

Tables and Graphics Relevant to Deciding 2009-2010 Groundfish Harvest Specifications

Table 2-1a. Preliminary PFMC-recommended alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2009, including preliminary preferred alternatives.

Table 2-1b. Preliminary PFMC-recommended alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2010, including preliminary preferred alternatives.

Table 2-2. Basis for the preliminary 2009-2010 optimum yield alternatives recommended by the PFMC for analysis.

Table 2-3. Estimated time to rebuild relative to alternative 2009-2010 OYs for overfished West Coast groundfish species.

Figure 2-2. 2009 optimum yields (mt) vs. predicted rebuilding times for overfished species.

TABLE 2-1a. Preliminary PFMC-recommended alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2009, including preliminary preferred alternatives. (Overfished stocks in CAPS; Stocks with new assessments in bold).

Stock	No Action Alternative			2009 Action Alternatives								Preliminary preferred alternative
	2007 ABC a/	2008 ABC a/	2007-08 OY a/	2009 ABC	2010 ABC	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY	
Lingcod - coastwide b/	6,706	5,853		5,278	4,829							
N of 42° (OR & WA)			5,558			4,593	4,593					
S of 42° (CA)			612			612	685					
Pacific Cod	3,200	3,200	1,600	3,200	3,200	1,600						
Pacific Whiting (U.S.)	612,068 (2007 U.S. & Can.)	To be determined in March 2008	242,591 (2007)	To be determined in March 2009	To be determined in March 2010	121,296	242,591	363,887				
Sablefish (Coastwide)	6,210	6,058	5,934	9,914	9,217	9,795	8,423	6,250				
N of 36° (Monterey north)			5,723			9,452	7,052	5,233				
S of 36° (Conception area)			210			343	1,371	1,018				
PACIFIC OCEAN PERCH	900	911	150	1,160	1,173	0	130	164	189			189
Shortbelly Rockfish	13,900	13,900	13,900	6,950	6,950	3,475	6,950	13,900				
WIDOW ROCKFISH	5,334	5,144	368	7,728	6,937	0	371	522				371
CANARY ROCKFISH	172	179	44	937	940	0	35	44	85	105	155	Ttarget=2021
Chilipepper Rockfish	2,700	2,700	2,000	3,037	2,576	2,000	2,099	3,037				
BOCACCIO	602	618	218	793	793	0	218	288				218
Splitnose Rockfish	615	615	461	615	615	461						
Yellowtail Rockfish	4,585	4,510	4,548	4,562	4,562	4,562						
Shortspine Thornyhead - coastwide	2,488	2,463		2,437	2,411							
Shortspine Thornyhead - N of 34°27'			1,634			1,608						
Shortspine Thornyhead - S of 34°27'			421			414						
Longspine Thornyhead - coastwide	3,953	3,860		3,766	3,671							
Longspine Thornyhead - N of 34°27'			2,220			2,231						
Longspine Thornyhead - S of 34°27'			476			395						
COWCOD	36	36	4	13	14	0	2	4				² Ttarget=2065
DARKBLOTCHED	456	487	290 (2007) 330 (2008)	437	440	0	159	229	300			Ttarget=2030
YELLOWEYE	47	47	Ramp-down c/	31	32	0	13	17	15			17
Black Rockfish (WA)	540	540	540	490	464	490						
Black Rockfish (OR-CA)	725	719	722	1,469	1,317	920	1000	1,469				

TABLE 2-1a (continued). Preliminary PFMC-recommended alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2009, including preliminary preferred alternatives. (Overfished stocks in CAPS; Stocks with new assessments in bold).

