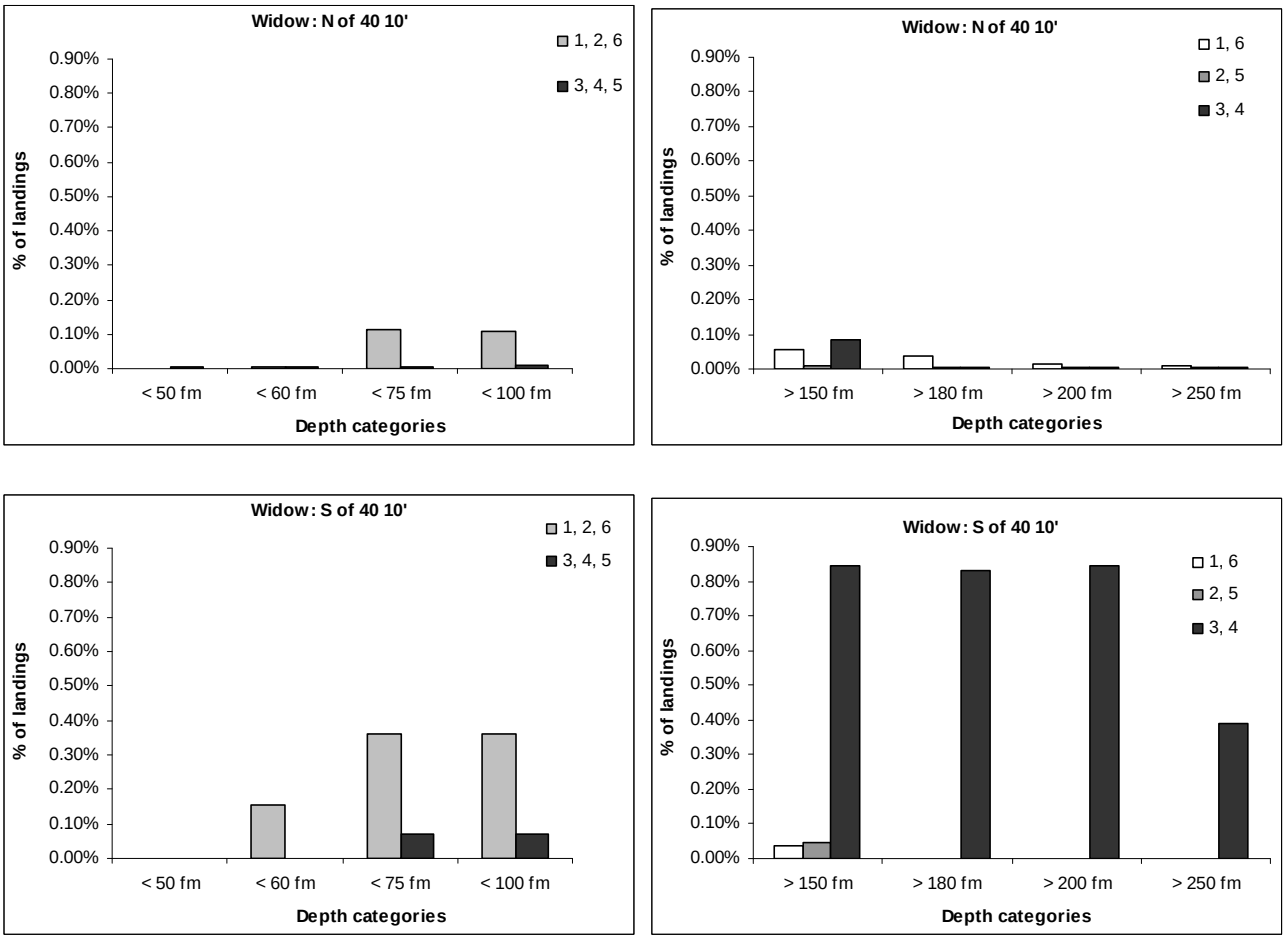


Figure B-13 Bycatch rates (OFS catch / landed species catch) of widow rockfish north and south of 40° 10' by calendar period and depth category.

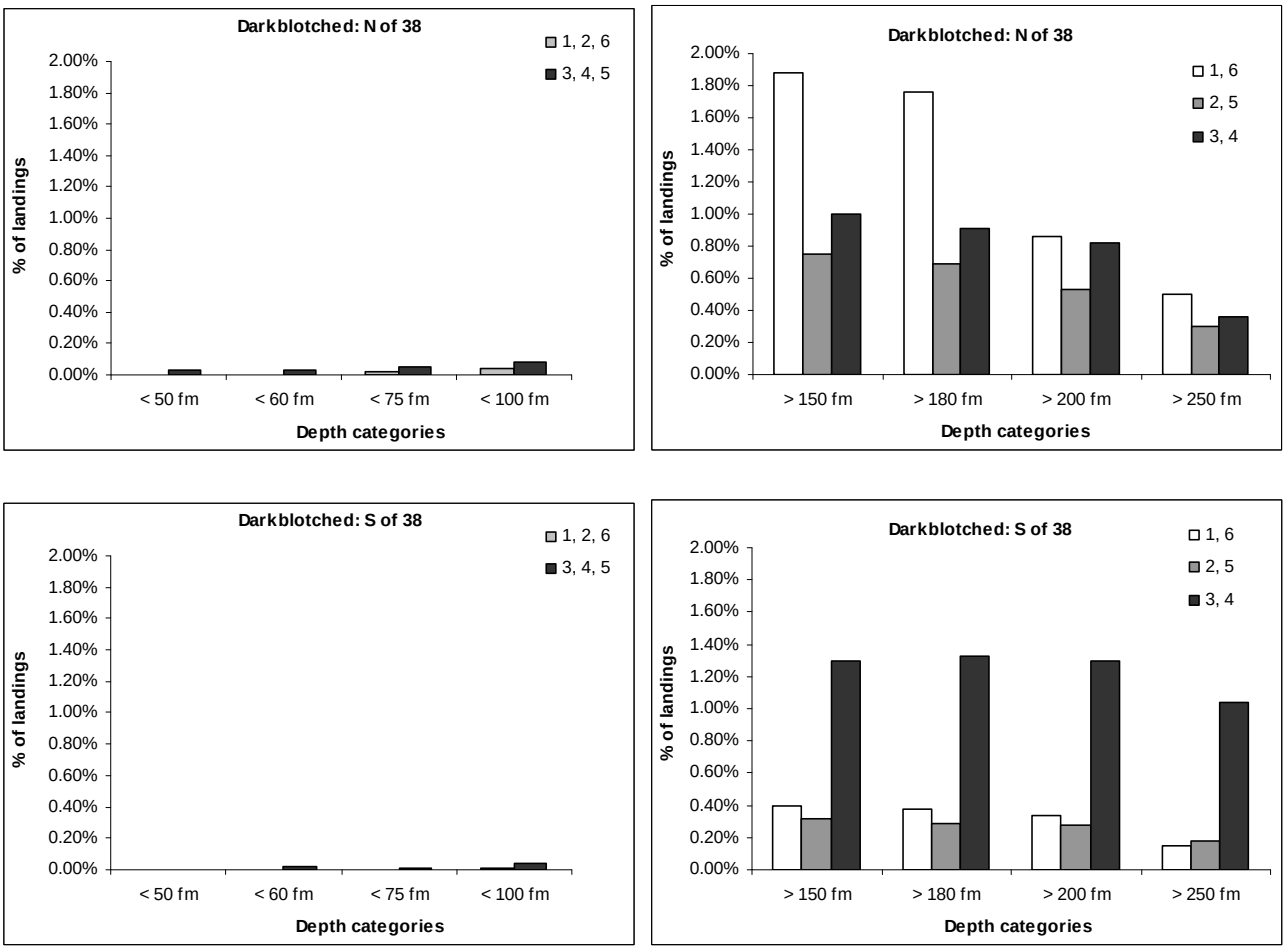


Figure B-14 Bycatch rates (OFS catch / landed species catch) of darkblotched rockfish north and south of 40° 10' by calendar period and depth category.

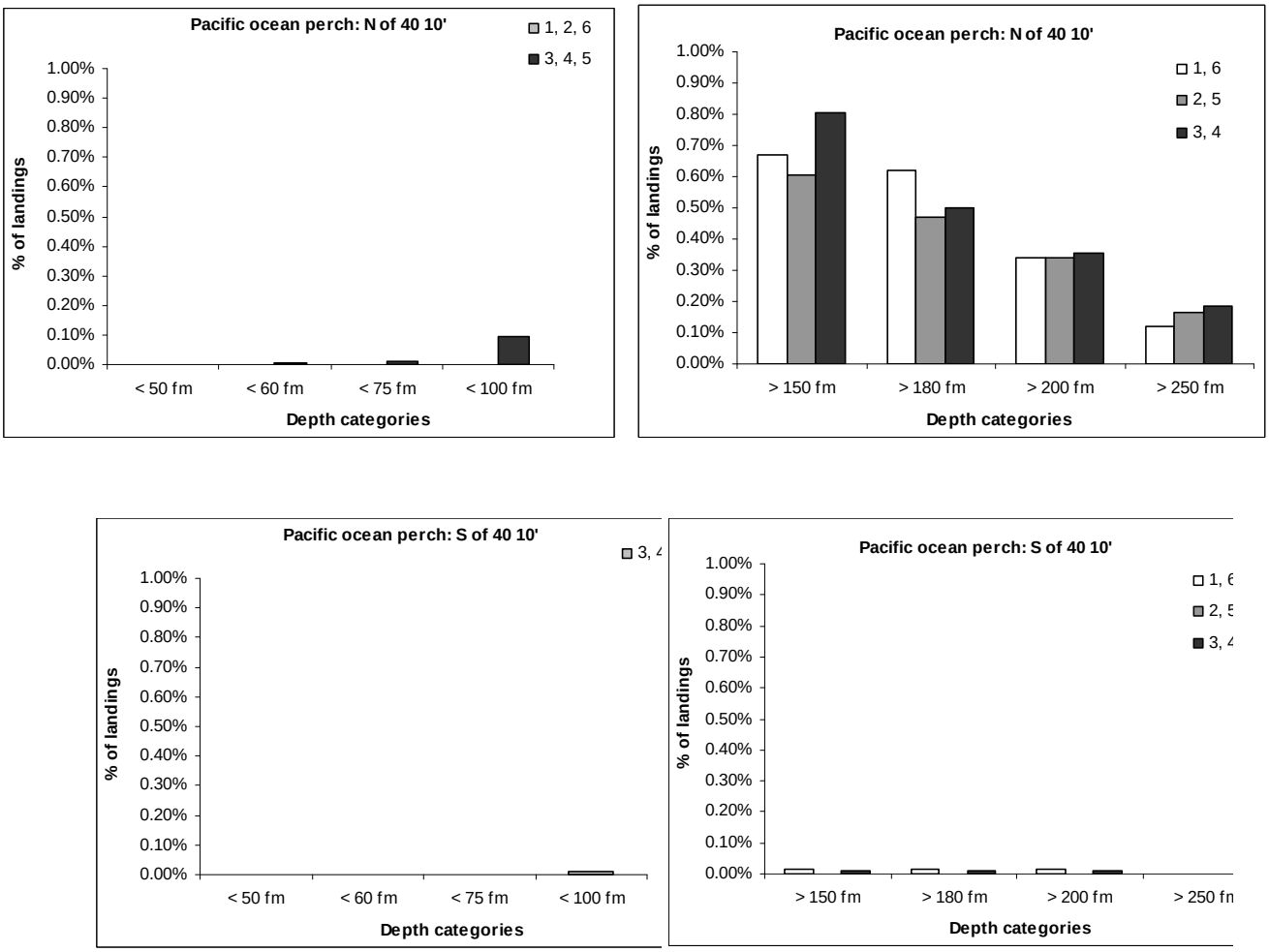


Figure B-15 Bycatch rates (OFS catch / landed species catch) of Pacific ocean perch north and south of 40° 10' by calendar period and depth category.

Gear Switching and RCAs

The proposed Amendment 20 allows quota pounds associated with a limited entry trawl permit to be harvested with either trawl gear or legal fixed gear (known as gear switching). Regulations currently specify both a trawl and non-trawl RCA. It is our understanding that the type of gear employed determines the RCA structure. As such vessels who harvest IFQ species with trawl gear will be held to the trawl RCA while vessels with fixed gear will be held to the fixed gear RCA.

The final preferred trawl allocation for yelloweye rockfish is very low (0.6 mt). This allocation was informed by the trawl model and is low primarily because current management measures (e.g., trawl gear restrictions and RCAs) prohibit fishing in rocky habitats where yelloweye rockfish concentrate. Yelloweye rockfish bycatch rates in the nearshore fixed gear fisheries are much greater than the trawl fishery bycatch rates, largely because fixed-gear fishermen are able to fish over bottom with structure (e.g., rocky bottom). In certain geographic areas and depth ranges,

canary rockfish bycatch rates are also higher in the nearshore model than in the trawl model. This information suggests that under trawl rationalization, special consideration may be given to those who switch gears to ensure that the yelloweye trawl allocations are not exceeded.

The Amendment 20 gear switching provision shoreward of the RCA may present an increased risk of exceeding the trawl sector allocation for yelloweye rockfish, and possibly canary rockfish. There is no available bycatch rate data to inform the fixed gear bycatch rates between 30 fm and 75-100 fm (the available trawl RCA north of 40'10). However, given that the trawl bycatch rates and survey data show that yelloweye are prevalent in this depth range, it is somewhat safe to assume that concerns discussed above using bycatch rates inside of 30 fm will likely be relevant to 100 fm.

Further, the final preferred shoreward non-trawl RCA is proposed to be implemented as follows: Closed in WA

- 30 fm in northern Oregon and 20 fm in the remaining areas in Oregon (largely state waters)
- 20 fm in northern California (largely state waters)
- 30 fm in central California (largely state waters)
- 60 fm south of 34°27' N. latitude.

The trawl sector received no allocation of nearshore species and as such will be unlikely to operate shallower than 30 fm. Further, state regulations require nearshore permits to land targeted amounts of nearshore species. In Oregon, additional gear restrictions may restrict fixed gear operations in this area. For example, pot fishing in Oregon within the 3-mile limit is currently restricted to one state nearshore permit and can be only be changed through a State-legislative vote. In reviewing the proposed non-trawl shoreward RCA structure, it appears that the most viable opportunity for shoreward activity is south of 34°27' N. latitude.

Relative to the seaward side of the RCA, the gear switching provision will be much less risky for encountering overfished species and may be most beneficial for those operating under trawl rationalization. Allowing gear switching seaward of 100 fm, the non-trawl RCA structure under the preliminary preferred decision, may allow access to valuable species such as sablefish and shortspine thornyheads.

Potential for a Mid-water Opportunity in 2011-2012

There is an opportunity under the trawl rationalized program to allow targeting of species such as yellowtail rockfish within the RCA using midwater trawl gear during the primary whiting season. Under current trawl rationalization regulations, this opportunity may be permissible regardless of amount of whiting onboard. A cursory analysis of data reveals that the risk of a mid-water opportunity appears lower than for bottom trawl gear for some species (e.g., yelloweye); it may be equally as risky for species as canary; and appears to have a higher risk for species like widow rockfish. The GMT believes that the under a rationalized trawl fishery structure, individual accountability, and the preliminary preferred ACLs for canary and widow rockfish and subsequent trawl allocation, this opportunity could be afforded in 2011-2012.

Amendment 20: Carry-over Provision

Under the Council's final preferred alternative for Amendment 20, unused QP up to 10 percent of the used and unused QP in the vessel account may be carried over for use in the next year. Similarly, in order to cover an overage (landings that exceed the amount of QP held in a vessel account) QP that may be allocated in the next year may be transferred to the current year, up to 10

percent of the used and unused QP in the vessel account during the current year. In sum, Amendment 20 provides for 10 percent of the quota pounds to be carried over (excess quota pounds) or carried under (deficit quota pounds).

The rationale for the carryover is described in the Amendment 20 FEIS and is based around increased flexibility to fishery participants. Through the SPEX process we must consider how the carry-over provision works in relationship to the 2011-12 ACLs and the trawl allocation. It is essentially a question of management uncertainty, i.e. the risk the provision poses to our ability to stay within catch limits and whether that risk is acceptably low.

To explore this risk, the worst case scenario was analyzed. The largest potential overage from the carry-over alone is of course, 10 percent. Every QP holder would need to carry under their 10 percent for that situation to occur and all QP would need to be harvested. Such a scenario is of concern only for species that are "fully prescribed" in the TIQ fishery and seems like a low risk to us. Moreover, given the carry under is matched with a carry over for the next year, we would not expect the biological impact to be high.

Table B-23 outlines the non-overfished species for which the OY was attained by 80 percent or greater from 2005-2008. Of those species, Dover sole, sablefish, and short spine thornyhead are targets in the trawl fishery. The GMT anticipates that sablefish will be harvested at greater than 80 percent, especially given the lower ACL contemplated in 2011-2012 relative to recent OYs. Petrale sole is likely to be fully prescribed because of its market desirability and restrictive rebuilding ACL. Whiting is another candidate.

As for Dover sole, the preliminary preferred ACL for Dover sole is significantly greater (25,000 mt) than the OYs seen in 2005 and 2006 (7,476 mt and 7,564 mt, respectively). Even if markets expanded it seems unlikely that the trawl allocation would be exceeded or that all or a majority of permit holders would carry forward a deficit. As such, it is not likely that there is a risk of exceeding the Dover sole trawl allocation, let alone the ACL, given the carry over provision.

The GMT anticipates that in addition to sablefish and shortspine thornyheads, all overfished species will be greater than 80 percent prescribed and thus are potential species for which a carryover may be possible.

Table B-23. Species from 2005-2008 where the OY was attained by 80 percent or greater, compared to the 2011-2012 PPA ACL.

Species	Year	Catch/OY	11-12 PPA ACL
Black rockfish s. 46°16	2007	577/722	1,000
Black rockfish s. 46°16	2008	593/722	
Cabezon CA	2005	80/69	179 - 168
Cabezon CA	2006	106/69	
Dover Sole	2005	7,507/7,476	17,560
Dover sole	2006	7,730/7,564	
Nearshore rockfish coastwide	2005	590/737	805 a/
Nearshore rockfish N 40°10	2007	133/142	155
Nearshore rockfish S 40°10	2006	711/615	650
Nearshore rockfish S 40°10	2007	466/564	650
Sablefish	2005	6,543/7,761	5,858 - 5792 a/
Sablefish	2006	6,470/,7634	
Sablefish	2007	5,545/5,934	
Sablefish	2008	6,078/5,934	
Shortspine thornyhead (coastwide)	2005	796/999	1,978-1,957 a/
Shortspine thornyhead (coastwide)	2006	853/1018	1,978-1,957 a/
Shortspine thornyhead n. 34°27	2008	1,313/1,634	1,573 - 1,556

a/The Council's final preferred decision for nearshore rockfish, sablefish, and shortspine thornyhead does not contain the specification of a coastwide ACL. For the purposes of this comparison the ACLs north and south were summed to represent a coastwide ACL.

The GMT considered what would happen if a stock assessment was completed in 2011, an accompanying point of concern was issued, and the ACL was reduced mid-cycle. For example, consider petrale sole actions during 2009/2010, where the stock assessment indicated cause for concern and the OY was reduced mid-year during 2009 and further reduced during 2010 (Table B-24).

Table B-24. Example of petrale sole changes in OY through point of concern.

Year	OY (mt)	Trawl Allocation a/ (mt)	New OY (mt)	Trawl Allocation a/ (mt)	% Change in Allocation
2009	2,433	2,393	2,433	1995	17%
2010	2,393	2,393	1,193	1178	51%

a/ For analytical purposes it was assumed the projected impacts were the defacto trawl allocation.

In the case of a mid-year point of concern declaration, the Council could reduce the amount of potential carry over proportionately to the reduction in the ACL. A similar proportional reduction could apply if the 2013-2014 (next SPEX process) are reduced compared to the 2012 ACL (current SPEX process).

