

Summary of potential impacts of the September 2009 MPA proposals (Round 3) on commercial and recreational fisheries in the South Coast Study Region

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1. Introduction

The purpose of this project is to analyze the relative effects of three MPA proposals on commercial and recreational fisheries in the South Coast Study Region (SCSR). For detailed information on how data were collected and/or analyzed, please see our *Draft Survey Methods and Summary Statistics for Ecotrust's South Coast Study Region Fishery Uses and Values Project* (presented to the RSG on 3/3/2009). For information on the methods used to evaluate these data, please see Section 12 of the *SAT Draft Methods Used to Evaluate Marine Protected Area Proposals for the MLPA South Coast Region*. Additional proposal-specific information on potential fishery-specific impacts (to study region and to total area and value) for any given MPA are available in the series of Excel files provided to the RSG.

To analyze the commercial fisheries, we used data layers characterizing the spatial extent and relative importance of fishing grounds for 15 commercial fisheries. We collected this information during the summer and fall of 2008 using a stratified, representative sample of 254 commercial fishermen. Individual responses regarding the relative importance of ocean areas for each fishery were standardized using a 100-point scale and normalized to the reported fishing grounds.

To analyze the recreational fisheries, we used data layers characterizing the spatial extent and relative importance of fishing grounds for ten commercial passenger fishing vessel (CPFV) fisheries and 17 recreational fisheries. We collected this information during the summer and fall of 2008 using a stratified, solicited¹ sample of 119 CPFV and 504 recreational fishermen. Individual responses regarding the relative importance of ocean areas for each fishery were standardized using a 100-point scale and normalized to the reported fishing grounds.

Based on the data described above, we evaluate the potential economic impacts on the commercial, CPFV, and recreational fishing grounds under each of the three MPA proposals (i.e., SCRSG MPA Proposal 1 (P1), SCRSG MPA Proposal 2 (P2), and SCRSG MPA Proposal 3(P3)). We also conduct a socioeconomic impact analysis on the commercial and CPFV fisheries. We report commercial and CPFV results by port. We report recreational results by user group (i.e., dive, kayak, and private vessel) and by county.

The remaining sections of this document summarize the potential impacts. For more detailed statistics, please see the tables in the Appendix.

In all tables presented, a 'dashed line' represents a fishery that does not occur or a fishery for which insufficient data were collected to merit presentation.

¹ The use of a solicited sample may cause traditional statistical measures (e.g., confidence intervals) to be less precise. Nevertheless, it does allow us to make generalizations about preferences of the overall recreational fishing population and about the three user groups within the study area. We feel that this adds thematic resolution to the MLPA marine planning process.

2. Impact of the Channel Islands MPAs (C.I. MPAs)

This report also presents the potential impacts of the Channel Island MPAs on commercial, CPFV, and recreational fishing grounds. We calculate these impacts the same way that we calculate the impacts of each MPA proposal (as described in the Introduction). For more information on this analysis, please see our *Summary of potential impacts of the Channel Islands MPAs on commercial and recreational fisheries in the South Coast Study Region* (presented to the RSG on 2/29/2009).

The Channel Islands network, which was established by California Fish and Game Commission (CFGC) in 2002 and expanded by the National Oceanic and Atmospheric Administration (NOAA) in 2006 and 2007, encompasses 241 square nautical miles (or 318 square miles). It consists of 11 marine reserves where all harvest and take is prohibited (Richardson Rock, Harris Point, Carrington Point, Scorpion, Anacapa Island, Footprint, Gulf Island, Skunk Point, South Point, Judith Rock, and Santa Barbara Island) and two marine conservation areas that allow limited take of lobster and/or pelagic fish (Painted Cave and Anacapa Island). The Channel Islands network was originally set to be reconsidered during the marine planning process (i.e., stakeholders would be given the opportunity to propose changes to the siting of the existing MPAs), and it was later decided that the Channel Islands MPAs would not be changed.

Therefore, because all proposals must include the Channel Island MPAs, the potential impacts of the Channel Islands (C.I.) MPAs will be the same under all the alternative MPA proposals and any comparison of the proposals should separate out these impacts.

By subtracting the estimated C.I. MPAs impacts from the estimated total impacts, stakeholders can more easily assess the potential impacts of MPAs that can be changed. For example, if the total impact of a MPA proposal is a 19% reduction in net economic revenue, but 5% of this reduction comes from the Channel Island MPAs, then stakeholders can only potentially affect 14% of the impact (i.e., the minimum impact of their proposal is a 5% reduction in net economic revenue assuming zero impact elsewhere in the SCSR).