Stock	No Action Alternative			2009 Action Alternatives								Preliminary preferred alternative
	2007 ABC a/	2008 ABC a/	2007-08 OY a/	2009 ABC	2010 ABC	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY	
Blue Rockfish (CA)	Managed under the Minor Nearshore Rockfish complexes			241	239	Managed under minor nearshore rockfish complexes		207	230			
Minor Rockfish North	3,680	3,680	2,270	3,678	3,678	2,280	2,283					
Nearshore Species			142			152	155					
Blue rockfish contribution				28	28	25	28					
Shelf Species			968			968						
Slope Species			1,160			1,160						
Minor Rockfish South	3,403		1,904	3,384	3,382	1,970	1,990					
Nearshore Species			564			630	650					
Blue rockfish contribution				213	211	182	202					
Shelf Species			714			714						
Slope Species			626			626						
California scorpionfish	236	202	175	175	155	111	175					
Cabezon (off CA only)	94	94	69	106	111	69	74	69				
Dover Sole	28,522	28,442	16,500	29,453	28,582	16,500						
English Sole	6,773	5,701	6,237	14,326	9,745	14,326						
Petrale Sole (coastwide) b/	2,917	2,919	2,499	2,811	2,751	2,433						
Arrowtooth Flounder	5,800	5,800	5,800	11,267	10,112	5,245	11,267					
Starry Flounder	1,221	1,221	890	1,509	1,578	1,004						
Other Flatfish	6,731	6,731	4,884	6,731	6,731	4,884						
Other Fish	14,600	14,600	7,300	TBD d/	TBD d/	TBD d/	TBD d/	TBD d/				
Longnose Skate	Managed under the Other Fish complex			3,428	3,269	901	1,349	3,428				
Kelp Greenling HG (OR)			OR HG			OR HG						

a/ The Council elected to average OY projections for 2007 and 2008. ABCs are year-specific.

b/ Area OYs/HGs are stratified according to the assessment areas and alternatively adjusted by management areas for lingcod and petrale sole.

c/ The yelloweye ramp-down strategy ramps the harvest rate down from the status quo harvest rate and resumes a constant harvest rate strategy in 2011. The 2007-2010 OYs are 23 mt, 20 mt, 17 mt, and 14 mt, respectively under the ramp-down strategy.

TABLE 2-1b. Preliminary PFMC-recommended alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2010, including preliminary preferred alternatives. (Overfished stocks in CAPS; Stocks with new assessments in bold).

Stock	No Action Alternative			2010 Action Alternatives								Preliminary preferred alternative
	2007 ABC a/	2008 ABC a/	2007-08 OY a/	2009 ABC	2010 ABC	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY	
Lingcod - coastwide b/	6,706	5,853		5,278	4,829							
N of 42° (OR & WA)			5,558			4,173	4,173					
S of 42° (CA)			612			612	656					
Pacific Cod	3,200	3,200	1,600	3,200	3,200	1,600						
Pacific Whiting (U.S.)	612,068 (2007 U.S. & Can.)	To be determined in March 2008	242,591 (2007)	To be determined in March 2009	To be determined in March 2010	121,296	242,591	363,887				
Sablefish (Coastwide)	6,210	6,058	5,934	9,914	9,217	8,988	7,729	5,777				
N of 36° (Monterey north)			5,723			8,673	6,471	4,837				
S of 36° (Conception area)			210			315	1,258	941				
PACIFIC OCEAN PERCH	900	911	150	1,160	1,173	0	137	173	200			200
Shortbelly Rockfish	13,900	13,900	13,900	6,950	6,950	3,475	6,950	13,900				
WIDOW ROCKFISH	5,334	5,144	368	7,728	6,937	0	362	509				371
CANARY ROCKFISH	172	179	44	937	940	0	35	44	85	105	155	Ttarget=2021
Chilipepper Rockfish	2,700	2,700	2,000	3,037	2,576	2,000	2,099	2,576				
BOCACCIO	602	618	218	793	793	0	227	302				227
Splitnose Rockfish	615	615	461	615	615	461						
Yellowtail Rockfish	4,585	4,510	4,548	4,562	4,562	4,562						
Shortspine Thornyhead - coastwide	2,488	2,463		2,437	2,411							
Shortspine Thornyhead - N of 34°27'			1,634			1,591						
Shortspine Thornyhead - S of 34°27'			421			410						
Longspine Thornyhead - coastwide	3,953	3,860		3,766	3,671							
Longspine Thornyhead - N of 34°27'			2,220			2,175						
Longspine Thornyhead - S of 34°27'			476			385						
COWCOD	36	36	4	13	14	0	2	4				2 Ttarget=2065
S of 36° (Conception area)	17	17										
N of 36° (Monterey area)	19	19										
DARKBLOTCHED	456	487	290 (2007) 330 (2008)	437	440	0	165	235	306			Ttarget=2030
YELLOWEYE	47	47	Ramp-down c/	31	32	0	14	14	15			14
Black Rockfish (WA)	540	540	540	490	464	464						
Black Rockfish (OR-CA)	725	719	722	1,454	1,303	831	1000	1,317				