Further, the Council considered that the at-sea whiting set asides (See Chapter 2 Tables 2-37 and 2-38) were set at levels higher than catches seen since 1995 (PFMC 2010). As such, the at-sea whiting set asides may buffer the trawl allocation and reduce the possibility that the trawl allocation or the ACL will be exceeded.

Impact of Petrale Sole Harvest Reductions to Halibut IBQ

The 2011 petrale ACL reductions and arrowtooth ACL decision are tied directly to the initial allocation of individual bycatch quota (IBQ) for Pacific halibut. Halibut IBQ will be calculated using a formula based on quota share (QS) for arrowtooth flounder and petrale sole, two target species that correlate to Pacific halibut bycatch. Therefore, under the new lower petrale ACLs, those permits with relatively less arrowtooth QS will be allocated relatively less halibut IBQ. Conversely, the higher petrale ACL alternatives are more likely to result in the intended distribution of halibut IBQ under the Amendment 20 action.

B.3.2.2 Limited Entry Whiting Trawl Fishery

In the event that Amendment 20: Trawl Rationalization is not implemented on January 1, 2011, the Council requested that the GMT design cumulative limits for the primary shore-based whiting fishery.

Non-whiting Cumulative Limits for the Primary Whiting Season

In 2007, cumulative monthly limits were specified in the shoreside whiting Exempted Fishing Permit (EFP) for lingcod, minor slope rockfish (including darkblotched), minor shelf, shortbelly, widow, and yellowtail rockfish, Pacific Ocean perch, Pacific cod, and sablefish. The 2008 and 2009 EFP structure did not provide landing allowances for species other than whiting. Since those allowances were not made in the EFP, Federal regulations applied and only allowed fishermen to get paid for monthly landing allowances for yellowtail and widow rockfish (species for which there is a midwater gear trip limit specified in Federal regulation). In November 2009, the Council tasked the GMT and the Northwest Region with analyzing mid-water trawl trip limits for the shoreside whiting EFP for 2010. This analysis is included in the 2011-2012 Harvest Specifications and Management Measures EIS so that the limits can be species in Federal regulation, in the event Amendment 20 is not implemented January 1, 2011. Further, these trip limits would then be considered a routine management measure and, should data reflect the need, the limits could be adjusted inseason.

The GMT analyzed the 2007 trip limit structure specified in the EFP and compared it to landings in 2008 and 2009, years when overages were forfeited to the state, to determine whether these limits could be appropriate for the 2010 EFP. From 2007-2009, the whiting fishery operated north of 40º10’ N. latitude and as such the analysis and recommendations are limited to north of 40º10’ N. latitude. Overall, the limits specified in the 2007 EFP appear to be appropriate, although many boats would be expected to exceed the sablefish and slope rockfish limits. The GMT did not recommend increasing these limits to accommodate the higher landings because the whiting season is very short (~4-6 weeks) and there is limited opportunity to decrease limits inseason should it become necessary. These cumulative limits are not expected to change the species composition of the landings or the magnitude of landings; they are only to allow the fishermen to get paid for their incidental catch, instead of forfeiting those landings to the state.

The following limits were recommended for 2010 the shoreside non-treaty whiting fisheries operating north of 40º10' N. latitude and would also be appropriate for the 2011-2012 fishery:

- Lingcod: 600 lb per calendar month
- Minor slope rockfish, including darkblotched rockfish: 1,000 lb per calendar month
- Pacific ocean perch: 600 lb per calendar month
- Pacific cod: 600 lb per calendar month
- Sablefish: 1,000 lb per calendar month

These limits would be in addition to the current midwater trawl limits specified in Federal regulations (i.e., trip limit table 3) for widow rockfish and yellowtail rockfish north of 40º10' N. latitude. Midwater trawl limits south of 40º10' N. latitude remain unaffected by this recommendation.

B.3.2.3 Tribal Fisheries

Bycatch in the Tribal Groundfish Fisheries

Tribal directed groundfish fisheries are subject to full retention requirements. As such, there are no regulatory discards in treaty tribal groundfish fisheries. For some rockfish species, where the tribes do not have formal allocations, trip limits proposed by the tribes are adopted by the Council to accommodate incidental catch in directed fisheries for Pacific halibut, sablefish, Pacific cod, flatfishes, and yellowtail rockfish. These trip limits are generally intended to constrain direct catches of non-overfished rockfishes while allowing for small incidental catches of non-target rockfish (i.e. both overfished and non-overfished). Trip limits of 300 pounds each exist for canary rockfish, minor shelf rockfish, and minor slope rockfish. Yelloweye rockfish are subject to a 100 pound per trip limit. Widow rockfish are constrained to 10 percent of the yellowtail rockfish landed by a given vessel for the year. For all other species, trip limits listed in the 2011-2012 management measures proposal apply.

Trip limit overages are forfeited to the tribes. In 2007 the overages in the bottom trawl fishery were 477 lbs of minor shelf, 378 lbs of widow, 288 lbs of yellowtail, and 162 lbs of lingcod. Longline fisheries in 2007 had 1,209 lbs of sablefish overages. In 2008, the bottom trawl fishery had overages of 11,111 lbs of yellowtail, 448 lbs of shortspine thornyhead, and 410 lbs of lingcod. The midwater trawl fishery in 2008 had overages of 7,876 lbs of widow and the longline fishery had overages of 100 lbs of canary rockfish, 35 lbs of yelloweye, and 1,636 lbs of sablefish. For 2009 the bottom trawl fishery had an overage of 135 lbs of canary, the midwater fishery had overages of 1,783 lbs of yellowtail, 10,021 lbs of widow, 752 lbs of canary, and 2,201 lbs of minor shelf rockfish. The longline fishery in 2009 had overages of 1,178 lbs of sablefish, 1,540 lbs of lingcod, and 58 lbs of minor slope rockfish. Rockfish trip limits do not apply in the tribal Pacific whiting fishery (where all rockfish are retained and forfeited to the tribe for charitable contribution). Groundfish bycatch in the Pacific whiting fishery is estimated by NMFS observers.

Estimated groundfish bycatch in Makah trawl and troll fisheries in recent years is depicted in Table B-25 along with catch of some select target species. For example yellowtail is the primary target in the midwater trawl fishery and lingcod and shortspine thornyhead are increasingly important targets for some bottom trawlers. Among the overfished species, the table shows some bycatch of widow rockfish and canary rockfish in midwater and bottom trawl as well as salmon

troll fisheries. Estimated bycatch in all tribal longline fisheries in recent years is shown in Table B-26. The table shows some bycatch of lingcod, canary rockfish, and yelloweye rockfish in tribal halibut and sablefish fisheries.

Table B-25. Groundfish bycatch and catch of select species in Makah trawl and troll fisheries 2005-2009.

Midwater Trawl					
	2005	2006	2007	2008	2009
Species	Pounds	Pounds	Pounds	Pounds	Pounds
black	0	0	0	2	0
lingcod	695	2,920	142	2,989	4,220
canary	4,096	1944	6	1,426	2,828
yelloweye	0	0	0	0	0
widow	56,518	20274	1,179	28,695	77,446
yellowtail	1,058,316	245,165	16,019	342,812	946,087
POP	0	0	0	0	0
darkblotched	0	144	0	0	0
sp thornyhead	0	0	388	0	0
Bottom Trawl					
	2005	2006	2007	2008	2009
Species	Pounds	Pounds	Pounds	Pounds	Pounds
black	279	0	0	0	0
lingcod	37,353	35,457	67,382	80,772	25,911
canary	1,699	1,158	1,708	1,271	3,307
yelloweye	0	0	0	7	13
widow	1,425	39	540	270	59
yellowtail	29,950	36,970	31,045	45,906	27,075
POP	7,160	8,228	4,009	1,288	382
darkblotched	0	260	200	21	17
sp thornyhead	13,926	32,995	69,645	58,171	39,714
Salmon Troll					
	2005	2006	2007	2008	2009
Species	Pounds	Pounds	Pounds	Pounds	Pounds
black	322	0	0	0	0
lingcod	20,201	25,294	9,679	9,929	1,405
canary	1,219	387	161	278	53
yelloweye	364	236	211	113	0
widow	0	49	0	0	0
yellowtail	29,598	30,774	7,218	15,796	3,173
POP	0	17	0	0	0
darkblotched	0	0	0	0	0
sp thornyhead	42	0	0	4	0

Table B-26. Groundfish bycatch in tribal longline fisheries for halibut and sablefish from 2000-2009.

Target Species	Associated Bycatch	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
					Quinault						
Halibut		85,252	85,644	104,191	25,023	119,995	105,414	86,554	76,321	76,421	46,385
Sablefish		309,762	288,511	114,269	253,412	302,268	240,696	319,039	179,204	259,652	368,079
	black	N/A	0	0	0	0	0	0	0	0	0
	lingcod	N/A	0	0	225	475	328	609	378	8,609	873
	canary	N/A	0	4	0	100	3	0	0	3	5
	yelloweye	N/A	0	10	0	14	17	18	31	62	74
	yellowtail	N/A	0	4	0	0	40	18	24	81	111
	widow	N/A	0	0	0	0	50	0	0	52	85
	POP	N/A	0	0	0	0	0	18	24	40	43
	darkblotched	N/A	0	0	0	158	0	214	49	292	437
	sp thornyheads	N/A	542	570	197	237	1414	1053	1974	4,203	6,031
					Quileute						
Halibut		42,666	45,034	67,290	28,737	51,965	40,788	38,337	53,782	47,360	27,043
Sablefish		164,016	143,591	92,438	76,352	155,164	72,184	71,437	69,152	47,622	36,631
	black	30	0	0	0	0	0	0	0	0	0
	lingcod	144	1,599	1,074	119	365	500	4,555	5,792	9,926	9,823
	canary	74	25	117	20	588	80	23	56	769	1,007
	yelloweye	2,365	4,224	3,287	520	1326	561	409	380	330	379
	yellowtail	63	19	74	154	2324	144	603	151	215	74
	widow	0	0	0	0	0	0	0	0	0	0
	POP	0	0	0	0	0	0	0	0	0	0
	darkblotched	0	0	0	0	0	0	0	0	0	0
	sp thornyheads	624	482	91	137	286	335	230	257	180	128
					Makah						
Halibut		151,268	270,365	294,618	405,020	330,776	330,776	284,780	257,786	245,144	168,329
Sablefish		490,229	464,723	227,740	493,616	512,907	659,507	534,159	453,392	445,309	486,903
	black	0	0	0	0	2	150	0	0	0	0
	lingcod	3,434	6,138	10,793	16,150	10,379	6,460	16,774	11,898	23,718	41,774
	canary	19,547	2,330	597	999	384	365	412	37	150	131
	yelloweye	523	2,075	1,819	0	283	854	403	281	85	182
	yellowtail	0	382	235	690	384	243	0	98	3,420	117
	widow	3	19	0	0	0	239	22	20	0	0
	POP	0	0	0	0	0	0	0	0	0	0
	darkblotched	0	0	0	0	0	0	0	0	0	0
	sp thornyheads	7,662	10,081	9,229	11,531	8,778	6,907	12,157	13,212	21,418	27,748

Discard and Retention in Tribal Sablefish Fisheries

The tribal sablefish allocation is 10 percent of the OY for the area north of 36° N. latitude. This amount is reduced by about 1.5 percent to account for discard mortality. The tribal sablefish fishery is primarily a longline fishery. The discard mortality rate is estimated as the difference in the ratio of small (<3 pounds) versus large (>3 pounds) fish found in the landings of the competitive portion of the fishery (approximately 1/3 of the tribal allocation) compared to the noncompetitive tribal longline fisheries (approximately 2/3 of the tribal allocation) averaged over the past nine years (Table B-27). This difference is then applied to the noncompetitive fishery allocation share (2/3) to get the rate of discards, and multiplied by 20 percent to get the estimated sablefish mortality rate due to discards[6]. This calculation does not account for the increase in larger fish closer to shore as the season progresses, and so may overestimate actual discard and mortality. A small portion of the tribal sablefish allocation is also taken in the Makah bottom trawl fishery as an allowance to prevent discarding in the directed flatfish and Pacific cod fisheries. That portion of the tribal sablefish fishery that is taken by bottom trawl – 25,689 pounds in 2008 and 3,293 pounds in 2009 (dressed weight) – is subject to full retention requirements. At the end of the season, most trawl vessels make one or two directed sablefish tows to take the remainder of their allowance. All overages are forfeited to the tribe. The lack of discard in the tribal trawl fishery does not significantly affect the overall rate of 1.5 percent applied to tribal sablefish fisheries.

[6] Northwest Fisheries Science Center estimate of mortality as a share of total sablefish discards is 20%.

Table B-27. Calculation of sablefish discard mortality in tribal longline fisheries.

				Pounds of Sablefish by Market Size Category						
Year	Fishery	<2lb	2-3lb	3-4lb	4-5lb	5-7lb	>7lb	Total	%>3lb	difference
2001	Competitive	22,673	67,786	79,515	57,836	36,608	7,829	272,247	66.77%	-
	Noncompetitive	18,616	92,475	111,587	106,734	115,006	34,788	479,206	76.82%	10.04%
2002	Competitive	28,005	56,255	52,910	37,824	26,307	3,710	205,011	58.90%	
	Noncompetitive	16,078	52,816	60,262	47,543	56,071	18,206	250,976	72.55%	13.65%
2003	Competitive	51,952	140,467	49,847	25,420	25,918	7,857	301,461	36.17%	
	Noncompetitive	36,452	103,777	81,568	56,473	70,502	33,588	382,360	63.33%	27.15%
2004	Competitive	42,556	156,187	107,438	33,185	16,602	5,801	361,769	45.06%	
	Noncompetitive	38,757	175,244	145,979	76,893	62,886	23,264	523,023	59.08%	14.02%
2005	Competitive	11,315	81,743	109,237	64,471	24,878	4,226	295,870	68.55%	
	Noncompetitive	18,148	126,973	191,364	134,564	93,428	24,963	589,440	75.38%	6.83%
2006	Competitive	16,890	69,262	98,647	67,620	34,159	7,517	294,095	70.71%	
	Noncompetitive	25,507	120,739	148,894	111,003	98,244	37,798	542,185	73.03%	2.32%
2007	Competitive	13,238	52,597	71,856	57,866	39,221	7,419	242,196	72.82%	
	Noncompetitive	11,430	62,023	96,250	94,340	104,367	27,816	396,224	81.46%	8.64%
2008	Competitive	12,530	68,914	91,742	62,372	48,202	11,220	294980	72.39%	
	Noncompetitive	9,749	68,912	99,861	84,610	94,341	29,367	386,840	79.67%	7.28%
2009	Competitive	15,268	82,037	89,593	53,410	44,532	11,093	295,933	67.12%	
	Noncompetitive	17,312	115,090	159,388	113,325	115,536	45,911	566,562	76.63%	9.51%
Calculations										
	YEAR	DISCARD RATE[a/]	MORTALITY RATE[b/]							
	2001	0.067298	0.013460							
	2002	0.091454	0.018291							
	2003	0.181933	0.036387							
	2004	0.093937	0.018787							
	2005	0.045776	0.009155							
	2006	0.015547	0.003109							
	2007	0.057915	0.011583							
	2008	0.048748	0.00975							
	2009	0.063726	0.012745							
	AVG	0.074037	0.014807							

a/ Difference between "%>3lb" in noncompetitive fishery and competitive fishery x .67 (allocation to noncompetitive fishery).

b/ Discard rate x 20% (Northwest Fisheries Science Center estimate of mortality as a share of total sablefish discards).

Makah Trawl Observations

Makah trawl fisheries pursue two basic strategies – bottom trawl and midwater trawl. In an agreement with the National Marine Fisheries Service and the Pacific Fishery Management Council, the Tribe has had an observer program in place since 2003 to monitor maximum retention. Maximum retention is defined as retention of all marketable species and all overfished species. The program has a target observation rate of approximately 15 percent of all trawl trips in a given year, though in. Management is focused on avoidance of two overfished species: canary rockfish in both strategies and widow rockfish in midwater trawls. Makah Fisheries Management combines their maximum retention policy with an observer program to verify the accuracy of bycatch accounting (i.e. if observed bycatch rates are not significantly different than unobserved bycatch rates, managers are reasonably certain that landings reflect total mortality for

overfished species). The following analyses are for the two most recent years of data. Prior years' analyses can be found in the 2009-2010 Specifications and Management Measures EIS.

Comparisons of bycatch rates in observed versus unobserved landings by year (2008-2009) were conducted for bottom trawl to test for differences in retention of canary rockfish. Separate analyses (*t* tests) were performed for vessels that carried an observer (Table B-28) and all vessels combined (i.e., including those vessels that had no observer coverage during the year) in 2009 (Table B-29). In 2008, all vessels carried an observer on at least one trip, so there is only one comparison. Bycatch rates were also compared for two separate target strategies in bottom trawl (shelf and slope) to examine whether bycatch was more prevalent in one strategy than the other. Two-tailed *t* tests found no significant difference between observed and unobserved trips for vessels that carried an observer during the season in any year. Likewise, no significant difference was measured between all observed and unobserved trips for any given year. Bycatch was not predominantly associated with either target strategy for bottom trawl when compared between the two years.

Midwater trawl fisheries were similarly analyzed for differences in retention of both canary and widow rockfish, as either may be constraining. Two-tailed paired *t* tests were conducted for 2009 only, as 2008 had limited participation and did not allow for confidential results. No significant differences were found between observed versus unobserved landings for either canary or widow rockfish in 2009 (Table B-30).

Table B-28. Yearly comparisons of canary rockfish bycatch rates (measured as pounds of canary rockfish divided by pounds of target category) for bottom trawl vessels that carried an observer at least once during a season.

Year	Target Species	Mean Bycatch Rates		d.f.	*t*	*p*
		Observed	Unobserved			
2008	Shelf	0.051760	0.010251	3	-0.91288	0.428615
	Slope	0.003362	0.001297	3	-1.45296	0.242185
	All Targets	0.002820	0.000960	3	-1.37944	0.261602
2009	Shelf	0.00680	0.00690	2	0.03435	0.975721
	Slope	0.08886	0.01692	2	-0.84492	0.487116
	All Targets	0.00567	0.00466	2	-0.36419	0.750612

Table B-29. Comparisons of canary rockfish bycatch rates (measured as pounds of canary rockfish divided by pounds of target category) for all observed and unobserved bottom trawl vessels in 2009.

Year	Target Species	Mean Bycatch Rates		d.f.	*t*	*p*
		Observed	Unobserved			
2009	Shelf	0.006800	0.006328	6	-0.12391	0.905433
	Slope	0.088861	0.011385	2	-0.91222	0.457945
	All Targets	0.005670	0.003589	2	-0.49315	0.670732

Table B-30. Comparisons of canary and widow rockfish bycatch rates (measured as pounds of bycatch divided by pounds of yellowtail) for midwater trawl vessels in 2009.