3. Results for Commercial Fisheries

We summarize here our analyses of the potential impacts on the 15 commercial fisheries (i.e., Ca. Halibut (Hook & Line), Ca. Halibut (Trawl), Coastal Pelagics, Lobster, N. Fishery (Hook & Line), N. Fishery (Trap), Rock Crab, Sablefish, Sea Cucumber (Diving), Sea Cucumber (Trawl), Spot Prawn, Squid, Swordfish, Thornyhead, and Urchin). The commercial fisheries are reported for the entire study region and by port (i.e., Santa Barbara, Ventura, Port Hueneme, San Pedro, Dana Point, Oceanside, and San Diego).

3.1 Potential Impacts on Commercial Fishing Grounds (Area and Stated Value)

MPA proposals vary considerably in their effects, both between and across fisheries. As mentioned previously, this report only presents results. Evaluation methods are presented in a separate document.

Each proposal affects the commercial fisheries differently. SCRSG MPA Proposal 2 generally has the lowest potential impacts in terms of both total area and total value total area, while SCRSG MPA Proposal 3 generally has the highest potential impacts. For information on the potential impacts on commercial fishing grounds for the 65 port-fishery combinations considered (both in terms of total area and total value), please see Tables A.1 and A.2 in the Appendix.

3.2 Potential Net Economic Impacts on Commercial Fisheries

A key assumption of this analysis is that each of the MPA proposals completely eliminates fishing opportunities in areas closed to specific fisheries and that fishermen are unable to adjust or mitigate in any way. In other words, the analysis assumes that all fishing in an area affected by an MPA is lost completely, when in reality it is more likely that fishermen will shift their efforts areas outside the MPA. The effect of such an assumption is most likely an overestimation of the impacts, or a “worst case scenario.”

Table 1 summarizes the MPA proposals with the estimated highest and lowest potential annual net economic impact by port (for associated values, see Table 2). On average, SCRSG MPA Proposal 2 is estimated to have the lowest potential net economic impact across the study region, while SCRSG MPA Proposal 3 is estimated to have the highest potential impact.

Figure 1 summarizes the potential annual net economic impact on SCSR commercial fisheries considered, calculated as a percentage reduction in net economic revenue (i.e., profit). The potential impacts from each proposal are further broken down by port in Figure 2 and Table 2. On average, Ventura is the port estimated to see the lowest potential net economic impacts (as a %), while Oceanside is estimated to see the highest potential impacts (as a %). Tables 3–10 show potential impacts by fishery for each port and for the SCSR.²

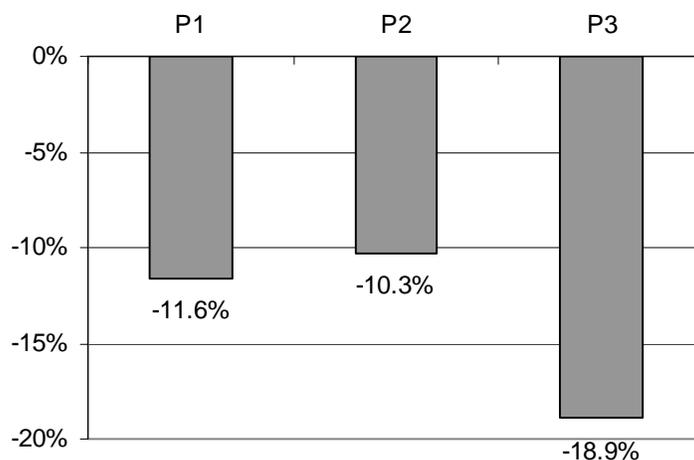
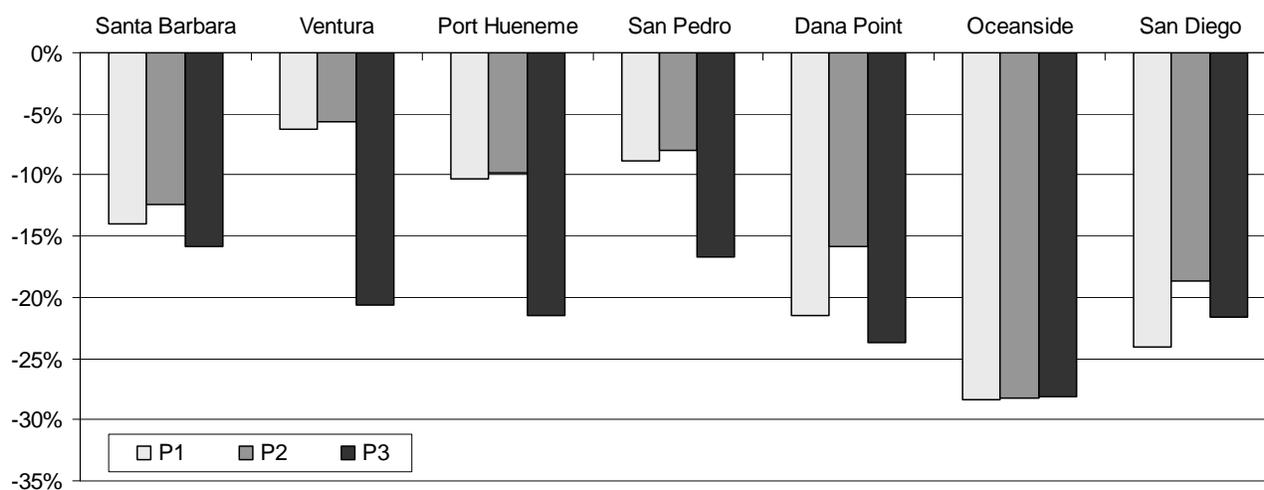
In terms of potential net economic impact across the SCSR for the top six commercial species based on % contribution to overall SCSR ex-vessel values (i.e., squid, urchin, lobster, coastal pelagics, spot prawn and rock crab), several patterns emerge from the analysis of the three proposals:

- The rock crab fishery sees the lowest range of potential impacts (in dollars). SCRSG MPA Proposal 3 has the highest potential impact on the rock crab fishery (\$99,356), while SCRSG MPA Proposal 2 has the lowest potential impact (\$80,740).
- The squid fishery sees the highest range of potential impacts (in dollars). SCRSG MPA Proposal 3 has the highest potential impact on the squid fishery (\$1,866,541), while SCRSG MPA Proposal 2 has the lowest potential impact (\$645,132).
- The coastal pelagics fishery sees the lowest range of potential impacts (as a %). SCRSG MPA Proposal 3 has the highest potential impact on the coastal pelagics fishery (11.7%), while SCRSG MPA Proposal 2 has the lowest potential impact (4.1%).
- The spot prawn and lobster fisheries see the highest range of potential impacts (as a %). SCRSG MPA Proposal 3 has the highest potential impact on the lobster fishery (21.2%), while SCRSG MPA Proposal 2 has the lowest potential impact on the spot prawn fishery (17.1%).

² For an explanation of why net economic impact can exceed 100%, please see the Appendix.

Table 1: Highest/Lowest Estimated Annual Net Economic Impact on Commercial Fisheries (% Reduction in Profit)³

Port	MPA Proposal(s) with highest potential impact	MPA Proposal(s) with lowest potential impact
Santa Barbara	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Ventura	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Port Hueneme	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
San Pedro	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Dana Point	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Oceanside	SCRSG MPA Proposal 1	SCRSG MPA Proposal 3
San Diego	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2
Study Region	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2

Figure 1: Estimated Annual Net Economic Impact on Commercial Fisheries (% Reduction in Profit)**Figure 2: Estimated Annual Net Economic Impact on Commercial Fisheries by Port (% Reduction in Profit)**

³ For all economic impacts, the results are the estimated maximum potential economic impact on average annual net revenue from 2000-07 (in \$2007).

Table 2: Estimated Annual Net Economic Impact on Commercial Fisheries by Port (Reduction in Profit)

Port	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Santa Barbara	\$5,796,804	\$2,655,064	\$3,141,740	\$256,224	\$439,340	\$390,779	\$497,798
Ventura	\$5,061,321	\$2,828,803	\$2,232,518	\$86,604	\$139,310	\$126,082	\$460,066
Port Hueneme	\$11,061,000	\$6,008,602	\$5,052,398	\$306,853	\$520,378	\$497,327	\$1,085,988
San Pedro	\$20,141,349	\$10,989,464	\$9,151,885	\$227,858	\$803,762	\$725,720	\$1,529,085
Dana Point	\$1,860,091	\$926,136	\$933,955	\$2,458	\$200,210	\$148,315	\$220,869
Oceanside	\$987,326	\$481,905	\$505,421	\$1,146	\$143,690	\$143,044	\$141,856
San Diego	\$3,093,219	\$1,462,682	\$1,630,538	\$168	\$391,505	\$305,068	\$353,248
Study Region	\$48,001,110	\$25,352,655	\$22,648,455	\$881,311	\$2,638,195	\$2,336,335	\$4,288,910
				% Reduction in Profit	% Reduction in Profit		
Santa Barbara	100%	46%	54%	7.5%	14.0%	12.4%	15.8%
Ventura	100%	56%	44%	3.9%	6.2%	5.6%	20.6%
Port Hueneme	100%	54%	46%	6.1%	10.3%	9.8%	21.5%
San Pedro	100%	55%	45%	2.5%	8.8%	7.9%	16.7%
Dana Point	100%	50%	50%	0.3%	21.4%	15.9%	23.6%
Oceanside	100%	49%	51%	0.2%	28.4%	28.3%	28.1%
San Diego	100%	47%	53%	0.0%	24.0%	18.7%	21.7%
Study Region	—	—	—	3.9%	11.6%	10.3%	18.9%