TABLE 2-1b (continued). Preliminary PFMC-recommended alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2010, including preliminary preferred alternatives. (Overfished stocks in CAPS; Stocks with new assessments in bold).

Stock	No Action Alternative			2010 Action Alternatives								Preliminary preferred alternative
	2007 ABC a/	2008 ABC a/	2007-08 OY a/	2009 ABC	2010 ABC	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY	
Blue Rockfish (CA)	Managed under the Minor Nearshore Rockfish complexes			241	239	Managed under minor nearshore rockfish complexes		207	230			
Minor Rockfish North	3,680	3,680	2,270	3,678	3,678	2,280	2,283					
Nearshore Species			142			152	155					
Blue rockfish contribution				28	28	25	28					
Shelf Species			968			968						
Slope Species			1,160			1,160						
Minor Rockfish South	3,403		1,904	3,384	3,382	1,970	1,990					
Nearshore Species			564			630	650					
Blue rockfish contribution				213	211	182	202					
Shelf Species			714			714						
Slope Species			626			626						
California scorpionfish	236	202	175	175	155	99	155					
Cabezon (off CA only)	94	94	69	106	111	69	74	79				
Dover Sole	28,522	28,442	16,500	29,453	28,582	16,500						
English Sole	6,773	5,701	6,237	14,326	9,745	9,745						
Petrale Sole (coastwide) b/	2,917	2,919	2,499	2,811	2,751	2,393						
Arrowtooth Flounder	5,800	5,800	5,800	11,267	10,112	5,245	10,112					
Starry Flounder	1,221	1,221	890	1,509	1,578	1,077						
Other Flatfish	6,731	6,731	4,884	6,731	6,731	4,884						
Other Fish	14,600	14,600	7,300	TBD d/	TBD d/	TBD d/	TBD d/	TBD d/				
Longnose Skate	Managed under the Other Fish complex			3,428	3,269	902	1,349	3,269				
Kelp Greenling HG (OR)												

a/ The Council elected to average OY projections for 2007 and 2008. ABCs are year-specific.

b/ Area OYs/HGs are stratified according to the assessment areas and alternatively adjusted by management areas for lingcod and petrale sole.

c/ The yelloweye ramp-down strategy ramps the harvest rate down from the status quo harvest rate and resumes a constant harvest rate strategy in 2011. The 2007-2010 OYs are 23 mt, 20 mt, 17 mt, and 14 mt, respectively under the ramp-down strategy.

TABLE 2-2. Basis for the DRAFT 2009-2010 optimum yield alternatives recommended by the PFM for analysis.