Year	Species	Mean Bycatch Rates		d.f.	*t*	*p*
		Observed	Unobserved			
2009	Canary	0.003243	0.002035	2	-0.60883	0.604578
	Widow	0.099908	0.077761	2	-1.20243	0.352243

B.3.2.4 Washington Recreational

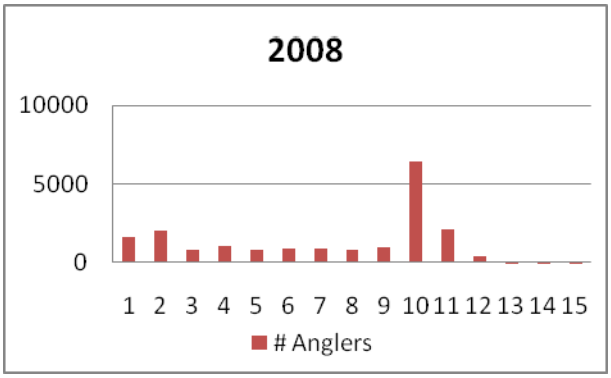
Recreational Groundfish Fishery Bag Limit Reduction and Cabezon Sub Limit Analysis

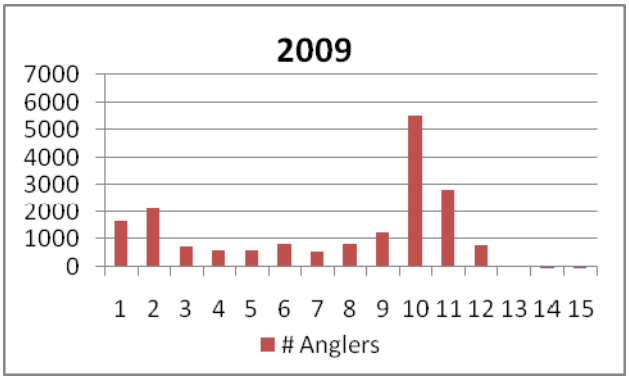
Washington would implement a reduced aggregate groundfish bag limit from 15 to 12 under all alternatives except the No Action Alternative. The most recent two seasons were analyzed to show the impacts of these changes. The analysis indicates that 99.9 percent of the anglers do not retain more than 12 groundfish and this change would impact less than 1 percent of the anglers (Table B-31).

Cabezon are subject to the aggregate gruondfish limit, but currently do not have a separate sublimit in coastal waters; however, there is a sublimit of two cabezon inside Puget Sound (i.e., east of the Bonilla-Tatoosh line and in Marine Catch Areas 5-13). As the status of cabezon off Washington is unknown and catches have recently increased on the coast WDFW would place a sublimit of two cabezon per angler per day under all alternatives except the No Action Alternative. This would promote consistency between the coast and Puget Sound. A summary of the analysis can be found in Table B-32.

Table B-31. Washington recreational groundfish bag limit analysis for Marine Areas 1-4.

Number of Bottomfish per Angler





% Unexpanded Catch

Rockfish	Lingcod	Cabezon	Other
91.25%	8.02%	0.55%	0.18%

% Unexpanded Catch

Rockfish	Lingcod	Cabezon	Other
89.61%	8.50%	0.88%	1.01%

Expanded Catches

Total Bottomfish: 195,517

Expanded Catches

Total Bottomfish: 216,700

Bottomfish Reduction (# of Fish)

14 Bag	13 Bag	12 Bag
0	30	107

Bottomfish Reduction (# of Fish)

14 Bag	13 Bag	12 Bag
6	32	150

% Bottomfish Reduction

14 Bag	13 Bag	12 Bag
0.00%	0.02%	0.05%

% Bottomfish Reduction

14 Bag	13 Bag	12 Bag
0.00%	0.01%	0.07%

Anglers Affected

Total Anglers: 94,443

	14 Bag	13 Bag	12 Bag
% Anglers	0.01%	0.03%	0.11%
# Anglers	6	29	99

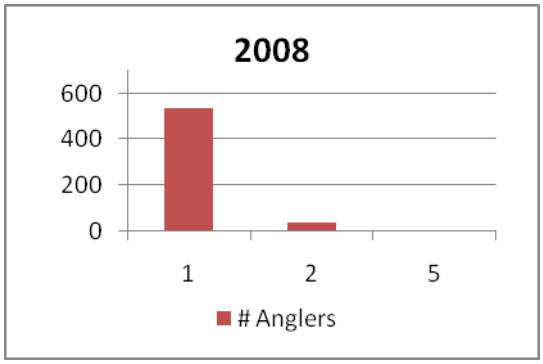
Anglers Affected

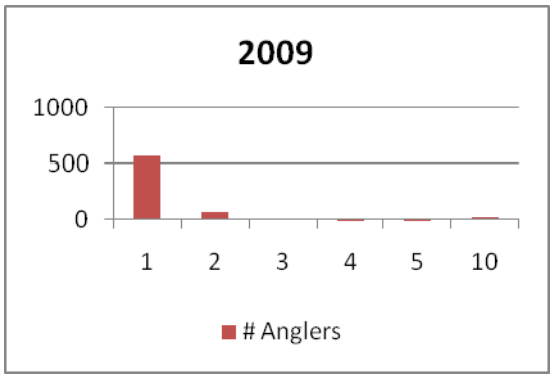
Total Anglers: 163,679

	14 Bag	13 Bag	12 Bag
% Anglers	0.01%	0.02%	0.11%
# Anglers	8	38	185

Table B-32. Washington recreational cabezon sublimit analysis for Marine Areas 1-4.

Number of Cabezon per Angler





Expanded Catches

Total Cabezon: 1,319

Cabezon Reduction (# of Fish)

2 Bag	1 Bag
13	61

% Cabezon Reduction

2 Bag	1 Bag
1.02%	4.59%

Expanded Catches

Total Cabezon: 2,401

Cabezon Reduction (# of Fish)

2 Bag	1 Bag
412	627

% Cabezon Reduction

2 Bag	1 Bag
17.15%	26.10%

Anglers Affected

Total Anglers: 94,443

	2 Bag	1 Bag
% Anglers	0.00%	0.07%
# Anglers	5	62

Anglers Affected

Total Anglers: 163,679

	2 Bag	1 Bag
% Anglers	0.06%	0.16%
# Anglers	99	264

B.3.2.5 Oregon Recreational

Groundfish Retention in the Pacific Halibut Fisheries

New management measure for Oregon included retention of groundfish in the Pacific halibut fisheries. This management measures was not included in the Final Preferred Alternative. The analysis can be found under Section B.4.4.1.

Recreational Groundfish Fishery Cabezon Sub Limit Analysis

Cabezon are subject to the aggregate marine fish bag limit. The status of cabezon off Oregon was assessed for the first time in 2009 and showed that the statewide (recreational and commercial) ACL should be similar to the level currently managed under state recreational and commercial landing caps. However, the state recreational landing cap does not take into account discard mortality or catch from beach and bank fisheries. Even without the additional impacts, the ocean boat fishery has been closed in recent years in August or September due to attainment of the state landing cap. The seasonal depth restriction used to reduce impacts to overfished species, does not have the same affect on cabezon in Oregon. Therefore to reduce recreational ocean boat impacts on cabezon to keep all recreational impacts below the recreational portion of the statewide ACL and attempt to allow for, limited, retention year round, a seasonal sub-bag limit was analyzed by adding a cabezon specific sub-bag limit factor to the Oregon recreational groundfish model (Figure B-16). This sub-bag limit factor did not change impacts to any other overfished or non-overfished species.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ocean Boat Cabezon Impacts (mt)
1	7												20.0
2	3												19.7
3	2												19.3
4	1												3.8
5	7						1		7				15.0
6	7					1			7				12.0
7	7				1				7				8.8
8	7			1						7			6.1

Figure B-16. Seasonal bag/sub-bag limits for cabezon from the Oregon recreational ocean boat fishery and the projected impacts.

In most areas of Oregon and for most anglers, cabezon is not a targeted species. Since it is a bycatch species, the sub-bag limit had to be reduced to one fish for at least part of the year, to observe decreased impacts. During public meetings with ODFW, anglers requested the seasonal sub-bag limit coincide with the seasonal depth closure, for ease and consistency of regulations.

B.3.2.6 California Recreational

Combine the Monterey South-Central and Morro Bay South Central Management Areas

CDFG proposes to eliminate the division between the Monterey South-Central (from Pigeon Point to Point Lopez) and the Morro Bay South-Central (Point Lopez to Point Conception) Management Areas to form a single Central Management Area. The original justification for this management line was to allow for finer-scale management in Central California where the main species of concern is canary rockfish. The set harvest limit for canary rockfish has greatly increased since 2008, eliminating the need for the division between these areas. Furthermore, CDFG has not had to enact differing regulations in these two areas since 2006 when the line was put in place.

Add a Management Line at Cape Vizcaino

CDFG proposes to add a management line at Cape Vizcaino (39º 44' N. latitude) in the North-Central North of Point Arena Management Area. Currently, there are no management lines identified in the North-Central North of Point Arena Management Area between Fort Bragg and Shelter Cove. The additional management line allows for finer-scale inseason management for an area which accrues the vast majority of statewide yelloweye rockfish catch. If the yelloweye rockfish catch is projected to exceed the harvest guideline, the North-Central North of Point Arena Management Area may be divided at Cape Vizcaino in order to close groundfish fishing in the northern portion (Shelter Cove) and keep the southern portion (Fort Bragg) open to fishing.

Revise the Naming Convention

To simplify the names used to describe the recreational Management Areas, the longer less intuitive status quo names were replaced with single one word names that relate to the geographic location of the area. The names of the status quo management areas and the new equivalents are provided in Table B-33. Other than the elimination of division between the South-Central Management Areas at Point Lopez, the geographic points delineating each area have not changed. The geographic locations delineating the management areas are also provided.

Table B-33. New California Recreational Management Area Names for 2011-2012, points and latitudes delineating the new areas and the status quo management area name equivalent.

2011-2012 Management Area Name	Northern Border (Latitude)	Southern Border (Latitude)	Status Quo Management Area Name
Northern	CA/OR Border (42º N. lat.)	Near Cape Mendocino (40º 10' N. lat.)	Northern
Mendocino	Near Cape Mendocino (40º 10' N. lat.)	Point Arena (38º 57.5' N. lat.)	North-Central North of Point Arena
San Francisco	Point Arena (38º 57.5' N. lat.)	Pigeon Point (37º 11' N. lat.)	North-Central South of Point Arena
Central	Pigeon Point (37º 11' N. lat.)	Point Conception (34º 27' N. lat.)	Monterey South-Central
			Morro Bay South-Central
Southern	Point Conception (34º 27' N. lat.)	CA/Mexico Border	Southern

Eliminate the 10 fm Depth Closure around the Farallon Islands and Noonday Rock

CDFG proposes the elimination of the 10 fm depth closure around the Farallon Islands and Noonday Rock in the North-Central South of Point Arena Management Area. At present, take or possession of groundfish is prohibited in waters of 10 fm or less around the Farallon Islands and Noonday Rock. This management measure was initially put in place to reduce impacts on shallow nearshore rockfish species such as China, kelp, grass, black and yellow and gopher rockfishes. Marine Protected Areas (MPAs), effective May 1, 2010, prohibit fishing around the Islands. MPAs are depicted by light shading in Figure B-17. The MPAs are closed to fishing and encompass many of the areas within the 10 fm depth closure (as represented by the black hatched areas within the shaded MPAs in Figure B-17). Thus, the 10 fm fishery closure is redundant and results in unnecessary regulatory complexity. The remaining open areas not affected by MPAs which are 10 fm or less in depth around the Islands are represented by the black hatch areas outside of the shaded MPA areas in Figure B-17. These small areas (around Middle Farallon) will remain open to groundfish fishing under the proposed action, although minimal effort is expected to occur there.

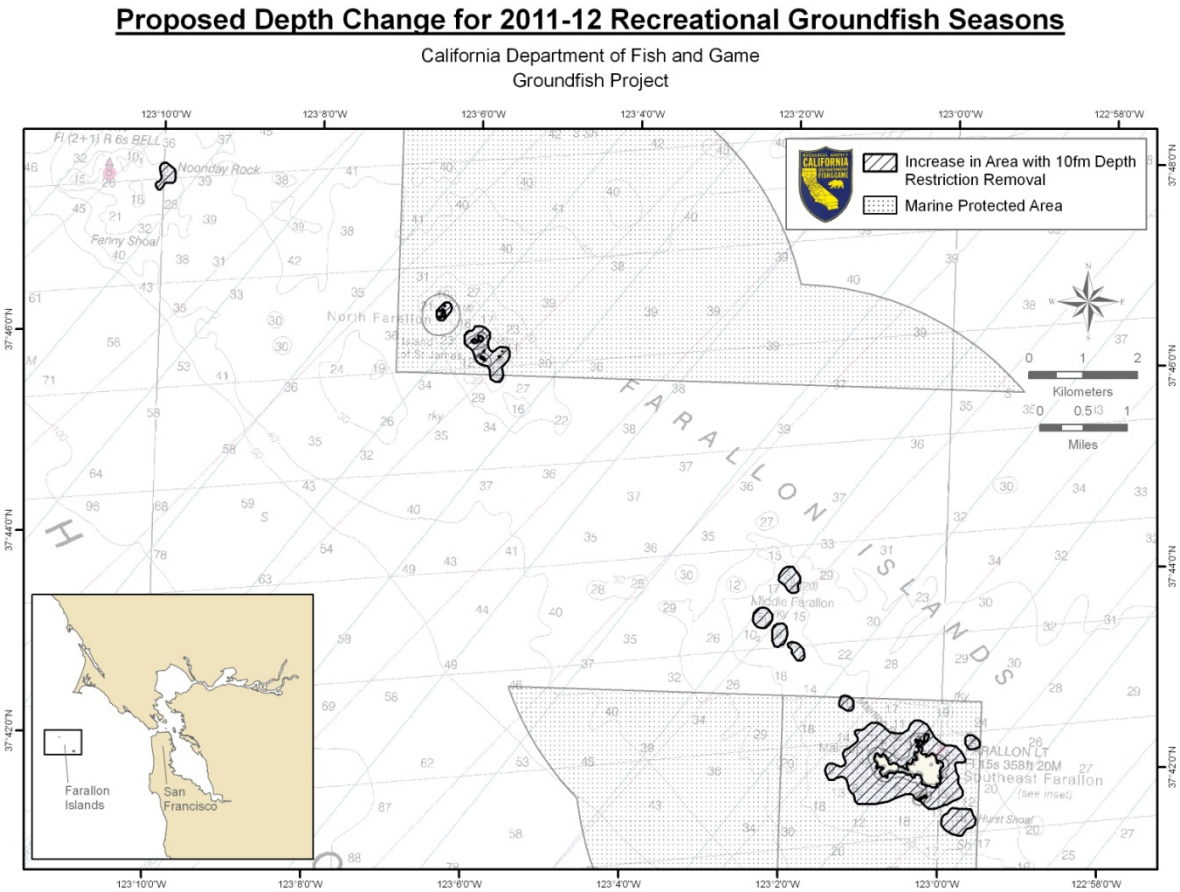


Figure B-17. **Areas within the current 10 fm depth restriction around the Farallon Islands and Noonday Rock and the location of Marine Protected Areas remaining closed to fishing for groundfish.**

Fishing Effort in the Proposed Open Areas

The Farallon Islands and Noonday Rock are located approximately 30 miles west of the of the San Francisco Bay entrance, limiting the number of private and rental boat anglers willing to travel the distance to fish. The party and charter boats that target groundfish in this area tend to fish in deeper water in pursuit of schooling species and lingcod, rather than the shallow nearshore. The long distance from shore in combination with poor weather and rough conditions limit the number of days that private and rental boats or party and charter boats anglers fish at the Islands during the open months of the season.

Shallow Nearshore Rockfish Catch

A vast majority of the shallow nearshore rockfish habitat is closed to fishing around the Farallon Islands through the MPAs. Even with the remaining areas open to fishing, the majority of fishing effort is anticipated to be focused on deeper depths (10 to 30 fm). Therefore, this proposed action is not expected to greatly increase the statewide catch minor nearshore rockfish south complex. Areas open to fishing would only represent less than one square mile of habitat, primarily distributed around the Middle Farallon and Noonday Rock (Table B-34). Though this is a small increase in the area open to fishing, elimination of the 10 fm depth closure will reduce regulatory complexity without greatly impacting minor nearshore rockfish.

Table B-34. **Area gained from elimination of 10 fm depth closure around the Farallon Islands and Noonday Rock.**

Location Opened to Fishing	Area Increase (sq. miles)
Farallon Islands - Noonday Rock	0.11
Farallon Islands – North*	0.02
Farallon Islands - Middle	0.40
Farallon Islands - Southeast*	0.00

* Little to no increase in area due to MPAs

California scorpionfish depth restriction

CDFG proposes to change the 40 fm California scorpionfish depth restriction to 60 fm year-round including January and February in which fishing is currently only open to 40 fm in the Southern Groundfish Management Area (Point Conception to the U.S.-Mexico border). This action will make the scorpionfish depth restriction consistent with the general groundfish depth restriction during the remainder of the year. The scorpionfish depth restriction will be set at 60 fm year-round, simplifying recreational regulations. The 2009 California scorpionfish take was only 62 percent of the recreational portion. The proposed action will provide additional fishing opportunity south of Point Conception and is not anticipated to result in an appreciable increase in take of overfished species.

Scorpionfish Impacts Relative to the Recreational Portion

The RecFISH model was used to project 2011–2012 annual scorpionfish and overfished species (e.g. bocaccio, canary, cowcod, yelloweye rockfishes) take with the modified depth restriction. The RecFISH model uses 2005–2009 data to project for 2011–2012. The projected increased impacts for the aforementioned overfished species were compared to the 2011 and 2012 recreational portion to evaluate whether those harvest guidelines would be exceeded as a result of this action. The RecFISH model projects that if scorpionfish is opened to 60 fm in the Southern Management Area in January and February, annual statewide scorpionfish take will increase only

1.3 mt from 75.7 mt to 77.0 mt in both years. The projected impacts under each ACL alternative with a 40 fm depth restriction and 60 fm depth restriction on California scorpionfish in January and February in the Southern Management Measure and the corresponding percentage of the 2012 recreational portion under the Council adopted ACL assuming the current catch sharing are in Table B-35. The projected scorpionfish take including this small increase is below the 2011 and 2012 recreational portion of 89 and 83 mt respectively. The RecFISH model projects this action will result in a negligible increase in the annual take of bocaccio, canary, cowcod, and yelloweye rockfishes (less than 0.01 mt).

Table B-35. Projected California scorpionfish impacts in mt under each of the ACL alternatives with a 40 fm and 60 fm depth restriction in January and February in the Southern Management Area.

ACL Alternative	Scorpionfish Impacts with 40 fm Open in Jan and Feb (SQ) (mt)	Scorpionfish Impacts with 60 fm Open in Jan and Feb (mt)	Percent 2012 Recreational Portion
PPA	61.4	63.8	76%
Intermediate	61.4	63.8	76%
Low	16.6	19.0	23%

Overfished Species Bycatch

To determine if an appreciable amount of overfished species are affiliated with scorpionfish from 40 fm to 60 fm, the RecFIN boat sample data were queried for 1999–2000 (before many of the recreational regulations were put in place) between 0-60 fm for trips where scorpionfish was targeted. The purpose was to identify whether the take of overfished species was associated with scorpionfish between 40 and 60 fm before the 40 fm depth restriction was in place. The boat sample data includes party and charter boats onboard data and party and charter boats dockside data and both show that few rockfishes were caught when boat anglers target scorpionfish. The top four ranked species affiliated with scorpionfish were: Pacific mackerel, flatfish order, barracuda, and Pacific sanddab (Figure B-18). No overfished species were recorded in the party and charter boats onboard sample data during 1999–2000. For the same years, the private and rental boats sample data show the top ranked affiliated species were: flatfish order, barred sandbass, California halibut and spotted sandbass (Figure B-19). No overfished species were recorded in the private and rental boats dockside sample data during 1999–2000.

To identify the species affiliated with scorpionfish in more recent years, the RecFIN California Recreational Fisheries Survey (CRFS) sample database was used for 2004–2009. All species that were caught in association with scorpionfish (targeted or caught) during the months of January and February south of Point Conception were queried and the data were stratified by party and charter boats and private and rental boats modes. Figure B-20 and Figure B-21 show the top six species caught in association with scorpionfish in January and February of 2004–2009 by mode; the results are similar to the boat sample data in Figure B-18 and Figure B-19**.** Few overfished fish were caught while anglers targeted or caught scorpionfish (Table 3-2). Some bocaccio were encountered while anglers fished for scorpionfish, but no yelloweye were caught, and only two canary rockfish and two cowcod were caught during the entire six-year span.

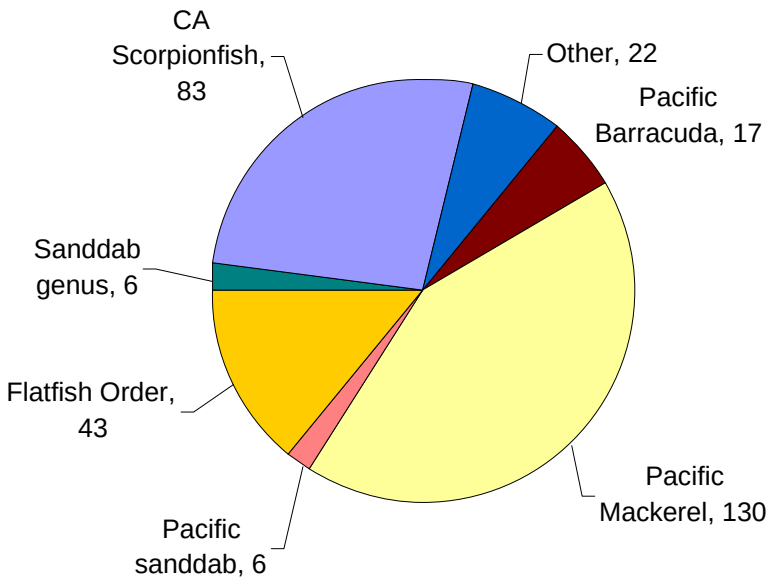


Figure B-18. Total fish caught onboard party/charter boats targeting California scorpionfish, 1999–2000, January and February, south of Point Conception. Data source: RecFIN boat sample data.

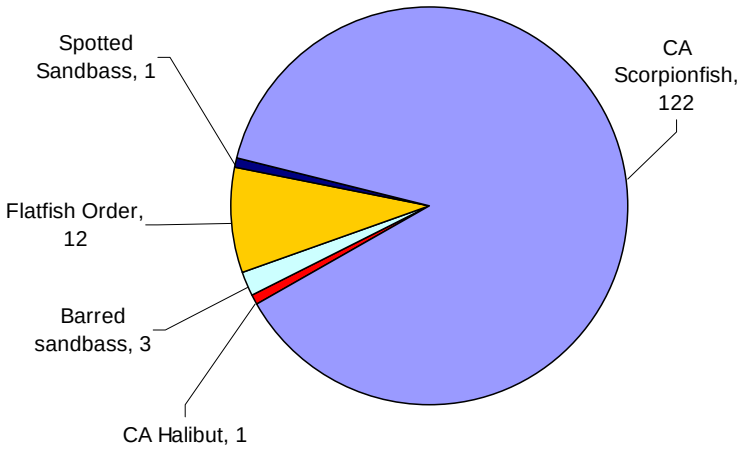


Figure B-19. Total fish caught onboard private/rental boats targeting California Scorpionfish, 1999–2000, January and February, south of Point Conception. Data source: RecFIN boat sample data.

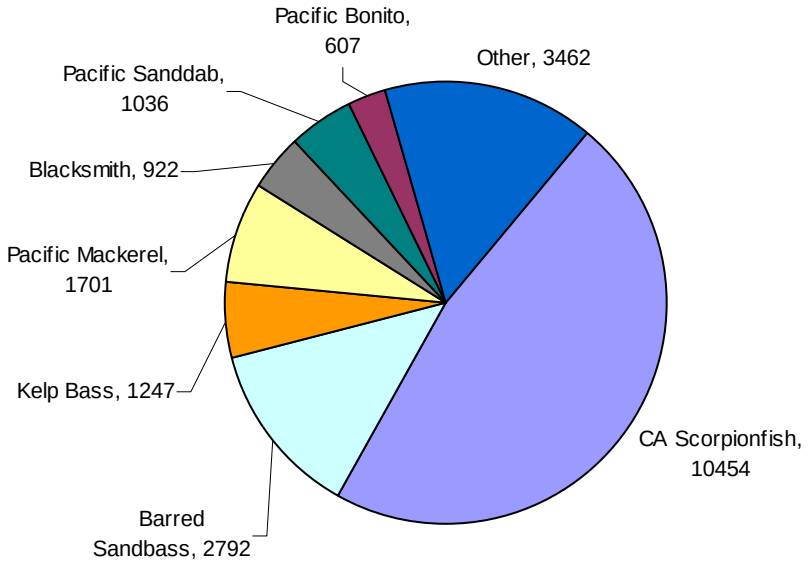


Figure B-20. Total fish caught on party/charter boats in association with California scorpionfish, 2004–2009, January and February, south of Point Conception. Data source: CRFS sample data.

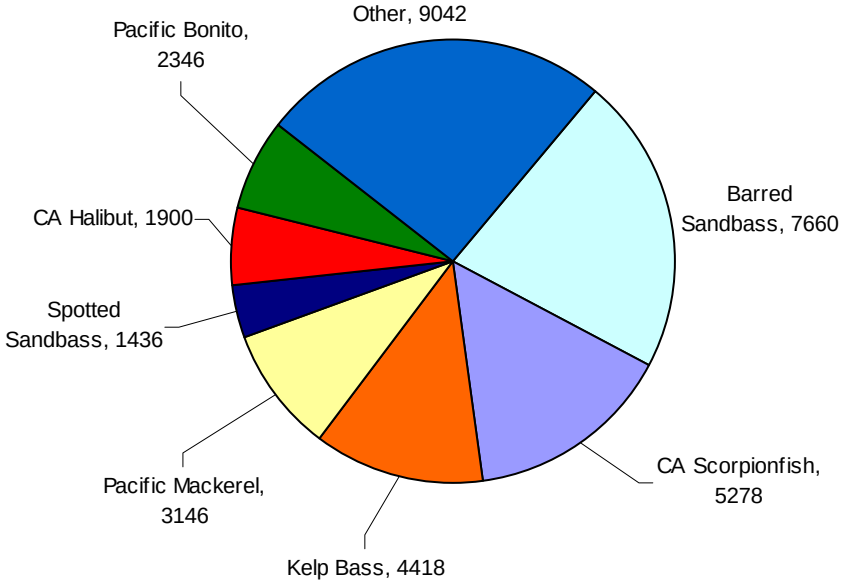


Figure B-21. Total fish caught on private/rental boats in association with California scorpionfish, 2004–2009, January and February, south of Point Conception. Data source: CRFS sample data.

Table B-36. Numbers of overfished species caught in association with California scorpionfish from boat modes in the Southern Management Area, January and February, 2004–2009. PC = party/charter boats, PR = private/rental boats. Data source: CRFS sample data.

	Numbers of Fish Sampled - PC				
Year	CA Scorpionfish	Bocaccio	Canary	Cowcod	Yelloweye
2004	5469	72	0	0	0
2005	282	0	0	0	0
2006	455	0	0	0	0
2007	1159	0	0	0	0
2008	2230	0	0	0	0
2009	859	0	0	0	0
	Numbers of Fish Sampled - PR				
Year	CA Scorpionfish	Bocaccio	Canary	Cowcod	Yelloweye
2004	3962	56	2	2	0
2005	174	5	0	0	0
2006	397	0	0	0	0
2007	255	0	0	0	0
2008	138	0	0	0	0
2009	352	8	0	0	0

Cabezon and Kelp Greenling Gear Restrictions

CDFG proposes to establish cabezon and greenlings gear restrictions such that no more than one rod with two hooks and one line may be used. This proposed action will eliminate the loophole in existing regulations and make gear restrictions consistent among cabezon, greenlings, rockfish and lingcod. This proposed action will eliminate the discrepancy in allowable methods of take among species which are commonly caught and managed together as the rockfish, cabezon, and greenling complex. This proposed action will prevent the excessive recreational fishing effort of multiple rods to target cabezon and kelp and rock greenling.

Cabezon Bag Limit

CDFG proposes to increase the statewide bag limit for cabezon. The proposed action will increase the cabezon bag limit from two to three fish statewide within the ten fish rockfish, cabezon, and greenling complex bag limit. Additional cabezon impacts can be accommodated within the higher ACL. California has management authority over cabezon and allocation of the statewide total allowable catch (TAC) between recreational and commercial sectors is defined in state regulations.

Increase in Catch Expected from Increasing the Cabezon Bag Limit from Two to Three fish

CDFG used the RecFIN methodology for Hypothetical Bag Limit Analyses to determine increased impacts on cabezon resulting from this change. The A+B1+B2 fish from 2004 to 2009 were used in estimating the increased impact based on all fish encountered. The A fish are sampled dead fish. CDFG assumes for cabezon that B1 includes fillets and there were no fish thrown back dead as cabezon have a high survival rate when released. B2 includes live fish over the bag limit or under the size limit of 15 inches.

Since there is no way to estimate the proportion of fish that were undersized, this analysis also assumes there were no fish thrown back as sub-legal and assumes that all B2 fish would be available if the bag limit were increased as the most conservative estimate. All bags over the existing limit are then set to the hypothetical limit to calculate increased take. Results show a consistent increase in expected catch.

The Hypothetical Bag Limit Analyses indicated that there would be a 10 percent increase in total harvested cabezon. The 10 percent increase results in a total projected impact of 28.9 mt under the preliminary preferred ACL alternative, which is 37 percent of the 2010 recreational allocation of the state total allowable catch of 79 mt. The recreational allocation of cabezon will increase to 122 mt under the preliminary preferred alternative ACL of 179 mt. Given the magnitude of the buffer between recent impacts with a two fish bag limit in place in 2009, an increase in the bag limit from two to three fish is not expected to result in the recreational allocation being exceeded. The projected impacts on cabezon resulting from increasing the two fish cabezon bag limit to three fish per angler can be accommodated within the recreational allocation under the adopted ACL.

Table B-37. Projected increase in impacts in mt from increasing the cabezon bag limit to three cabezon with each overfished ACL option and corresponding resulting percentage 2011 total allowable catch.

ACL Alternative	Present Cabezon Impacts 2 Fish Bag Limit (mt)	Projected Impacts with a Three Fish Limit (mt)	Percent 2011 Recreational Allocation of the TAC
PPA	26.3	28.9	30%
Intermediate	21.6	23.8	25%
Low	18.1	19.9	21%

Reduce the California Recreational Lingcod Size Limit

CDFG proposes to lower the minimum size limit for lingcod statewide from 24 inches to 22 inches. The lingcod size limit will be reduced to achieve an annual catch level closer to the recreational portion of the non-trawl allocation. The lingcod take has been nearly half of the recreational portion of the non-trawl allocation for the years 2004–2009, except 2006 (Table B-38). The previous stock assessment in 2005 shows the southern lingcod stock has rebuilt. The most recent stock assessment (2009) shows increasing abundance and the recreational portion of the non-trawl allocation will increase from 422 mt in 2009 to 1,151 mt in 2011 under the Council adopted ACL. Reducing the size limit will increase annual take, but projections show that the recreational portion of the non-trawl allocation will easily accommodate this change with a substantial residual yield left untaken.

The current lingcod size limit in recreational fisheries in Oregon and Washington is 22 inches, so this action will make recreational regulations consistent coast wide. Historically, the California recreational size limit has varied from no size limit prior to 1981 to 30 inches in 2004. The size limit in California has remained 24 inches since 2005, despite the lingcod catch staying well below the statewide ACL. This proposed action will help improve fishing opportunity and achieve the optimum yield of lingcod.

Table B-38. Recreational lingcod take by year as compared to the recreational portion of the non-trawl allocation.

Year	Recreational Portion of the Non-Trawl Allocation	Recreational Lingcod Catch (mt)	% Utilized
2004	269	130	48%
2005	422	242	57%
2006	422	301	71%
2007	422	174	41%
2008	422	99	23%
2009	422	121*	29%

*Includes RecFIN data through 10/31/09

Increased Impacts

Length frequency distributions of discarded and retained lingcod from 2005 to 2009 in combination with weight-at-length data from CRFS onboard sampling were used to estimate the percent increase in catch (by number of fish and weight). The only available length data for recreational discards are from the onboard sampling of party and charter boats. As a result, lengths from this mode were assumed to be representative of all modes.

In order to normalize the length frequency distributions for retained and discarded catch, the frequencies were converted to proportions of catch by length and multiplied by the respective catch estimates in numbers of fish. The size limit was 24 inches from 2005 to 2009 and normalized length composition data from all five years were combined to provide an aggregate length frequency distribution for this period. From this distribution, the proportional increase in lingcod catch (by number of fish) expected from a given reduction in the size limit was estimated. This was done by calculating the percentage of lingcod that were between the 24 inch size limit and the 22 inch size limit (Eq. 1 below).

Eq. 1. Proportional Increase in the Number of Lingcod for a Given Size Limit = Number of fish larger than new size limit / Number of fish larger than 24 inches.

The length-weight relationship from the 2009 stock assessment (Hamel 2009) was used to calculate the average weights of each length bin. The expected increase by weight was then estimated by multiplying the average weights by the frequency for that bin. The proportion of catch between the new size limit and the 24 inch size limit was then calculated, reflecting the percent increase mt (Eq. 2 below).

Eq. 2. Proportional Increase in the Weight of Lingcod for a Given Size Limit = Number of fish in each length bin larger than new size limit * weight of fish for each frequency bin (sum of Li x Wi for all i > x) / number of fish in each length bin larger than 24 inches * weight for each frequency bin (sum of Li x Wi for all i > 24).

Assumptions:

- Anglers will retain all fish above the size restriction.
- Anglers will discard all fish below the size restriction.

- The percent increase in catch from party and charter boats mode is representative of all recreational fishing modes in CRFS.
- The aggregate length frequency distribution for discarded and retained lingcod from 2005-2009 is representative of the stock structure in 2011 and 2012. In reality, it may vary depending on recent recruitment patterns.

The expected percentage increase in catch resulting from reduction of the size limit to 22, 20, or 18 inches and no size limit by number of fish and weight are shown in Table B-39. The increase in catch by weight is estimated to increase from between 19.4 percent for a 22 inch size limit to 39.3 percent in the absence of a size limit. Even if the lingcod size limit had been eliminated in the years 2005–2009, California would not have exceeded the recreational portion of the non-trawl allocation in any year. The length frequency distribution of discarded lingcod does not indicate unusually large year classes will be recruiting to the recreational fishery in the near future, which would have increased catch substantially as a result of a 22 inch size limit.

Table B-39. **Percent increase in recreational lingcod catch estimated to result from each prospective reduced size limit (2005–2009 RecFIN data).**

Size Limit (in.)	Percent Increase in Fish (#)	Percent Increase in Catch (mt)
22	38.0%	19.4%
20	65.5%	29.8%
18	83.7%	34.9%
None	115.2%	39.3%

Ability to Accommodate Increased Lingcod Impacts

It is possible to eliminate the lingcod size limit altogether, without exceeding the recreational portion of the non-trawl allocation, given the large anticipated increase in the ACL. If the size limit was lowered, the increased lingcod fishing mortality would decrease predation on and competition with the less productive *Sebastes* species. A lower lingcod size limit makes it more likely that an angler will obtain the two fish lingcod limit before attaining the rockfish, cabezon, and greenling complex limit and stop fishing, rather than continuing to discard rockfish in pursuit of lingcod. So, this proposed action will discourage high-grading and will reduce bycatch of rockfish.

Lingcod exhibit sexual dimorphism in depth distribution, with males found in shallower water than females and males displaying nest-guarding behavior. Males mature between 18 and 20 inches, while females mature between 27 and 30 inches. The current depth restrictions preserve a large proportion of the female spawning biomass in deeper waters, while redistributing fishing effort onto nearshore waters, increasing impacts on males. Thus, it may be prudent to maintain an appreciable size limit, like 22 inches, to ensure that male lingcod abundance is sufficient to maintain an adequate population of mature nest guarding males. With reduction to a 22 inch size limit, the fillet length restriction would also be reduced to reflect the change in the length restriction (i.e., 14 inch fillet length restriction under a 22 inch total length restriction).

Modification of Recreational Lingcod Spawning Closure in the Southern Management Area in California

A lingcod spawning closure has been in place in California from December through March since the southern stock was deemed overfished in 2001. This was done to protect nest-guarding males during the spawning period in the interest of rebuilding the southern lingcod stock more quickly. According to the most recent stock assessment, the southern lingcod stock has rebuilt to 70 percent of virgin biomass, well above the 40 percent target biomass set by the Council thus the need to continue the spawning closure is questionable. This will greatly increase the California recreational harvest guideline from 422 mt in 2010 to 1,151 mt in 2011 under the preferred ACL and the current catch sharing between sectors.

The lingcod closure is not the only time closure affecting nearshore fisheries. The recreational rockfish, cabezon, and greenling complex season in the Southern Groundfish Management Area is closed in January and February to boat-based anglers and open March through December. The December through March lingcod closure applies to all recreational anglers (boat-based as well as shore-based and spear divers). The current discrepancy in the rockfish, cabezon, and greenling complex and lingcod seasons can be resolved by allowing lingcod to be retained in March and December to reduce regulatory complexity and allow for additional take while remaining far below the recreational portion of the non-trawl allocation for lingcod.

The annual take in the California recreational fishery has been close to half of the recreational portion of the non-trawl allocation for the California recreational fishery since 2004 (Table B-38) due to constraints from over fished species. Under the Council adopted ACL, recreational portion of the non-trawl allocation for the California recreational fishery will more than double. With limited access to the primary depth distribution of lingcod in deeper waters, few management measures are available to harvest the full non-trawl allocation of lingcod in 2011 and 2012.

CDFG proposes to eliminate the lingcod spawning closure in the California recreational fishery to reduce regulatory complexity by maintaining consistent seasons with the other groundfish species including rockfish and enhance fishing opportunity during the months open to fishing. Lingcod would remain closed when the rockfish, cabezon, and greenling complex is closed to prevent anglers that would target lingcod from accruing regulatory discard mortality on rockfish. For example, in 2011, retention of lingcod would not be allowed in the Southern Management Area in January and February, during the closed season for the rockfish, cabezon, and greenling complex. From 2004–2009, not a single canary or yelloweye rockfish was encountered from the shore by anglers interviewed in the California Recreational Fishery Survey who were targeting lingcod and only about six tenths (0.6) of a metric ton of bocaccio were encountered in the shore mode statewide during those six years. Clearly, shore-based anglers have minimal impact on overfished species.

For the purpose of regulation consistency and brevity, the CDFG proposes to eliminate the lingcod spawning closure statewide for all modes of fishing including boat-based and shore-based fishing as well as spear diving.

<u>Lingcod Take Relative to Increased OYs/ACLs in 2011</u>

In 2011 and 2012 recreational portion of the non-trawl allocation under the Council adopted ACL will increase dramatically from 422 mt (2010) to 1151 mt (2011) and to 1184 mt (2012). The average statewide recreational lingcod take from 2005–2009 was only 197 mt, which is 47

percent of the 422 mt recreational portion of the non-trawl allocation in 2010 and 17 percent of the 2011 recreational portion of the non-trawl allocation (Table B-40). The annual lingcod take in 2009 was only 168 mt, which is only 40 percent of the 422 mt harvest guideline and only 14 percent of the 2011 harvest guideline. The unused yield will increase without changes to current management measures.

Table B-40. Recreational lingcod take by year as compared to the recreational portion of the non-trawl allocation.

Year	Recreational Portion of the Non-Trawl Allocation (mt)	Recreational Lingcod Catch (mt)	% Utilized
2005	422	242	57%
2006	422	301	71%
2007	422	174	41%
2008	422	99	23%
2009	422	168	29%
Average	422	197	44%

The monthly projected take of lingcod from January to March with the status quo 2010 depth restrictions by management area are reported in Table B-41. The RecFISH model projections indicate that opening the lingcod fishery in March and December in the Southern Groundfish Management Area will increase annual statewide catch by only 3.8 mt in 2011. If January through March and December were open to fishing in all management areas, lingcod impacts are only projected to increase by 47.8 mt although under the final preferred ACL (which is the least restrictive) these months would remain closed to fishing in most management areas. The projected impacts for December and March 2011 were 3.1 mt and 0.7 mt, respectively. This additional take is negligible relative to the 983 mt of unharvested lingcod between the 2011 recreational portion of the ACL of 1,151 mt and the estimated impacts in 2009 of 168 mt.