Stock	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY
Lingcod - coastwide						
N of 42° (OR & WA)	Adjusted the projected OY from the 2005 assessment for N of 43 deg (Col. and U.S.-Van areas) as follows: derived the percentage of the 2005-06 OY estimated for the area between 42 and 43 deg. (107 mt/719 mt) and applied this proportion to the estimated OY S of 43 deg. to determine an estimated OY for the area between 42 and 43 deg. This was added to the projected OY for N of 43 deg. to determine an appropriate OY for N of 42 deg	Adjusted the projected OY from the 2005 assessment for N of 43 deg (Col. and U.S.-Van areas) as follows: derived the percentage of the 2005-06 OY estimated for the area between 42 and 43 deg. (107 mt/719 mt) and applied this proportion to the estimated OY S of 43 deg. to determine an estimated OY for the area between 42 and 43 deg. This was added to the projected OY for N of 43 deg. to determine an appropriate OY for N of 42 deg				
S of 42° (CA)	Status quo	Adjusted the projected OY for S of 43 deg (Col. and U.S.-Van areas) as follows: derived the percentage of the 2005-06 OY estimated for the area between 42 and 43 deg. (107 mt/719 mt) and applied this proportion to the estimated OY S of 43 deg. to determine an estimated OY for the area between 42 and 43 deg. This was subtracted from the projected ave. 2009-10 OY for S of 43 deg. to determine an appropriate OY for S of 42 deg				
Pacific Cod	Status quo					
Pacific Whiting (U.S.)	50% of 2007 U.S. OY	2007 U.S. OY	150% of 2007 U.S. OY			
Sablefish (Coastwide)	From Schirripa 2007; Note: 2009-10 ave. OY > 2010 ABC	From Schirripa 2007 base model, based on the sum of South of Conception OY with 50% precautionary adjustment and North of Conception OY	From Schirripa 2007 low abundance model, based on the sum of South of Conception OY with 50% precautionary adjustment and North of Conception OY			
N of 36° (Monterey north)	96.5% of coastwide OY, which is the status quo apportionment.	72% of coastwide OY, which is the 2003-06 ave. proportion of the estimated swept-area biomass from the NWFSC shelf-slope survey	72% of coastwide OY, which is the 2003-06 ave. proportion of the estimated swept-area biomass from the NWFSC shelf-slope survey			
S of 36° (Conception area)	3.5% of coastwide OY, which is the status quo apportionment	28% of the base model coastwide OY (based on 2003-06 ave. biomass from the NWFSC shelf-slope survey) with a 50% precautionary adjustment due to assessment and survey uncertainty, and lack of access to fishing grounds in the CCA	28% of the low productivity model coastwide OY (based on 2003-06 ave. biomass from the NWFSC shelf-slope survey) with a 50% precautionary adjustment due to assessment and survey uncertainty, and lack of access to fishing grounds in the CCA			
PACIFIC OCEAN PERCH	T (@ F=0) = 2010	SPR = F90.3%; Ttarg = 2010; Pmax = 95.6%	SPR = F88% (HR that produces the 0708 ave. OYs); Ttarg = 2011; Pmax = 95%	Status quo SPR = F86.4%; Ttarg = 2011; Pmax = 94.4%		
Shortbelly Rockfish	25% of status quo ABC/OY; stock projected to rebuild	50% of status quo ABC/OY; stock projected to remain in equilibrium	Status quo ABC/OY; stock projected to decrease dramatically			
WIDOW ROCKFISH	T (@ F=0) = 2009	SPR = F96.4% (HR that produces the 0708 ave. OYs); Ttarg = 2009; Pmax = 100%	Status quo SPR = F95%; Ttarg = 2009; Pmax = 100%			
CANARY ROCKFISH	T (@ F=0) = 2019	SPR = F97.3%; Ttarg = 2020; Pmax = 75.0%	Status quo OY; SPR = F96.2%; Ttarg = 2020; Pmax = 75.0%	SPR = F93.6%; Ttarg = 2020; Pmax = 75.0%	SPR = F92.2%; Ttarg = 2020; Pmax = 75.0%	Status quo SPR = F88.7%; Ttarg = 2021; Pmax = 75%
Chilipepper Rockfish	Status quo OY specifically less than the ABC as an added precautionary mechanism for reducing bocaccio bycatch	Long-term equilibrium MSY at F50%				
BOCACCIO	T (@ F=0) = 2020	SPR = F82.6% (HR that produces the 0708 ave. OYs); Ttarg = 2022; Pmax = x%	Status quo SPR = F77.7%; Ttarg = 2023; Pmax = x%			