Table B-41. **Projected impacts on lingcod in mt for each month from December to March in each management area if the season was open.**

Management Area	Dec	Jan	Feb	Mar	Total All Months
Northern	0.9	0.7	0.7	4.0	6.3
North Central North of Point Arena	0.9	0.7	0.7	4.0	6.4
North Central South of Point Arena	10.5	2.3	2.3	8.2	23.3
South-Central Management Area	2.2	0.5	0.5	1.7	4.9
Southern Management Area	3.1	1.6	1.6	0.7	6.9
Total All Management Areas	17.6	5.8	5.8	18.6	47.8

Additional lingcod management measures options are also being proposed. An increase in the recreational bag limit to three or four fish per angler or a reduction of the lingcod size limit from 24 inches to 22 inches under consideration by the Council are not expected to appreciably increase impacts relative to the recreational portion of the non-trawl allocation of the preferred 2011 ACL. The constraints posed by the bycatch of canary rockfish and yelloweye rockfish continue to prevent commercial and recreational groundfish fisheries from accessing a higher

lingcod biomass in deeper water. Few additional methods beyond size limits, bag limits and an increased season length are available to increase the fishing opportunity for lingcod. An even larger residual of lingcod will be left unutilized even if size limits are reduced, bag limits are decreased, and fishing is allowed during the spawning season. The projected lingcod impacts under each alternative and accounting for both allowing retention during the spawning season and a 22 inch size limit from the respective analyses are provided in Table B-42as well the corresponding percentage of the recreational portion of the non-trawl allocation for 2011.

Table B-42. **Projected lingcod impacts (mt) under each of the overfished species ACL alternatives and management measures relative to the 2011 recreational portion of the non-trawl allocation under the final preferred alternative.**

ACL Alternative	Present Lingcod Impacts	No Spawning Closure	Size Limit	No Spawning Closure and 22 in. Length Restriction	Percent 2011 Recreational Portion of the Non-Trawl Allocation
PPA	215.1	220.4	256.8	263.2	23%
Intermediate	170.3	175.6	203.4	209.7	18%
Low	164.7	164.7	196.7	196.7	17%

This residual should compensate for the loss of reproductive output resulting from removal of males during the spawning and nest-guarding period. Opening the spawning season is one of the few ways to harvest additional lingcod given the constraints on fishing deeper water posed by the bycatch of overfished species.

Species Retention in the California Recreational CCA

Under the Council's Final Preferred Alternative, shelf rockfish are allowed to be retained while fishing in the CCA. The original analysis, which is provided here, explored the risk of retention for both shelf and slope rockfish.

Under the current regulations, of the more than 90 species within the Pacific Coast Groundfish Management Plan, nearshore rockfish, cabezon, California scorpionfish, greenlings of the genus *Hexagrammos*, and lingcod may be retained within the depths and seasons open to recreational groundfish fishing in the CCA. Currently, all shelf and slope rockfishes encountered within the CCA must be discarded. A percentage of these discarded fish die due to barotrauma and hooking and handling injuries. These fish are wasted as regulatory discards as anglers continue pursuing their 10 fish rockfish, cabezon, and greenling complex bag limit while accruing additional discards. Minimization of regulatory discarding is an expressed preference of stakeholders. "Regulatory discards" represent forgone catch that will then be replaced by another fish to fill the 10 fish rockfish, cabezon, and greenling complex bag limit, increasing chances of encountering overfished species before reaching the bag limit. In conjunction with modifying the list of groundfish species that can be retained, CDFG is also considering an increase in the depth restriction in the CCA which would increase the likelihood of encountering shelf rockfish.

The current recreational depth restriction in the CCA is 20 fm. The CDFG proposes allowing retention of shelf and slope rockfishes within the depths open to recreational groundfish fishing within the CCA. This will make the retention regulations for these species consistent with

regulations in the other groundfish management areas allowing retention both shelf and slope rockfish regardless of the depth restriction, even when a 20 fm depth restriction in place as in the Northern Management Area. Retention of cowcod, canary and bronzespotted rockfish will still be prohibited statewide. While this change results in a limited increase to overall take of shelf and slope rockfish, this change will eliminate wastage due to regulatory discarding. In addition, it will reduce regulatory complexity as differentiating nearshore rockfish from shelf and slope rockfish is difficult for anglers and the regulation change will greatly simplify regulations as a result. This action will also disperse some of the effort from larger boats which would have been targeted in the more frequently fished areas in 60 fm outside the CCA or within the very limited habitat within 20 fm in the CCA.

Risks of Exceeding the ACL for Overfished Species and Target Species under the Proposed Action

Using the National Standard 1 language, the standard for whether a management measure is permissible whether the risk of catch exceeding the ACL is "acceptably low." When considering the risk of exceeding the ACL for species likely to be encountered as a result of revised species retention regulations in the CCA, the concerns are whether the increased effort will substantially increase encounters with cowcod or target stocks and if a sufficient buffer exists between the projected impacts and the ACL to account for uncertainty catch estimates inseason, preventing the ACL from being exceeded.

Potential for increased fishing effort within the CCA as a result of the proposed action.

This improved fishing opportunity may result in increased fishing effort in the open depths of the CCA, but the long distance of the Area 1 of the CCA from any port makes it unlikely that many additional anglers will travel the 40 miles from the closest port to fish Santa Barbara Island, let alone travel the nearly 100 miles to Tanner or Cortes Bank to target bottomfish. Furthermore, the 60 fm depth restriction outside the CCA provides considerable opportunity in deeper water closer to shore. The area within the proposed depth restrictions is expected to receive effort from anglers that are pursuing highly migratory species in the area. These anglers may retain rockfish incidentally taken under the revised retention regulations while pursuing other target species or target rockfish as a secondary fishing opportunity before returning to port. A portion of these fish would be wasted under the current prohibition on retention, due to mortality from hooking and barotrauma related injuries after being released rather than being converted to retained catch as anglers continue to pursue yellowtail and nearshore rockfish in the area.

Shelf and slope rockfish catch and cowcod bycatch and the risk of exceeding the ACLs.

The OY is defined as the amount of fish that will provide the greatest overall benefit to the Nation, but in 2007 and 2008 the total mortality of Minor Shelf and Slope Rockfish South by all sectors was less than 51 percent of the OY for these complexes (Table B-43). This is in part due to the constraints posed by overfished species bycatch in the primary depth distribution of these species. The current Council final preferred ACLs for these complexes in 2011 and 2012 less than the OYs in 2007 and 2008. The large residual expected between the total mortality from all sectors and the preliminary preferred OYs for these complexes in 2011 and 2012 should accommodate any potential increases to species in these complexes.

Bocaccio is also a shelf rockfish that could be retained under the retention regulations so long as anglers abide by the present two fish bag limit. It is also subject to a rebuilding plan and restrictive annual harvest limits. Though bocaccio encounters are anticipated to increase within

the CCA with proposed deeper depth restrictions, the projected recreational bocaccio impact with the Council's adopted regulations for 2011 is 55.4 mt, well below the 130 mt recreational apportionment of the non-trawl allocation. With a 74.6 mt buffer between the apportionment and the projected impacts, even a doubling of impacts would not cause the apportionment to be exceeded. Thus the risk of exceeding the apportionment, let alone the aggregate ACL bocaccio being exceeded as a result of the proposed action is very low.

The depth restriction analysis provided above indicates that few cowcod are expected to be encountered in depths shallower than the proposed depths within the CCA. At the June 2010 Council meeting 0.9 mt of cowcod out of the 4 mt ACL for 2011 was allocated to the non-trawl fishery including the recreational fishery. Since only de minimis take of cowcod has been observed in the non-trawl commercial fisheries, with less than a tenth of a mt estimated to have been taken in the last five years, a residual of nearly 0.7 mt is anticipated to be available to accommodate an unanticipated increase in impacts from the proposed action. In the event that the 0.9 mt non-trawl allocation is exceeded, there is a one mt portion of the ACL that was not allocated. This represents a one mt management uncertainty buffer between the three mt de-facto ACT for cowcod proscribed to sectors of the fishery and the four mt ACL. In the event that catch does accrue inseason at a rate greater than projected by the RecFISH model that would cause the 0.9 mt non-trawl allocation to be exceeded, action can be taken inseason to close the fishery before the ACL is reached.

Concerns have been expressed that allowing retention of shelf and slope rockfish within the proscribed depth restrictions would motivate anglers to fish in deeper depths in pursuit of these species potentially increasing impacts on cowcod. Discussions with CDFG enforcement indicated that the ability to enforce retention regulations does not differ based on the species that can be retained in this case. Enforcement personnel must encounter anglers in possession of groundfish in depths greater than the established depth restriction in order to issue citations. If there are any groundfish onboard while fishing in waters deeper than depth restriction, whether it be 20 fm, 30 fm or 40 fm, anglers can be cited.

Primary enforcement of the CCA will continue to be by the three 58 foot patrol vessels stationed on the South Coast. These vessels are capable of going far offshore for multiple days. Additionally the department has two radon craft vessels that can cover Santa Barbara Island. Enforcement has also utilized the Departments planes and Coast Guard vessels and helicopters on a regular basis to assist with enforcement of the CCA. As in any management area, enforcement of the regulations is vital to gaining compliance. The depth restrictions and species retention regulations under consideration by the Council would provide enforcement with the enforceable regulations to deter anglers from fishing in waters deeper than those proscribed in regulation with any groundfish onboard.

Continuing the prohibition on retention of slope rockfish would reduce the impetus for anglers in depths far greater than the existing and proposed depth restrictions. Regulatory complexity would not be as greatly reduced as anglers would still have to discriminate slope rockfish which could not be retained from shelf and nearshore rockfish that could. Love et al. (2002, p. 80) note that deepwater sport fishing for rockfish was common practice in Southern California for over 50 years. Though it is highly unlikely that anglers would encounter slope rockfish in the depths open to fishing, continued prohibition will make regulations more complex than in other management areas and may confuse anglers when identifying the catch. Cowcod, bronzespotted, canary and yelloweye rockfish are prohibited in the recreational fishery. Three slope species commonly occur in these areas (bank, blackgill, and aurora rockfish). Historically, bank rockfish

(a slope species) was seasonally targeted by recreational fishermen, and ranked 9th among CPFV rockfish catch in Southern California (Ally et al., 1991).

Table B-43. Catch of minor shelf and slope rockfish in 2007 and 2008 compared to the OYs in each year. Data from the 2007 and 2008 WCGOP Total Mortality Report for West Coast Groundfish.

Species Complex	2007 Total Mortality (mt)	2007 OY (mt)	% OY	2008 Total Mortality (mt)	2008 OY (mt)	% OY
Minor Shelf Rockfish S. of 40º 10' N. lat.	365	714	51	212	714	30
Minor Slope Rockfish S. of 40º 10' N. lat.	149	626	24	189	626	30

Summary

While the impacts on shelf and slope rockfish including bocaccio are likely to increase as a result of allowing their retention in the open depths of the CCA, the impacts can be accommodated within the recreational harvest guideline with a minimal risk of exceeding the ACLs. The bycatch of cowcod is not expected to substantially increase as a result of the proposed action and what little increase that may occur can be accommodated within the non-trawl allocation. Regulations are actively enforced within the CCA and the proposed action is enforceable in that shelf and slope rockfish could only be retained within the open waters within the CCA and possession in deeper depths would result in citation as is the case for nearshore rockfish species under the status quo regulation. The proposed regulation change would reduce wastage from regulatory discarding of shelf and slope rockfish. This action will also allow anglers to achieve their 10 fish rockfish, cabezon, and greenling complex bag limits more quickly, thus may reduce the chances of them encountering cowcod in the process.

Proposed Changes to Depth Restrictions in the California Recreational CCA

The CCA was established in 2001 to reduce the impacts on cowcod from the recreational and commercial fishery and hasten the rebuilding of this overfished stock. The western CCA (also known as CCA 1) encompasses 4,200 square miles of area and includes the waters shallower than 20 fm surrounding Osborn, Santa Barbara and San Nicholas Islands and Tanner and Cortez Banks as well as Begg Rock, currently open to fishing for some species of groundfish. This open area currently represents about one percent of the CCA 1.

Adult cowcod are primarily encountered in depths greater than 50 fm (Butler et. al., 2003), which is deeper than the proposed 30 or 40 fm depth restrictions in the CCA. Juvenile cowcod (less than 45 cm total length) occur at depths greater than 30 fathoms (Love and Yoklavich, 2008), which is within the proposed 40 fathom depth restriction. Estimated encounter rates in the California recreational fishery have been extremely low since the current depth restrictions (60 fm outside the CCA and 20 fm inside the CCA), prohibition on retention and the CCA were put in place in 2001, resulting in recreational catch below the 0.3 mt harvest target, far below the 4 mt ACL for 2011. The main conservation consideration regarding the proposed changes to depth restrictions is whether effort distributed in proposed depths would result in increased encounters with cowcod and thus significantly increase the risk of exceeding the ACL. An increase in the depth restriction from 20 fm to 30 fm or 40 fm may not result in a significant increase in bycatch of adult (greater than 45 cm) cowcod in recreational fishery or appreciably increase the risk of the ACL being exceeded. However, the proposed 40 fm depth restriction may increase encounters

with juvenile (less than 45 cm) cowcod by allowing fishing in known juvenile cowcod habitat within the CCAs. Continued disturbance of known nursery habitat could also have long-term, negative effects on rebuilding of this overfished species (Love and Yoklavich, 2008).

While the CCAs, in addition to depth restrictions outside the CCA and prohibitions on retention, have contributed to the reduced cowcod bycatch in the recreational fishery, helping keep catch below the OY/ACL, additional fishing opportunity could be made available by increasing the maximum depth restriction within the CCA without greatly increasing cowcod impacts. The CDFG has proposed increasing the depth restriction within the cowcod Conservation Area to 30 fm (180 ft.) or 40 fm (240 ft.) in some of the areas currently open to fishing under the current 20 fm depth restriction. This action would greatly increase fishing opportunity within the western CCA, by allowing the retention of rockfish incidentally encountered while targeting yellowtail in these depths and increasing fishing grounds for anglers targeting rockfish. Depth restrictions would be codified as waypoints connected to form RCA boundaries around the open areas within the CCA found in Table B-48. This analysis evaluates potential benefits to the fishery, as well as uncertainties and impacts to cowcod relative to the ACL associated with the proposed depth restrictions.

Definition of the Proposed Depth Restriction Changes and the Effects of 30 fm or 40 fm Depth Restrictions on Fishable Area

Depictions of the status quo 20 fm depth restriction and the RCA lines representing waypoints connected to delineate the area in which retention of specified species would be allowed with the proposed 30 fm and 40 fm depth restriction are provided in Table B-48. The areas represent large continuous fishing grounds in waters shallower than the common depth distribution of adult cowcod (or both juvenile and adult in the case of the 30 fm proposal). While the proposed areas would be open to take of specified groundfish, there are smaller areas that rise to a depth less than 30 or 40 fm that would remain closed. In these areas, depths drop off too rapidly and over too short a distance to allow them to be fished due to concern for the ability of anglers to comply with the depth restriction. These smaller areas are identified in black in Figure B-22, Figure B-23, Figure B-24, and Figure B-25. Only areas currently open under the 20 fm depth restriction are being opened to greater depths, with the exception of Osborn Bank and Begg Rock, which will be closed to fishing since depths change too abruptly in these areas.

The increases in fishable area made available by 30 and 40 fm depth restrictions in comparison to 20 fm are provided in Table B-44. Overall, the 30 fm depth restriction would increase the fishable area within the CCA by 61.2 square miles, representing an increase of 128 percent. This is more than double the current fishable area under the current 20 fm depth restriction. With a 40 fm depth restriction, the fishable area would increase by 104.4 square miles or 218 percent, more than tripling the fishable area in the CCA. Under the 30 and 40 fm depth restrictions, the percentage of the total area within the CCA open to fishing would only equal 2.6 percent and 3.6 percent of the total 4,200 sq mile CCA respectively.

Using the depth distribution of cowcod in 20 fm to 267 fm (Love et. al., 2002) and GIS layers of the bathymetry within the CCA, the area within these depths was estimated to be 1637 square miles. Given the estimated area within the proposed 40 fm depth restriction, 104.4 square miles or 6.4 percent of the cowcod habitat in the CCA would be open to fishing, while 61.2 square miles or 3.7 percent of the cowcod habitat within the CCA would be open to fishing under the 30 fm depth restriction. While the proposed depth restrictions would appreciably increase the area open to fishing for groundfish within the CCA, the total area open to fishing would still remain less than 7 percent of the cowcod habitat in the CCA, protecting the cowcod biomass in their

predominant depth distribution. Thus the proposed depth restrictions would greatly increase fishing opportunity in the CCA while preventing impacts on adult cowcod in the vast majority of the cowcod habitat within the CCA. The proposed 30 fm depth restriction would most likely extend this habitat protection to both juvenile and adult cowcod.