TABLE 2-2. Basis for the preliminary 2009-2010 optimum yield alternatives recommended by the PFMC for analysis (continued).						
Stock	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY
Splitnose Rockfish	Status quo					
Yellowtail Rockfish	OY = ABC projected from 2005 assessment					
Shortspine Thornyhead - coastwide	No coastwide OY (status quo)					
Shortspine Thornyhead - N of 34°27'	OY = 66% of the projected coastwide ABC/OY since the 2005 assessment indicated 66% of the biomass occurs N. of Pt. Conception (status quo methodology)					
Shortspine Thornyhead - S of 34°27'	OY = 34% of the projected coastwide ABC/OY since the 2005 assessment indicated 34% of the biomass occurs S of Pt. Conception with an additional 50% precautionary reduction to account for the paucity of survey data S of Pt. Conception (status quo methodology)					
Longspine Thornyhead - coastwide	No coastwide OY (status quo)					
Longspine Thornyhead - N of 34°27'	Coastwide ABC/OY projected from the 2005 assessment was apportioned N & S of Pt. Conception as follows: Assumed constant density throughout the Conception area and estimated 79% of the assessed coastwide biomass occurs N of Pt. Conception, with a 25% precautionary reduction to account for relatively higher assessment uncertainty (status quo methodology).					
Longspine Thornyhead - S of 34°27'	Coastwide ABC/OY projected from the 2005 assessment was apportioned N & S of Pt. Conception as follows: Assumed constant density throughout the Conception area and estimated 21% of the assessed coastwide biomass occurs S of Pt. Conception, with a 50% precautionary reduction to account for relatively higher assessment uncertainty and a paucity of survey data for the Conception area (status quo methodology).					
COWCOD	T (@ F=0) = 2061; Pmax = 78.4%	Status quo SPR = F90%; Ttarg = 2065; Pmax = 72.4%	SPR = F82.1% (produces the 2007-08 OY); Ttarg = 2072; Pmax = 66.2%			
DARKBLOTCHED	T (@ F=0) = 2018	SPR = F75.6%; Ttarg = 2022; Pmax = 97.7%	SPR = F67.7%; Ttarg = 2025; Pmax = 91.0%	Status quo SPR = F67.7%; Ttarg = 2030; Pmax = 76.7%		
YELLOWEYE	T (@ F=0) = 2049	Constant HR strategy; SPR = F71.9%; Ttarg = 2082; Pmax = 69.5%	HR ramp-down strategy (2009 OY = 17 mt, SPR HR = F66.3%; 2010 OY = 14 mt, SPR HR = F71.3%); Ttarg = 2082; Pmax = 68.9%	Constant HR strategy; SPR = F69.3%; Ttarg = 2090 (= Tmax); Pmax = 50%		
Black Rockfish (WA)	OY under the base model (M=0.16 males, M=0.24 females) with a 3% reduction to account for the portion of the stock estimated between Cape Falcon and the Columbia River.					
Black Rockfish (OR-CA)	OY under the STAR Panel endorsed model with the addition of the northern OY 3% reduction to account for the portion of the stock estimated between Cape Falcon and the Columbia River.	Constant catch scenario requested by the GMT;	OY under the medium productivity scenario (base case) with the addition of the northern OY 3% reduction to account for the portion of the stock estimated between Cape Falcon and the Columbia River.			