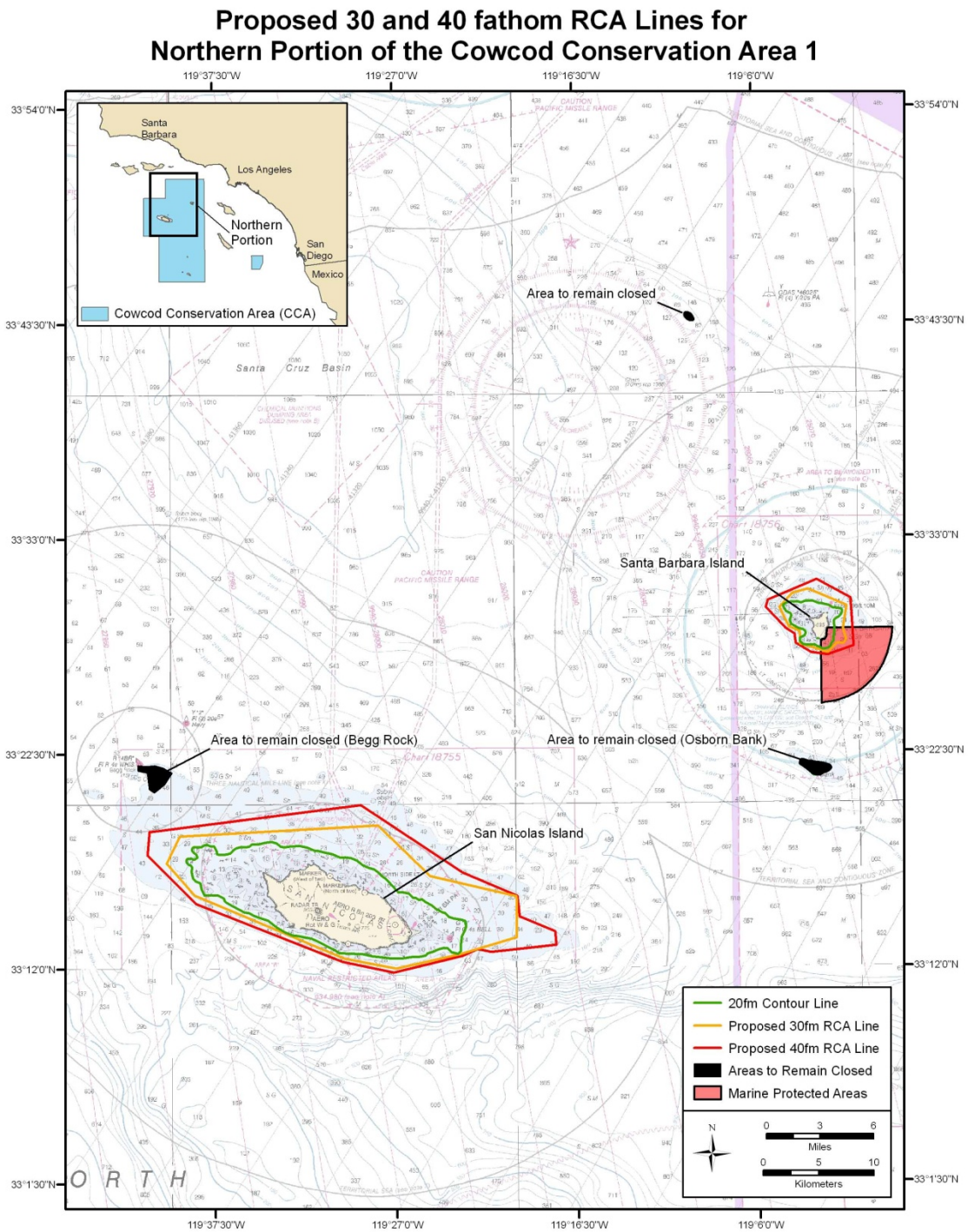
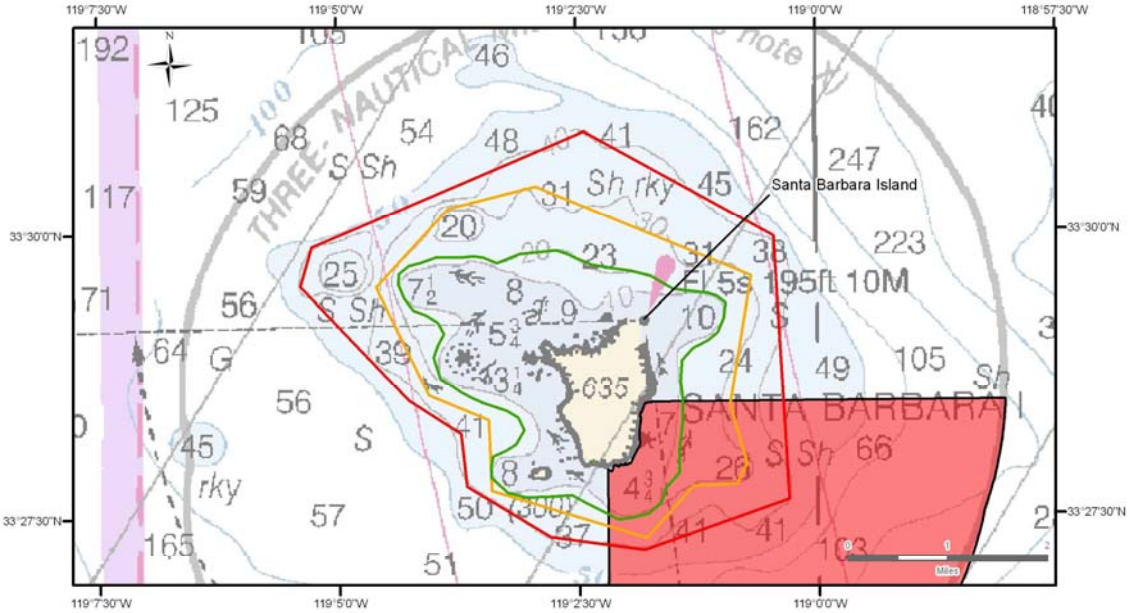
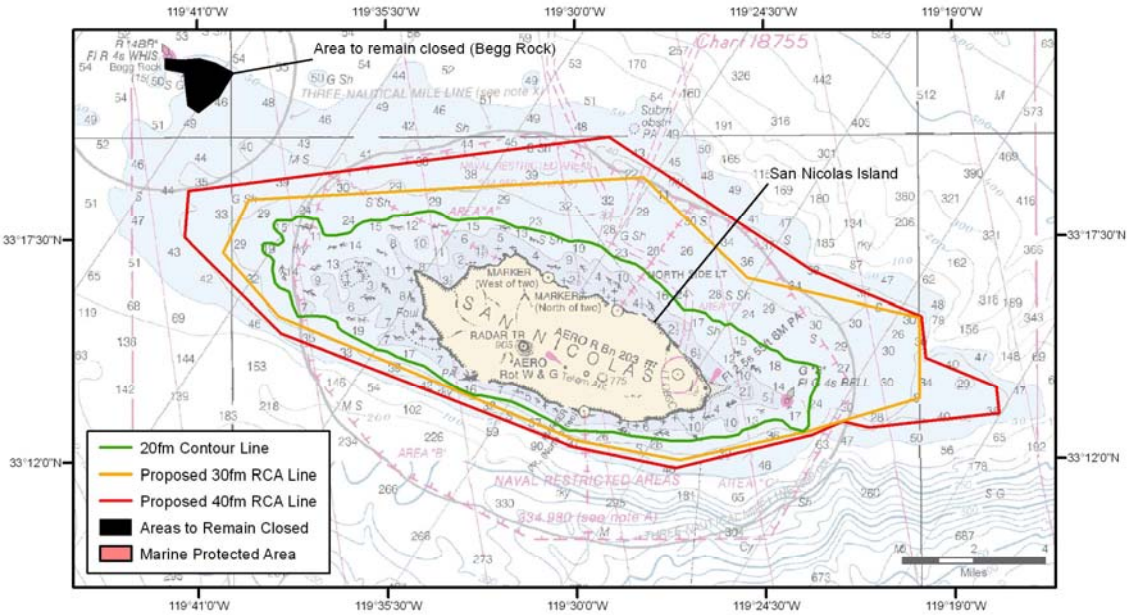


Figure B-22. Detailed chart of proposed 30 and 40 fm RCA lines for the northern portion of the western CCA. The Marine Protected Area shown above is closed to fishing for groundfish.

Proposed 30 and 40 fathom RCA Lines for Northern Portion of the Cowcod Conservation Area 1



Santa Barbara Island



San Nicolas Island

Figure B-23. Detailed charts of the proposed 30 and 40 fathom RCA lines for the northern portion of the western CCA. The Marine Protected Area shown above is closed to fishing for groundfish.

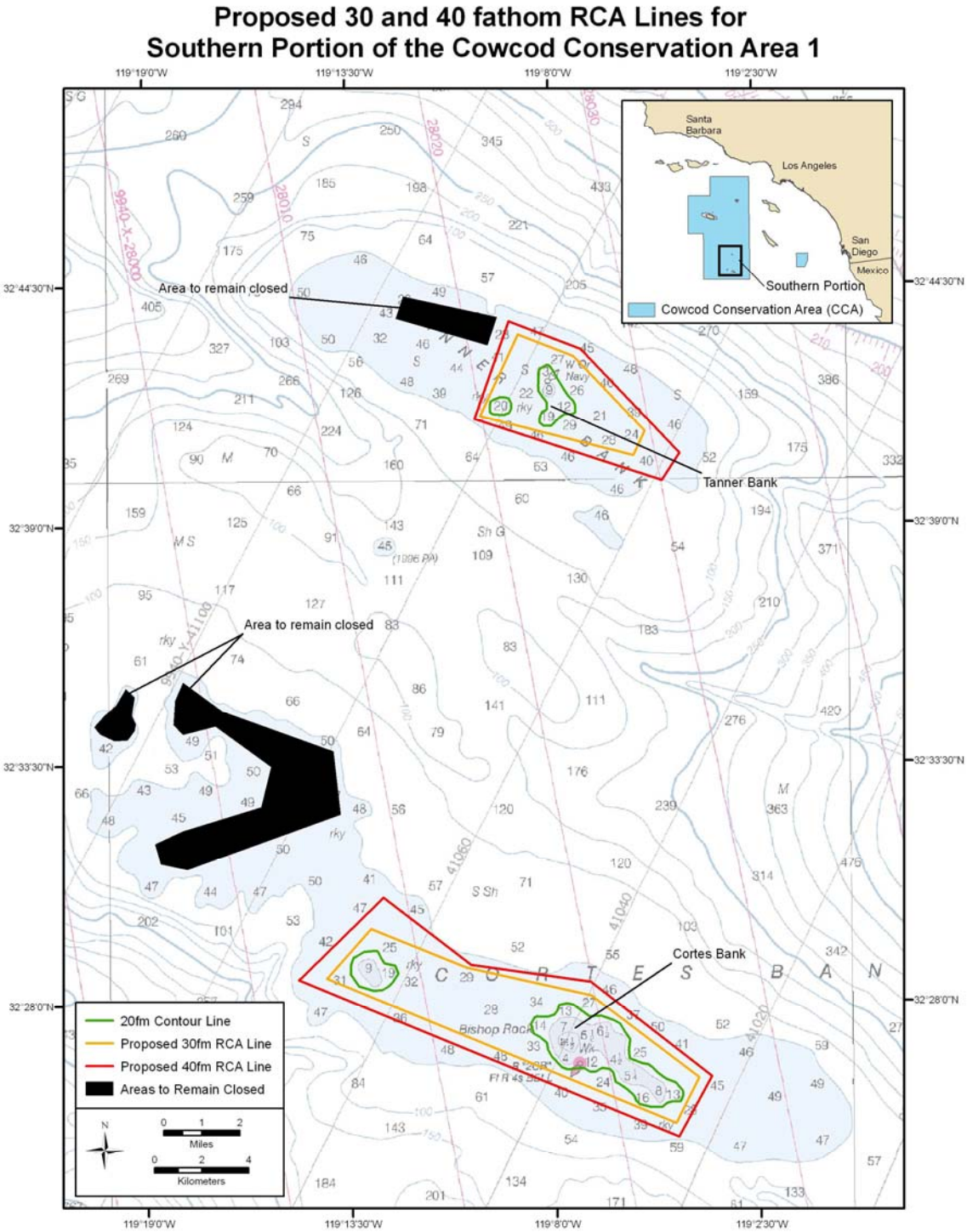


Figure B-24. Overview chart of proposed 30 and 40 fathom RCA lines for the southern portion of the western CCA.

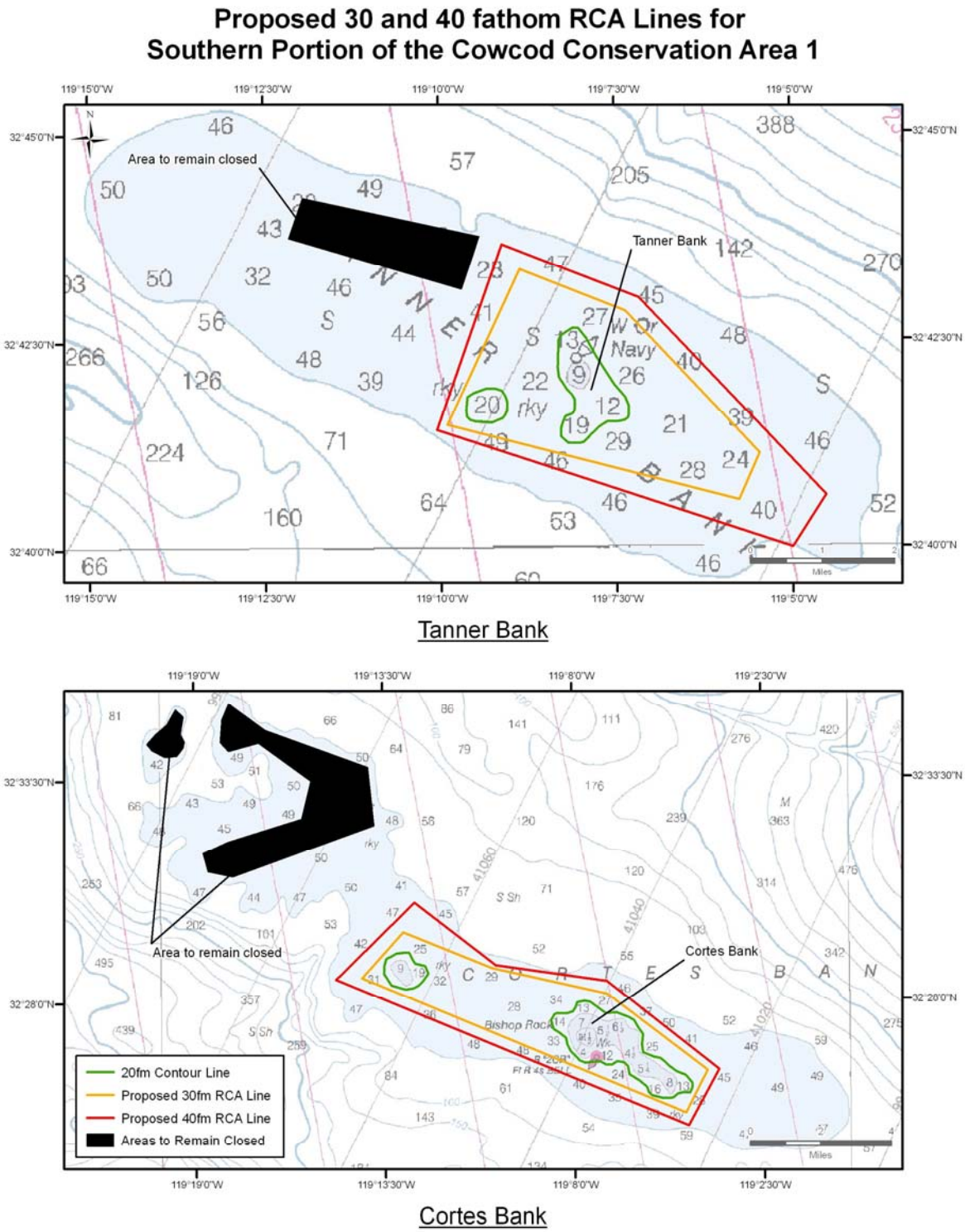


Figure B-25. Detailed charts of the proposed 30 and 40 fm RCA lines for the southern portion of the western CCA.

Table B-44. Area open to fishing within the status quo 20 fm depth restriction and the estimated increase in area open to fishing under the proposed depth restriction modification from 20 fm (status quo) to 30 fm or 40 fm and the corresponding percentage increase in area.

	Status Quo 20 fm Depth Restriction	Option 1			Option 2		
		30 fm Depth Restriction			40 fm Depth Restriction		
Open Area within CCA	**Area Less Than 20 fm (sq. miles)**	**Area Increase 20 to 30 fm (sq. miles)**	**Total Area to 30 fm (sq. miles)**	**Percent Increase 20 to 30 fm (sq. miles)**	**Area Increase 20 to 40 fm (sq. miles)**	**Total Area to 40 fm (sq. miles)**	**Percent Increase 20 to 40 fm (sq. miles)**
Santa Barbara Island	4.6	3.4	8	74%	8.3	12.9	180%
San Nicolas Island	36.5	39.6	76.1	108%	66.2	102.7	181%
Cortes Bank	5.5	12.1	17.6	220%	19.9	25.4	362%
Tanner Bank	1.1	6.1	7.2	553%	10.0	11.1	907%
CCA Total	47.7	61.2	108.9	128%	104.4	152.1	219%

Conservation Considerations Regarding Cowcod Depth Distribution Relative to Proposed Depth Restrictions and Potential Implications for Impacts on Cowcod

The main concern regarding the proposed changes to depth restrictions is whether effort distributed in deeper depths would result in increased encounters with cowcod and significantly increase the risk of exceeding the ACL. When considering this risk, the concerns are 1) whether the increased depth restrictions will substantially increase encounters with cowcod, 2) how much uncertainty there is in bycatch estimation, and 3) if a sufficient buffer exists between the projected impacts and the ACL to account for variability in catch estimates inseason.

Evaluation of the Potential for Increased Cowcod Encounters based on Common Depth Distribution

Though cowcod do occur from 20 fm to 267 fm (Love et. al., 2003), submersible surveys within the Southern California Bight indicate that juvenile cowcod occur from 28 fm (52 meters) to 180 fm (330 meters) and adults are most common at depths of 66 fm to 115 fm (Butler et al., 2003). Butler et al. (2003) reported depth ranges for juvenile that were based on a subset (21 observations) of the data used in the more recent and comprehensive study (216 observations) by Love and Yoklavich (2008). The study by Love and Yoklavich included sites within the CCAs, the area of interest, whereas the data available to Butler et al. were limited to areas outside the CCAs. These trends in the depth distribution are not inconsistent with the proportion of catch by depth from the trawl fishery in the Southern California Bight

where cowcod were predominantly encountered in depths deeper than 65 fm (Butler et al., 1999). Submersible surveys within the CCA (Love, Yoklavich, and Fourney, 2008) found that adult cowcod occupy depths of 74-322 meters (40-176 fm). Recent submersible surveys also indicate that juvenile cowcod occur over a wide range of habitat types, at depths between 28 and 180 fm and typically avoid soft sediment substrate, favoring hard substrate such as cobble and boulder fields or rock ridges (Love and Yoklavich, 2008). Therefore, the proposed depth restriction of 30 fm would extend fishable area to the edge of juvenile cowcod habitat, and the proposed 40 fm limit would allow fishing in known cowcod habitat. The current 20 fm depth restriction provides a 10-fathomfm buffer between the fishable area and known cowcod habitat. Depth distribution data from the commercial fishery and submersible surveys indicate that adult cowcod are rarely encountered in waters shallower than the proposed 40 fm depth restriction, and that juvenile cowcod, which are still vulnerable to the recreational fishery (Figure B-26), are uncommon in waters shallower than the proposed 30 fm depth restriction.

Cowcod catch by depth data from the Marine Recreational Fishery Statistical Survey (MRFSS) from 1999 and 2000 reflects the proportion of catch by depth, including areas both inside and outside of the CCA, south of Point Conception (Table B-45) when there was no depth restriction or CCA. Though thousands of anglers were sampled, the sample size available for analysis is limited, due to the low cowcod encounter rate in the recreational fishery. The limited results indicate that cowcod are nearly absent from the catch from waters shallower than 40 fm; only 5.9 percent of the catch came from 0 to 30 fm, none were taken from 30 to 40 fm. Though the catch of cowcod still occurs in depths less than 60 fm, they are relatively uncommon in these depths and abundance increases with increasing depth as indicated by the catch per unit effort by 10 fm depth bins in Table B-46. Recent (2004 to 2009) California Recreational Fishery Survey (CRFS) depth of capture data are available from private and CPFV vessels fishing outside the CCA in southern California with a 60 fm depth restriction. These data also reflect the rarity of cowcod in depths less than 40 fm; only 6.8 percent of the catch reported as being taken in less than 40 fm (Table B-45).

Concerns have been expressed regarding the likelihood that anglers comply with existing depth restrictions in the CCA, and what compliance might be with new proposed depth restrictions. All cowcod catch events from recent CRFS data were taken in depths shallower than the current 60 fm depth restriction (Table B-46), which indicates that bottomfish anglers are aware of or abiding by the existing depth restriction, which bodes well for awareness of any proposed depth restrictions in the CCA. The Rockfish Conservation Area (RCA) lines established under the proposed 30 or 40 fm depth restrictions within the CCA are codified by connecting a series of waypoints that provide a definitive delineation of the area open to fishing. The 20 fm depth restriction based on general depth contours is not as clearly defined and allows fishing on small pinnacles where depth restrictions are difficult for anglers to comply with since depths change over too short a distance. The RCA lines delineating the proposed depth restrictions will allow enforcement based on possession inside verses outside the line making the proposed depth restrictions easier for anglers to comply with and for wardens to enforce. Primary enforcement of the CCA will continue to be by the three 58 foot patrol vessels stationed on the South Coast. These vessels are capable of going far offshore for multiple days. Additionally the department has two radon craft vessels that can cover Santa Barbara Island. Enforcement has also utilized the Departments planes and Coast Guard vessels and helicopters on a regular basis to assist with enforcement of the CCA.

Concerns regarding effects that changes to depth restrictions might have on the comparability fishery independent surveys through time have been stated as reason for forgoing previously proposed changes to the outer boundaries of the CCA for the commercial fishery. Fishery independent survey indices for cowcod should not be significantly affected by the currently proposed depth restrictions in the shallower depths of the CCA since the depth restrictions under consideration would open waters shallower than the predominant depth distribution of the species. Thus fishery independent survey indices should be

comparable though time as survey sampling at stations in depths shallower than the depth restriction are not as indicative of the relative abundance as those in deeper waters where cowcod are commonly encountered. Considering the prohibition on retention, the relatively low mortality rates from barotraumas in the shallow depths under consideration and outreach encouraging anglers to use descending devices to minimize barotrauma induced mortality, of the few cowcod that are encountered, many are likely to survive after being discarded. Thus the effect on survey indices at the stations within the proposed depth restrictions should be minimal in any case due to the relatively low mortality suffered by discarded fish. Discard mortality rates are estimated to increase rapidly between 30 and 40 fm for rockfish (2009/2010 FEIS, Chapter 4; PFMC, 2009), so the status quo 20 fm and proposed 30 fm depth restrictions would be more effective at maintaining low rates of discard mortality for rockfish.

Data gathered from vessels fishing within the proposed depth restrictions could provide data to inform a fishery dependent index of abundance for species encountered by the recreational fishery in the CCA. This could potentially provide an index of relative abundance that can be compared to future data, if not historical data collected onboard CPFVs, properly stratified to provide a comparable CPUE index, such as data collected by PSMFC from 1999 to 2000 (MRFSS) and by the Department in the 1970s.

Table B-45. Number of cowcod encountered by Commercial Passenger Fishing Vessels (CPFV) and Private/Rental Boats (n = 17) by Depth of Capture from 1999 to 2001 from the Marine Recreational Fishery Statistical Survey (MRFSS), Recreational Fisheries Information Network (RecFIN). All the cowcod catch from Point Conception (34° 27') to the U.S./Mexico border (32° 32').

Depth Bins (fm)	Number of Fish	Percent of Catch
0-10	0	0.0%
11-20	0	0.0%
21-30	1	5.9%
31-40	0	0.0%
41-50	4	23.5%
51-60	2	11.8%
61-70	3	17.6%
71-80	1	5.9%
81-90	4	23.5%
91-100	0	0.0%
>101	2	11.8%

Table B-46. Number of cowcod encountered by 60 ft depth bins on Commercial Passenger Fishing Vessel (CPFV) and Private/Rental Boats (n = 29) from 2004 to 2009 from CRFS, Recreational Fisheries Information Network (RecFIN). The data represents all the cowcod catch data from Point Conception (34° 27') to the U.S./Mexico border (32° 32'). All encounters with cowcod on CPFV on-board and dock-side interviews that include the depth at which they were caught were analyzed.

Depth Bins (fm)	Number of Fish	Percent of Catch
0-10	0	0.0%
11-20	1	3.4%
21-30	0	0.0%
31-40	1	3.4%
41-50	8	27.6%
51-60	19	65.5%
61-70	0	0.0%
71-80	0	0.0%
81-90	0	0.0%
91-100	0	0.0%
>101	0	0.0%

Table B-47. CPUE of cowcod encountered by 60 fm depth bins on Commercial Passenger Fishing Vessel (CPFV) (n = 13) from 1999 to 2000 from CRFS, Recreational Fisheries Information Network (RecFIN). The data represents all the cowcod catch data from Point Conception (34° 27') to the U.S./Mexico border (32° 32').

Depth Bins (fm)	Number of Fish	Angler hours	CPUE
0-10	0	0	0
11-20	0	0	0
21-30	0	0	0
31-40	0	0	0
41-50	4	76.92	0.05
51-60	2	53.08	0.04
61-70	1	3.75	0.27
71-80	3	22.17	0.14
81-90	1	25.02	0.04
91-100	1	11.08	0.09
>101	1	10.5	0.10

Uncertainties in Encounter Rates and Catch Estimates

The stock of cowcod in the Southern California Bight is currently at 4.5 percent of unfished biomass, and was at less than 2.5 percent of unfished biomass in 1999-2000 (Dick et al., 2009). Depth-specific catch estimates from 1999-2001 may not be reliable indicators of potential habitat or the potential distribution of the stock in the future. Given the recently characterized distribution of juvenile cowcod (Love and Yoklavich, 2008), one would expect that recreational fisheries will encounter greater densities in the shallower habitats between 20 and 60 fm as the stock rebuilds. The known depth and habitat preferences of cowcod should also be considered in the context of vulnerability to the fishery at target biomass levels. Length composition data are available from 1975-1977 (Dick et al., 2007) from onboard observer data from the recreational fishery during this unregulated time period. The data show that juvenile cowcod were vulnerable to the gear when there were no depth restrictions and anglers could access the primary depth distribution cowcod, while it was legal to target and retain cowcod (Figure B-26). Given the depleted status of the stock, the predominant depth distribution and the proposed depth restrictions, it will

be many decades until the stock reaches a density that would be expected to result in a significantly increased risk of exceeding the current ACL and at that time, the ACL would be increased with the improved status of the stock. Though encounters may increase as the stock rebuilds, so will the ACL. As a result, a buffer can be maintained between the impacts with the proposed depth restrictions and the ACL.

Other concerns have been expressed regarding the frequency of under-reporting of cowcod encounters to prevent additional regulation. The current depth and season restrictions have been in place since 2001 and regulatory action beyond the current restrictions have not been necessary to curtail impacts. Thus, anglers have not had a reason to under report impacts; although, there is no certainty that it is or is not currently occurring. With the increase in fishing opportunity in the CCA, there is concern that reporting of cowcod catch could result in reversion to status quo depth restrictions in the CCA and lead to under-reporting of catch, though the proposed 30 fm depth restriction is not expected to appreciably increase interaction with cowcod (under-reporting of juvenile cowcod catch may be a concern under the proposed 40 fm depth restriction).

The proportion of unidentified rockfish which may be cowcod, and how that might be affected under the proposed changes, was also considered. Since 2002, CDFG has provided identification materials in sport fishing booklets to help anglers identify cowcod, which should reduce the contribution of cowcod to unidentified rockfish. Given that the species has been prohibited for many years without further restrictions from reported catch, anglers are likely to know how to identify cowcod and report encounters. Thus the majority of cowcod interactions are likely to already have been reported and not contribute to the unidentified rockfish. At present, a full analysis of the composition of unidentified rockfish has not been undertaken and a robust estimate of the marginal contribution of cowcod impacts from unidentified rockfish is not available. The magnitude of unreported impacts and unidentified catch composed of cowcod is speculative in nature and cannot be reliably quantified at present.

The question of whether fishing effort would increase in the CCA with increased areas open to fishing, was also an expressed concern. The projected impacts are conservatively biased high relative to the encounter rates expected at a given level of effort in the CCA since the proportion of catch by depth to 60 fm rather than 20 fm is used in the model to represent catch South of Point Conception within U.S. waters. However, they do not account for the potential increase in effort in the CCA. The outcome of increased effort within the proposed depth restrictions in the CCA is difficult to quantify since effort redistributed to deeper depths within the CCA may result in increased cowcod impacts within the CCA.

Variability in bycatch estimates accruing during the course of the season may cause the bycatch estimates to exceed those projected by the RecFISH model. Cowcod are a prohibited species and as such, the vast majority of the encountered fish are discarded in accordance with regulations. The impacts on angler reported discarded fish are determined by the depth dependent mortality rates found in the 2009/2010 FEIS (PFMC, 2008) and the proportion of catch by depth in the Southern Management Area. The present bycatch estimation method applies a depth dependent mortality rate to discard estimates based on the 60 fm depth restriction currently in place in the Southern Management Area, including the CCA. Despite the 20 fm depth restriction in the CCA, the mortality rate is based on the 60 fm depth restriction resulting in an overestimation of mortality for fish caught in the CCA. Thus the bycatch estimate for discarded fish tracked against the harvest target is systematically biased high accounting for more mortality than is likely to be induced.

In addition, use of descending devices has been a component of California's outreach efforts to reduce discard mortality since 2007. More than 10,000 copies of "Bring That Rockfish Down" brochures have been distributed to bait and tackle shops, harbor masters and license vendors statewide to encourage anglers to use the devices to minimize mortality on discarded cowcod. Thus discard mortality may be far

lower than estimated if anglers are more likely to identify cowcod and use descending devices to return fish back to depth, however this decrease is not quantifiable with available data.

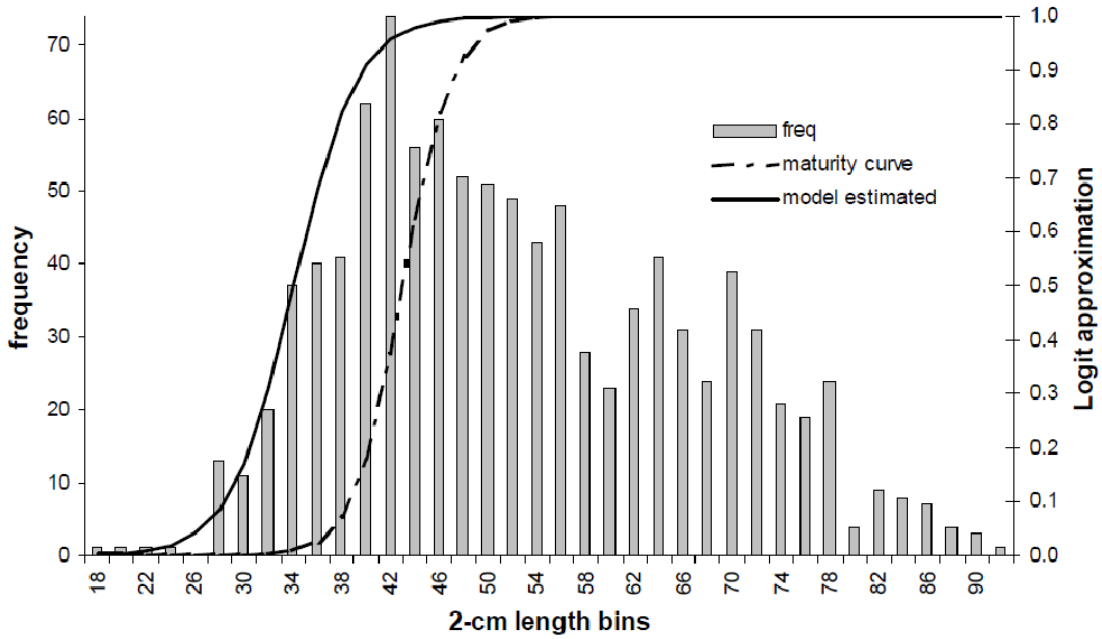


Figure B-26. Length composition data (1975-77) used to fit selectivity curves in the 2007 and 2009 cowcod assessments (Dick et al., 2007, Dick et al., 2009). The model-estimated selectivity is to the left of the maturity curve, showing that juvenile cowcod were vulnerable to the recreational fishery during this time period. Length at 50 percent selection is 34 cm.

Projecting Impacts on Overfished Species and the Risk of Exceeding the California Recreational Harvest Limits

California uses a catch projection model, called RecFISH, to estimate projected impacts of all species of interest taken in the recreational fishery, including the overfished species. The potential for the proposed depth restrictions to cause cowcod bycatch to exceed the non-trawl allocation can be measured by the projected impacts from RecFISH. The current model projections are based on the proportion of catch by depth during the unregulated period 1999-2000 including all waters both inside and outside the CCA. Projections assume the current 60 fm depth restriction in the Southern Management Area encompasses all waters from Point Conception (34°27' N. latitude) to the California/Mexico border including depths within the CCA. In other words, the model already assumes take in the CCA to a depth of 60 fm. Thus, the current 2011 statewide cowcod projection of 0.2 mt accounts for a depth restriction greater than either of those options proposed, biasing the projected impacts toward a higher value than is likely to result from a 30 or 40 fm depth restriction.

The 2010 statewide projected impact of 0.3 mt for cowcod in the California recreational fishery was established in the 2007-2008 management cycle based on projected impacts with a 60 fm depth restriction and was not the result of a Council allocation. The recreational portion of the non-trawl allocation is not a hard allocation and represents less than 7.5 percent of the current 4 mt cowcod ACL. At the June 2010 Council meeting 0.9 mt of cowcod out of the 4 mt ACL for 2011 was allocated to the non-trawl fishery including the recreational fishery. Since only deminimis take of cowcod has been observed in the non-trawl commercial fisheries, with less than a tenth of a mt estimated to have been taken in the last five years, a residual of nearly 0.7 mt is anticipated to be available to accommodate an unanticipated increase in impacts from the proposed action. In the event that the 0.9 mt non-trawl allocation is exceeded, there is

a one mt portion of the ACL that was not allocated. This represents a one mt management uncertainty buffer between the three mt de-facto ACT for cowcod proscribed to sectors of the fishery and the four mt ACL. In the event that catch does accrue inseason at a rate greater than projected by the RecFISH model that would cause the 0.9 mt non-trawl allocation to be exceeded, action can be taken inseason to close the fishery before the ACL is reached.

Cowcod bycatch in the recreational fishery is tracked closely inseason by the State of California. While the California Recreational Fishery Survey tracks catch with a one and a half month lag, the Department tracks the catch of cowcod on a weekly basis using the weekly reports from samplers on the number of retained and discarded cowcod sampled in the field and the regression of past estimates of cowcod impacts with sampled catch. The CRFS estimates available to date are combined with the weekly catch tracking and projected impacts to provide a projected catch estimate for the season that will be tracked relative to the non-trawl allocation of cowcod to prevent it from being exceeded. In the event that recreational bycatch does accrue inseason at a rate greater than projected, which could cause the 0.9 mt non-trawl ACL to be exceeded, California has the ability to take action inseason well before the ACL is reached.

Though bocaccio encounters are anticipated to increase within the CCA with deeper depth restrictions, the projected recreational bocaccio impact with the Council's adopted regulations for 2011 is 55.4 mt, well below the 130 mt harvest guideline. As with cowcod, the predominant depth distribution of adult bocaccio is in depths greater than the proposed depth restrictions. Given the magnitude of the buffer between the harvest guideline and the projected impacts, even a doubling of impacts would not cause the harvest guideline to be exceeded as a result of the increased depth restrictions. A two fish bag limit is in place to minimize limit the take of bocaccio in the recreational fishery, reducing waste while minimizing targeting of bocaccio. As mentioned above, California tracks estimated catch of bocaccio inseason using CRFS estimates.

Bronzespotted rockfish have not been observed in the recreational fishery since 2001 when the current depth restrictions were put in place. The proposed depth restrictions are not anticipated to result in any impacts on bronzespotted rockfish, which have only been observed at depths greater than 40 fm (Love et. al., 2003) and are likely uncommon until even greater depths.

Summary

The proposed changes to the depth restriction in the CCA would provide a significant increase in the fishing opportunity within the CCA. While there is some concern regarding the potential for increased cowcod interactions within the CCA as a result of the increased depth restriction, any additional impacts are expected to be minimal. The primary depth distribution of adult cowcod is in deeper water and inseason catch is closely tracked to prevent the non-trawl allocation let alone the ACL from being exceeded. The risk of exceeding the ACL as a result of variability in catch estimates or under-projection of impacts with the proposed depth restrictions is greatly reduced by the remaining management measures that minimize impacts on cowcod, the weekly inseason catch tracking of cowcod, the 0.5 mt buffer of un-proscribed non-trawl allocation, the one metric ton buffer between the allocated catch and the ACL, and the state's ability to act inseason.

Though cowcod do occur from 20 fm to 267 fm (Love et. al., 2003, Love and Yoklavich, 2008, Miller and Lea 1972), The proposed depth restriction of 30 fathoms would extend to the edge of juvenile cowcod habitat, and the proposed 40 fathom limit would allow fishing in known cowcod habitat. The current 20 fathom depth restriction provides a 10 fathom buffer between the fishable area and known cowcod habitat. Encounters with cowcod in the recreational fishery data from the unregulated period increase gradually in depths greater than 40 fm (Table B-46 and

Table B-47) thus implementation of the 30 fm depth restriction, rather than 40 fm, would reduce the likelihood of encountering cowcod.

As noted in the cowcod stock assessment (Dick et al., 2009), projected increases in cowcod biomass have not been verified by observations, but are inferred from the model. No informative abundance indices are available to monitor recent trends in stock status. The estimated status of the stock (5% of unfished biomass) and uncertainty regarding progress toward rebuilding should be taken into account when considering modification to regulations concerning the CCAs.

Coordinates for Revising the CCA Boundaries

The following tables include the latitude and longitude points delineating for the proposed 30 and 40 fm RCA lines in the CCA. In the Council's Final Preferred Alternative the proposed changes to the 30 fm CCA lines were adopted, the 40 fm lines were not approved.

Table B-48. Proposed RCA lines for the CCA.

Santa Barbara Proposed 30fm RCA Points

Fathom Line	Proposed Coordinates						Action
		Lat			Long		
	Point	Deg	Min	Dir	Deg	Min	
30-fm	1	119	2.93	W	33	30.41	Add
30-fm	2	119	3.84	W	33	30.22	Add
30-fm	3	119	4.60	W	33	29.53	Add
30-fm	4	119	4.06	W	33	28.57	Add
30-fm	5	119	3.44	W	33	28.35	Add
30-fm	6	119	3.41	W	33	27.73	Add
30-fm	7	119	1.80	W	33	27.31	Add
30-fm	8	119	1.31	W	33	27.76	Add
30-fm	9	119	0.85	W	33	27.78	Add
30-fm	10	119	0.75	W	33	27.95	Add
30-fm	11	119	0.92	W	33	28.47	Add
30-fm	12	119	0.69	W	33	29.61	Add
30-fm	13	119	2.93	W	33	30.41	Add

Santa Barbara Proposed 40fm RCA Points

Fathom Line	Proposed Coordinates						Action
		Lat			Long		
	Point	Deg	Min	Dir	Deg	Min	
40-fm	1	119	2.42	W	33	30.89	add
40-fm	2	119	5.27	W	33	29.89	add
40-fm	3	119	5.39	W	33	29.54	add
40-fm	4	119	4.27	W	33	28.53	add
40-fm	5	119	3.73	W	33	28.23	add
40-fm	6	119	3.67	W	33	27.77	add
40-fm	7	119	2.80	W	33	27.32	add
40-fm	8	119	1.82	W	33	27.20	add
40-fm	9	119	0.31	W	33	27.64	add
40-fm	10	119	0.45	W	33	29.96	add
40-fm	11	119	2.42	W	33	30.89	add

Table B-48. Proposed RCA lines for the CCA. (continued)

San Nicolas Proposed 30fm RCA Points

Fathom Line	Proposed Coordinates						Action
	Point	Lat			Long		
		Deg	Min	Dir	Deg	Min	
30-fm	1	119	28.00	W	33	19.00	add
30-fm	2	119	39.5	W	33	18.50	add
30-fm	3	119	40.26	W	33	17.18	add
30-fm	4	119	38.65	W	33	15.61	add
30-fm	5	119	30.00	W	33	12.50	add
30-fm	6	119	27.00	W	33	12.00	add
30-fm	7	119	23.30	W	33	12.68	add
30-fm	8	119	20.00	W	33	13.50	add
30-fm	9	119	20.00	W	33	15.50	add
30-fm	10	119	25.00	W	33	16.50	add
30-fm	11	119	28.00	W	33	19.00	add

San Nicolas Proposed 40fm RCA Points

Fathom Line	Proposed Coordinates						Action
	Point	Lat			Long		
		Deg	Min	Dir	Deg	Min	
40-fm	1	119	29.00	W	33	20.00	add
40-fm	2	119	41.27	W	33	18.72	add
40-fm	3	119	41.38	W	33	17.56	add
40-fm	4	119	38.59	W	33	15.19	add
40-fm	5	119	30.11	W	33	12.35	add
40-fm	7	119	27.13	W	33	11.81	add
40-fm	8	119	23.15	W	33	12.60	add
40-fm	9	119	22.26	W	33	12.93	add
40-fm	10	119	21.48	W	33	12.78	add
40-fm	11	119	17.70	W	33	13.11	add
40-fm	12	119	17.77	W	33	13.77	add
40-fm	13	119	19.82	W	33	14.50	add
40-fm	14	119	19.94	W	33	15.52	add
40-fm	15	119	23.12	W	33	16.67	add
40-fm	16	119	29.00	W	33	20.00	add

Table B-48. Proposed RCA lines for the CCA. (continued)

Cortes Bank 30fm RCA Points

Fathom Line	Proposed Coordinates						Action
		Lat			Long		
	Point	Deg	Min	Dir	Deg	Min	
30-fm	1	119	12.95	W	32	29.73	add
30-fm	2	119	10.38	W	32	28.83	add
30-fm	3	119	7.04	W	32	28.17	add
30-fm	4	119	4.14	W	32	26.27	add
30-fm	5	119	4.77	W	32	25.22	add
30-fm	6	119	14.15	W	32	28.60	add
30-fm	7	119	12.95	W	32	29.73	add

Cortes Bank 40fm RCA Points

Fathom Line	Proposed Coordinates						Action
		Lat			Long		
	Point	Deg	Min	Dir	Deg	Min	
40-fm	1	119	12.61	W	32	30.45	add
40-fm	2	119	10.26	W	32	28.90	add
40-fm	3	119	7.04	W	32	28.49	add
40-fm	4	119	3.80	W	32	26.29	add
40-fm	5	119	4.70	W	32	24.91	add
40-fm	6	119	14.91	W	32	28.57	add
40-fm	7	119	12.61	W	32	30.45	add

Tanner Bank 30fm RCA Points

Fathom Line	Proposed Coordinates						Action
		Lat			Long		
	Point	Deg	Min	Dir	Deg	Min	
30-fm	1	119	8.86	W	32	43.37	add
30-fm	2	119	7.36	W	32	42.86	add
30-fm	3	119	5.46	W	32	41.13	add
30-fm	4	119	5.76	W	32	40.57	add
30-fm	5	119	9.90	W	32	41.49	add
30-fm	6	119	8.86	W	32	43.37	add

Table B-48. Proposed RCA lines for the CCA. (continued)

Tanner Bank 40fm RCA Points

Fathom Line	Proposed Coordinates						Action
	Point	Lat			Long		
		Deg	Min	Dir	Deg	Min	
40-fm	1	119	9.11	W	32	43.67	add
40-fm	2	119	7.17	W	32	43.02	add
40-fm	3	119	4.52	W	32	40.62	add
40-fm	4	119	5.00	W	32	40.00	add
40-fm	5	119	10.05	W	32	41.43	add
40-fm	6	119	9.11	W	32	43.67	add

B.4 Analysis for Management Measures Considered But Rejected

The following management measures were adopted by the Council for preliminary but were ultimately rejected for use in 2011-2012. The following is a summary of the analysis to date along with the rationale for not implementing the management measures.