TABLE 2-2. Basis for the preliminary 2009-2010 optimum yield alternatives recommended by the PFMC for analysis (continued).						
Stock	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY
Blue Rockfish (CA)	Managed under minor NS complexes		Represents 40:10 base case scenario plus 9 mt from 50% of the original 94-99 Pt Conception south contribution of blue rockfish to minor nearshore south ABC	Based on setting the OY equal to the ABC (high productivity model as constrained by the base model ABC) plus 9 mt from 50% of the original 94-99 Pt Conception south contribution of blue rockfish to minor nearshore south ABC		
Minor Rockfish North	Based on the increased blue rockfish contribution	Based on the increased blue rockfish contribution				
Nearshore Species	Based on revising the contribution of blue rockfish using the 40:10 base case scenario from the blue rockfish assessment	Based on revising the contribution of blue rockfish using the 40:10 high productivity scenario (as constrained by the ABC) from the blue rockfish assessment				
Blue rockfish contribution	Based on the historical northern (42° to 40°10') proportion of blue rockfish applied to the 40:10 base case OY	Based on the historical northern (42° to 40°10') proportion of blue rockfish applied to the 40:10 high productivity scenario (as constrained by the ABC) from the blue rockfish assessment				
Shelf Species	Status quo					
Slope Species	Status quo					
Minor Rockfish South	Based on increased blue rockfish contribution	Based on increased blue rockfish contribution				
Nearshore Species	Based on revising the original contribution of blue rockfish using the 40:10 base case scenario from the blue rockfish assessment	Based on revising the contribution of blue rockfish using the 40:10 high productivity scenario (as constrained by the ABC) from the blue rockfish assessment				
Blue rockfish contribution	Based on the historical central (40°10' to 34°27') proportion of blue rockfish applied to the 40:10 base case OY	Based on the historical central (40°10' to 34°27') proportion of blue rockfish applied to the 40:10 high productivity scenario (as constrained by the ABC) from the blue rockfish assessment				
Shelf Species	Status quo					
Slope Species	Status quo					
California scorpionfish	Based on the results of the 2005 assessment modified to incorporate CRFS monitoring data for the CPFV component	Status quo:Based on a value between 137 (2007-8 OY as modified by CRFS) and 219 (base model without CPFV modification)				
Cabezon (off CA only)	Status quo OY(average 2007-2008 projection) based on F50% harvest rate with a 60:20 adjustment from the 2005 assessment	Average OY from the 2005 Assessment for 2009-2010 based on F50% harvest rate with a 60:20 adjustment	Year-specific OY from the 2005 Assessment for 2009-2010 based on F50% harvest rate with a 60:20 adjustment			
Dover Sole	Equilibrium MSY under the proxy HR (SPR = F40%) from 2005 assessment					
English Sole	OY from base model					
Petrale Sole (coastwide)	Projected from 2005 assessment: sum of ave. 40:10 adjusted northern OYs and 75% of 40:10 adjusted southern OYs (75% precautionary adjustment for assessment uncertainty)					

TABLE 2-2. Basis for the preliminary 2009-2010 optimum yield alternatives recommended by the PFMC for analysis (continued).						
Stock	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY
Arrowtooth Flounder	Equilibrium MSY under the proxy HR (SPR = F40%)	OY = ABC from base model; Note OY > 2010 ABC				
Other Fish	TBD	TBD	TBD			
Longnose Skate	Projected OY under the current estimated exploitation rate	OY based on a 50% increase in average landings and discard mortality relative to the base model	OY = ABC under the proxy SPR HR (F45%)			
Kelp Greenling HG (OR)	Status quo					

TABLE 2-3. Estimated time to rebuild relative to alternative 2009-2010 OYs for overfished West Coast groundfish species.

Species	Ttarget in the FMP	OY Alternative	Median Time to Rebuild	OYs (mt)		T @ F=0	Current Tmax	Re-estimated Tmax
				2009	2010			
Bocaccio (S of 40°10')	2026	1	2020	0	0	2020	2032	2033
		2	2022	218	227			
		3	2023	288	302			
			2026	468	482			
Canary	2063	1	2019	0	0	2019	2071	2035
		2	2020	35	35			
		3	2020	44	44			
			2020	55	55			
		4	2020	85	85			
			2020	95	95			
		5	2020	105	105			
		6	2021	155	155			
	2023	328	325					
			2035	637	623			
Cowcod	2039	1	2061	0	0	2061	2074	2098
		2	2065	2	2			
		3	2072	4	4			
			2080	6	7			
			2089	8	8			
Darkblotched	2011	1	2018	0	0	2018	2033	2040
		2	2022	159	165			
		3	2025	229	235			
		4	2030	300	306			
			2031	318	323			
			2040	385	390			
POP	2017	1	2010	0	0	2010	2043	2042
		2	2010	130	137			
		3	2011	164	173			
		4	2011	189	200			
			2012	565	589			
			2014	744	769			
			2017	971	992			
Widow	2015	1	2009	0	0	2009	2027	2023
		2	2009	371	362			
		3	2009	522	509			
			2009	4,338	4,051			
Yelloweye	2084	1	2049	0	0	2049	2096	2090
		2	2082	13	14			
		3	2082	Ramp-down a/				
		4	2090	15	15			

a/ 2009 and 2010 OYs under the harvest rate ramp-down strategy are 17 mt and 14 mt, respectively.