B.4.1 Modify the Non-trawl RCA line at Catalina Island from 60 fm to 100 fm

In November 2009, the original request for analysis was for fixed gear fishing within 100 fm of Catalina Island to provide fishing opportunities after establishment of MPAs. Since then, industry amended the proposal to modify the RCA line at the west end of Catalina Island only. Liberalizing the RCA boundary will provide increased access for the commercial sector (specifically for chilipepper) that would otherwise be lost due to MPAs.

This proposal was predicated on adoption of the Bird Rock State Marine Conservation Area/Blue Cavern State Marine Area and the Farnsworth Onshore and Offshore State Marine Conservation into state regulations since area between the western boundaries of these MPAs is the area to be liberated under this proposal

CDFG staff consulted with Enforcement to verify whether or not this request is enforceable, verify the proposed modification does not conflict with Essential Fish Habitat Areas, and verify the proposed implementation date of the MPAs into state regulation. At the April 2010 Council meeting, the Enforcement Consultants did not support any change to the current 60 fm closure due to the location of an expanded area near proposed marine protected areas (Agenda Item I.4.b Supplemental EC report, April 2010). The increased regulatory complexity potential associated with small fishing opportunity in this area did not seem to justify the change and investment in resources to evaluate it. As a result, a further in-depth analysis of this management measure was discontinued.

B.4.2 Remove the Commercial Lingcod Spawning Closure Coastwide

Current commercial lingcod regulations for the limited entry and open access fixed gear fisheries north and south of 40°10’ N. latitude include a spawning closure for the months of December through April. (Note: lingcod may be retained year round by the bottom trawl fishery north and south of 40°10’ N. latitude) The limited entry and open access fixed gear seasonal closures were implemented to protect lingcod when it was declared overfished in 1999. The 2009 assessment showed that the northern stock has

rebounded to an average depletion of 61.9 percent and the southern stock, 74 percent. Based on this information the GMT considered whether it was appropriate to reduce or eliminate the lingcod spawning closure for the limited entry and open access fixed gear fisheries north and south of 40-10 because the need for the restrictive management measure (i.e., rebuild depleted groundfish stocks) has been satisfied.

Although the lingcod ACLs in the south will be increasing based on the optimistic stock assessments, the amount available to harvest will be limited by available overfished species. Overfished species impacts attributed to lingcod (taken in 60 fm or less) are estimated from the nearshore model. The nearshore model only accounts for total landings and does not differentiate between limited entry and open access sectors. Many species taken in the nearshore fishery are covered under state specific permits, except for lingcod. Lingcod is one of the few species available in shallow water not covered under a state specific permit (only a general state commercial license is required to land lingcod); therefore, the number of participants can fluctuate within and among years.

The take of lingcod is currently limited by two month cumulative landing limits in the limited entry fixed gear sector and by monthly limits in the open access sector. Although the overall amount of fish available under each trip limit is the same (800 lb per 2 months) the monthly limit of 400 lb for the open access sector was implemented to help control effort in this fishery.

The amount of lingcod available to both sectors will be limited by available yelloweye due to the high interactions between the two species. If the spawning closure is removed, it is expected that the amount of lingcod would increase under status quo trip limits. Since the overall take of lingcod cannot increase without exceeding yelloweye impacts, removal of the spawning closure could effectively result in lower trip limits with year round availability.

Since lingcod will have state specific ACLs, the GMT examined modifying the spawning closures separately for each state and for each fishery (limited entry and open access).

B.4.2.1 Oregon Considerations for Removing the Lingcod Spawning Closure

The amount of lingcod available to the nearshore fishery is dependent on the final preferred yelloweye rockfish ACL and catch sharing options adopted by the Council. The nearshore fishery north of 42° N. latitude is severely constrained by yelloweye rockfish impacts under the current ACL (17 mt) and catch sharing method. Yelloweye rockfish constraints could become more severe for the Oregon nearshore fishery as a result of the recent judgment in the case of Natural Resources Defense Council, et al. (Plaintiffs) v. Gary Locke, et al. (Defendants).

Following numerous runs of the nearshore model, which is used by the GMT to predict yelloweye rockfish impacts by the nearshore fishery, it is possible that extending the lingcod season into the winter and early spring spawning months (November – March) off Oregon may increase yelloweye rockfish impacts, even if trip limits were reduced throughout the year to compensate for the extended season. Lingcod spawn in shallow waters, and are therefore more accessible by small boats during the spawning season. This easier access may lead to increased effort (number of boats) by the open access fishery. Hence, removing the spawning closure could create an opportunity for a directed lingcod fishery (regardless of trip limit) by both open access and permitted vessels in the nearshore off Oregon, and therefore increase impacts to yelloweye rockfish. Under the current and possibly tighter yelloweye rockfish constraints, the GMT recommends that it is not prudent to extend the lingcod-retention season off Oregon due to the risk of increased bycatch of yelloweye rockfish. A further, in-depth analysis of this potential management measure for Oregon was discontinued upon this discovery.

B.4.2.2 California Considerations of Removing the Lingcod Spawning Closure

Prior to the overfished declaration of lingcod, approximately 12 percent of the catch (on average) was taken during December through February during 1994-1999 (data source PacFIN). Due to significant changes in the fishery since 2000, the GMT does not anticipate a similar increase in lingcod landings by removing the spawning closure.

Using PacFIN data, CDFG staff modeled trip limit scenarios with several different time series and proxy data to estimate the expected take of lingcod during December through February if the spawning closure was removed. Two time series, 2003-2009 and 2007-2009, were analyzed to reflect long-term participation versus the most recent participation. Similarly, historical landings data versus recent landings were used as proxies to estimate take during December through February. It was determined that the more recent time series and landings data (2007-2009) was the most appropriate for modeling purposes because the month of November was opened for more opportunity starting in 2007. This additional fishing opportunity is more informative of recent participation. The model runs were separated by limited entry and open access sectors to take into account different trip limit allowances and dissimilar variation in participation. Trip limits models assumed a 50:50 allocation between limited entry and open access with 7 percent discard mortality and 20 percent buffer applied to both sectors.

The amount of lingcod available to the nearshore fishery will ultimately be a direct result of the final preferred yelloweye ACL, catch sharing options adopted by the Council, and state specific input. The GMT notes that the current Federal trip limits may also be subject to change based on available yelloweye, independent of the spawning closure removal. Table B-49 shows a preliminary range of lingcod trip limits for both high and low ACL targets for status quo and removal of the spawning closure.

Table B-49. Comparison of lingcod trip limits under status quo and with removal of spawning closure.

	Status Quo (Dec-April closure)	Removal of Spawning Closure
Limited Entry	800 lbs/2 months	800-1,500 lbs/2 months
Open Access	400 lbs/month	150-400 lbs/month

Biological implications of status quo management (maintain spawning closure)

Current management will continue to result in discarding of lingcod from December through April while targeting other species. Unlike many other nearshore rockfish, lingcod have high survivorship (low mortality) and do not readily suffer from barotrauma due to the lack of a swim bladder. Under current management, the GMT does not expect any additional increase in mortality as a result of discarding.

Implications of removing the spawning closure

Since male lingcod are nest guarders, removing the spawning closure could result in a disproportional removal of males from the population. Since the 2009 southern lingcod stock assessment did not take into account differential male removals prior to the implementation of the spawning closure, the GMT was unable to quantify the effects on the overall population by opening up a winter fishery. The GMT does note that future stock trends are modeled based on full attainment of removals each year and this will not likely be realized due to the yelloweye constraints.

In California, most of the lingcod is taken incidental to other fisheries (nearshore, shelf, etc). Removing the spawning closure could create an opportunity for a directed lingcod fishery (regardless of the trip limit) and it is possible that many participants in this fishery will not have a nearshore permit. Since a

nearshore permit is required to land nearshore species, many of the species caught incidentally with lingcod will have to be discarded.

Unlike lingcod, many rockfish species that inhabit the nearshore waters have low rates of survivorship (depending on the depths caught) and can suffer from barotrauma, leading to increased mortality as a result of discarding. Since little is known about the life history or stocks status of many of these species, the GMT was unable to quantify effects on the overall population as a result of discarding.

B.4.3 Remove Gear Restriction for 'Other Flatfish' in the California Commercial Fishery

In 2003, the limited entry and open access fixed gear fisheries south of 40°10' N. latitude were constrained by management measures to protect bocaccio. The current commercial gear restriction is "*no more than 12 #2 hooks, up to 2-1lb weights, not subject to the RCA*". During the 2009-2010 management cycle, the recreational fishery removed their flatfish gear restriction because it was not effective in restricting the bycatch of overfished rockfish species. The commercial fishery is interested in pursuing a similar removal to have conforming regulations. CDFG staff consulted Enforcement and determined there are no additional enforcement issues resulting from removal of this gear requirement. CDFG does not anticipate that removing the gear restriction will increase impacts to overfished rockfish species because this fishery operates over sandy bottom habitats where overfished species are less likely to occur. However, due to a potential risk of petrale sole bycatch, which has been declared overfished, a further in-depth analysis of this management measure was discontinued.

B.4.4 Oregon Recreational

B.4.4.1 Analyze groundfish retention in the Oregon recreational all-depth Pacific halibut fishery

This action is consistent with the Purpose and Need because it takes into account the rebuilding of yelloweye rockfish while potentially allowing for increased harvest opportunity for an underutilized species. Anglers have expressed a desire to retain incidentally caught groundfish, specifically lingcod, while participating in the Central Oregon coast all-depth Pacific halibut fishery. Currently, retention of groundfish is prohibited when Pacific halibut are onboard recreational vessels, except for Pacific cod and sablefish, during all-depth Pacific halibut days. The Pacific halibut quota in Area 2A (Washington and Oregon) has decreased from 1.22 million pounds in 2008 to 0.95 million pounds in 2009 and 0.81 million pounds in 2010, drastically decreasing the number of days open to the all-depth fishery (Table B-50). It is anticipated that the Pacific halibut quota will continue to decrease, along with the number of open days, as the fishery transitions to more of a derby-style fishery. The current bag limit in Oregon for Pacific halibut is one fish per angler per day with an annual limit of six fish and for lingcod is two fish per angler per day.

Table B-50. Area 2A Pacific Halibut Quota in millions of pounds and days open to the Central Oregon all-depth Pacific halibut fishery, 2005-2010.

Year	2A Halibut Quota (million	Central Oregon All-Depth Open Days
2005	1.33	60
2006	1.38	36
2007	1.34	45
2008	1.22	44
2009	0.95	15
2010	0.81	11-16*

* projected number of days open in 2010

During the 2010 Pacific halibut Catch Sharing Plan (CSP) process, a regulation was added allowing the retention of lingcod in one halibut management area in Washington. The first season under that regulation will not be completed prior to the final adoption of management measures for 2011 and 2012; therefore, those data will not be available for this analysis. ODFW staff has completed some preliminary analysis on the impacts to yelloweye and canary rockfish from allowing retention of groundfish during all-depth Pacific halibut days. This option is included under the analysis of the integrated alternatives. Yelloweye and canary rockfish impacts, during years when groundfish retention was allowed, was compared to recent years when groundfish retention has been prohibited. The analysis projects the yelloweye rockfish impacts of allowing groundfish retention during all-depth halibut days to be 1.5 times those without groundfish retention. For canary rockfish the projection is 2.3 times what it would be if groundfish retention were not allowed.

Under the Final Preferred Alternative, this management measure was not adopted due to concerns over increased yelloweye and canary impacts, given the ACLs and associated state harvest guidelines.

B.4.5 California Recreational

B.4.5.1 Increasing the Depth Restriction around Catalina Island from 60 fm to 100 fm

Allowing fishing in depths between 60 fm and 100 fm would result in a significant increase in cowcod impacts and in the interest of rebuilding the stock in as quickly as possible, this management measure will not be implemented at this time.

B.4.5.2 Increase in Depth Restriction to 50 fm in the Monterey and Morro Bay Recreational Groundfish Management Areas

CDFG proposed to change the depth restriction in the Monterey and Morro Bay South-Central Management Area from 40 fm to 50 fm. Currently, the depth restriction is 40 fm in the South-Central Groundfish Management Areas (Monterey and Morro Bay South-Central Management Areas combined, from Pigeon Point to Point Conception). The area seaward of the depth restriction line is termed the Rockfish Conservation Area (RCA). The South-Central Management Areas have had a depth restriction in place since 2001. The change in RCA lines from 40 fm to 50 fm will provide increased fishing opportunities on the central coast but may not be feasible due to interactions with yelloweye rockfish.

The RecFISH model was used to project the 2011–2012 annual take of select groundfish species with the modified depth restriction. The RecFISH model uses data from 2005–2009 to project for 2011–2012. The RecFISH model projects that if the depth restriction is changed from 40 fm to 50 fm in the South-Central Management Areas in 2011 and 2012, the annual take of select species will increase. There will be no additional impacts for California scorpionfish, California sheephead, greenlings, cowcod, or cabezon. Most of the recreationally caught species commonly encountered in the South-Central Groundfish Management Areas will have small increases in statewide fishing impacts as a result of this action as compared to the Harvest Guideline for the recreational fishery.

Some of the most constraining species and species groups in the Central Groundfish Management Area are blue rockfish and the Minor Nearshore rockfish group. There is additional fishing opportunity available with the status quo ACL option likely for blue rockfish and the Minor Nearshore Rockfish group. The proposed action will increase impacts on Minor Nearshore Rockfish (8.0 mt), and blue rockfish (4.0 mt). Analyses of Minor Shelf Rockfish catch indicate that the increase in take can be accommodated within the status quo ACL which is the preliminary preferred alternative for 2011–2012, or the ACL determined by the Science and Statistical Committee (SSC).

Few cowcod and yelloweye rockfish are encountered in central California, however, at deeper depths, they are more common. With this action, there is projected to be impacts to bocaccio (20.2 mt), yelloweye (0.2 mt), canary (0.8 mt) and negligible impacts to cowcod (less than 0.01 mt). The 24 mt canary rockfish harvest guideline, 1.9 mt cowcod harvest guideline, and 163 mt bocaccio harvest guideline under the preliminary preferred alternatives will accommodate the projected impacts.

Yelloweye rockfish, however, is a cause for concern. The additional 0.2 mt of yelloweye rockfish catch projected to occur in the South-Central Management Areas represents a substantial increase in statewide yelloweye rockfish catch relative to the 3.4 mt preliminary preferred alternative. The high yelloweye catch, and variability of the catches in the North-Central North of Point Arena Management Area, make *any* increase in yelloweye rockfish catch a cause for concern. If significant residual yelloweye catch is left over between the 2011 catch and the 2011 harvest guideline, the 50 fm depth restriction could be put in place for the 2013–2014 management cycle.

B.4.5.3 Exempting Federally Managed Flatfish from Recreational Groundfish Depth and Season Closures

Exemption of federally managed flatfish, including petrale sole, from depth and season closures may be not be prudent at this time without regulation of bag limits (currently no bag limit), given the depleted status of petrale sole. The take of this species is predominantly in the commercial fishery at present. Additional analysis may be undertaken in the future to evaluate acceptable harvest limits for recreational fishery, bycatch rates for overfished species and bag limits to keep catch within harvest limits. Once the petrale sole stock has made suitable progress in rebuilding or is rebuilt, this management measure may be reconsidered.

B.4.5.4 Modify Regulations Regarding Filleting Federal Groundfish Species at Sea

Feedback from the public has identified a number of potentially adverse effects from prohibition of filleting at sea. Deck hands make a considerable portion of their income from filleting the catch of patrons on the way back to port. A prohibition on filleting at sea would result in reduction in much needed income. Party boat operators are required to allow California Recreational Fisheries Survey (CRFS) samplers to collect data onboard their vessels at sea, providing access to fish before being filleted.

The fish reported by the angler that are destined for a purpose that would be included in the "plan to eat" disposition code make up less than 9 percent of unidentified rockfish. Filleted fish make up an unknown but likely a small fraction of this percentage since anglers are required to leave the entire skin attached allowing identification of filleted fish. Given the limited potential for reduction of unidentified rockfish in the recreational catch, filleting regulations will not be changed in the 2011-2012 season.

B.4.5.5 Lingcod Bag Limit Increase

The CDFG proposed to increase the statewide bag limits for lingcod. The proposed action would increase the lingcod bag limit from two fish to three fish statewide. Additional lingcod impacts can be accommodated within the increased harvest guideline. The action would improve fishing opportunities especially in nearshore areas.

CDFG analyses of bycatch rates show that an increase in the lingcod bag limit is likely to increase the rockfish bycatch including overfished species. Anglers would have to fish for a longer period of time to obtain three lingcod and in the process may encounter additional overfished rockfish including yelloweye rockfish. Given the constraints presented by yelloweye rockfish, there is concern that catch rates may increase if anglers continue to fish for their lingcod bag limit and an increase in the bag limit may result in increased yelloweye rockfish catch per angler. Increasing the lingcod bag limit may also encourage high-grading behavior by recreational anglers as anglers encounter larger rockfish than are currently in their 10 fish bag and high grade these larger fish for smaller dead fish that were previously retained. Although the three fish lingcod bag limit could be accommodated by the lingcod harvest guideline, interactions with over fished species and potential high-grading prevent implementation of an increased lingcod bag limit at this time.

B.5 References

PFMC (Pacific Fishery Management Council). 2008. Status of the Pacific Coast Groundfish Fishery: Stock Assessment and Fishery Evaluation. Portland, Oregon: Pacific Fishery Management Council. Volume 1.

PFMC (Pacific Fishery Management Council). 2010. Allocation of harvest opportunity between sectors of the Pacific coast groundfish fishery [FMP Amendment 21]; Final environmental impact statement. Portland, OR: Pacific Fishery Management Council and National Marine Fisheries Service. June 2010.