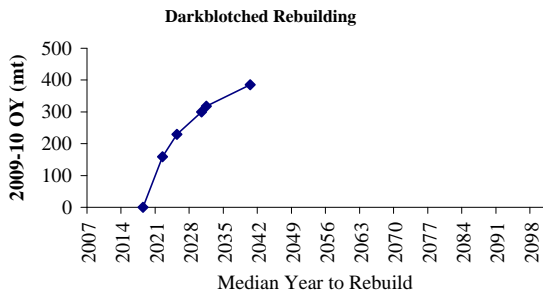
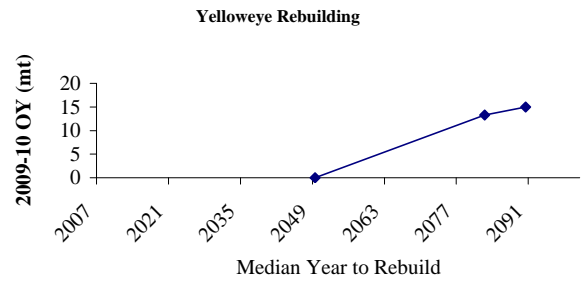
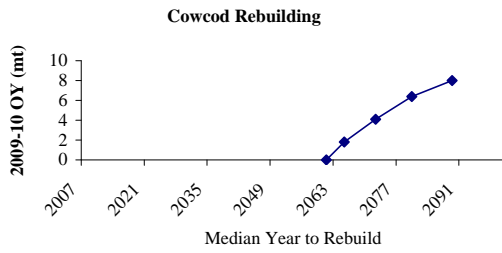
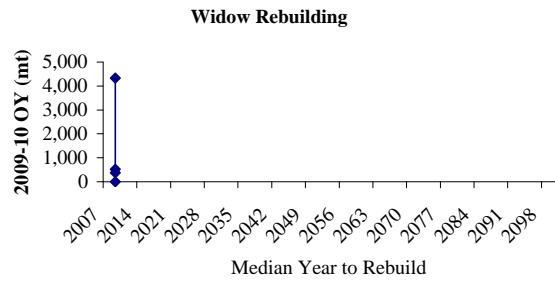
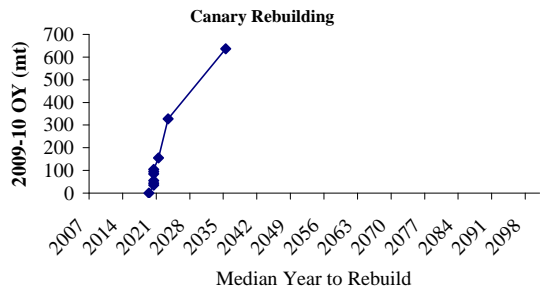
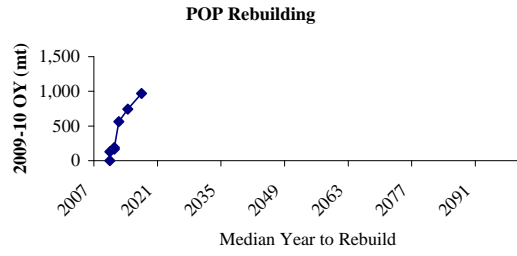
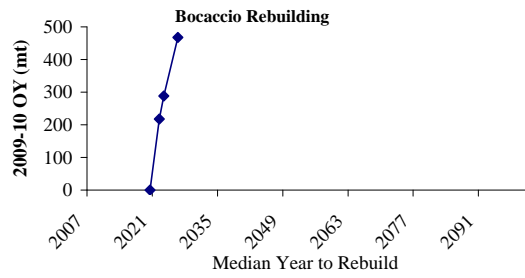


Figure 2-2. 2009 optimum yields (mt) vs. predicted rebuilding times for overfished species.