Table 3: Estimated Annual Net Economic Impact for Santa Barbara

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	\$70,658	\$37,025	\$33,633	\$2,938	\$7,777	\$6,840	\$11,519
Ca. Halibut (Trawl)	\$200,567	\$65,184	\$135,383	\$0	\$11,754	\$12,052	\$19,193
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	\$1,558,845	\$716,026	\$842,819	\$43,055	\$128,401	\$96,810	\$151,330
N. Fishery (Hook & Line)	\$150,237	\$77,523	\$72,715	\$10,879	\$14,799	\$14,938	\$16,782
N. Fishery (Trap)	\$39,144	\$19,986	\$19,157	\$1,266	\$2,819	\$2,087	\$4,451
Rock Crab	\$845,105	\$396,193	\$448,912	\$27,368	\$73,166	\$66,168	\$73,512
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	\$19,874	\$9,858	\$10,017	\$1,538	\$1,948	\$1,835	\$3,091
Sea Cucumber (Trawl)	\$163,088	\$40,772	\$122,316	\$0	\$4,795	\$4,138	\$6,307
Spot Prawn	\$48,537	\$23,651	\$24,886	\$0	\$4,706	\$4,810	\$4,810
Squid	—	—	—	—	—	—	—
Swordfish	—	—	—	—	—	—	—
Thornyhead	—	—	—	—	—	—	—
Urchin	\$3,064,404	\$1,374,803	\$1,689,601	\$169,180	\$205,725	\$197,291	\$232,303
All Fisheries	\$6,160,459	\$2,761,020	\$3,399,438	\$256,224	\$455,889	\$406,969	\$523,298
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	100%	52%	48%	8.7%	23.1%	20.3%	34.3%
Ca. Halibut (Trawl)	100%	33%	68%	0.0%	8.7%	8.9%	14.2%
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	100%	46%	54%	5.1%	15.2%	11.5%	18.0%
N. Fishery (Hook & Line)	100%	52%	48%	15.0%	20.4%	20.5%	23.1%
N. Fishery (Trap)	100%	51%	49%	6.6%	14.7%	10.9%	23.2%
Rock Crab	100%	47%	53%	6.1%	16.3%	14.7%	16.4%
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	100%	50%	50%	15.4%	19.4%	18.3%	30.9%
Sea Cucumber (Trawl)	100%	25%	75%	0.0%	3.9%	3.4%	5.2%
Spot Prawn	100%	49%	51%	0.0%	18.9%	19.3%	19.3%
Squid	—	—	—	—	—	—	—
Swordfish	—	—	—	—	—	—	—
Thornyhead	—	—	—	—	—	—	—
Urchin	100%	45%	55%	10.0%	12.2%	11.7%	13.7%
All Fisheries	—	—	—	7.5%	13.4%	12.0%	15.4%

Table 4: Estimated Annual Net Economic Impact for Ventura

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRS MPA Proposal 1	SCRS MPA Proposal 2	SCRS MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	\$18,178	\$9,525	\$8,653	\$952	\$1,288	\$1,205	\$1,343
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	\$371,161	\$170,486	\$200,675	\$0	\$4,034	\$4,458	\$65,482
N. Fishery (Hook & Line)	—	—	—	—	—	—	—
N. Fishery (Trap)	\$35,207	\$17,976	\$17,231	\$0	\$0	\$0	\$4,338
Rock Crab	\$126,384	\$59,250	\$67,134	\$3,637	\$3,637	\$3,637	\$5,015
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	\$49,076	\$24,342	\$24,734	\$116	\$5,604	\$4,238	\$7,208
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	\$108,471	\$52,855	\$55,616	\$0	\$0	\$0	\$0
Squid	\$4,352,843	\$2,494,369	\$1,858,475	\$81,899	\$124,747	\$112,543	\$376,681
Swordfish	—	—	—	—	—	—	—
Thornyhead	—	—	—	—	—	—	—
Urchin	—	—	—	—	—	—	—
All Fisheries	\$5,061,321	\$2,828,803	\$2,232,518	\$86,604	\$139,310	\$126,082	\$460,066
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	100%	52%	48%	11.0%	14.9%	13.9%	15.5%
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	100%	46%	54%	0.0%	2.0%	2.2%	32.6%
N. Fishery (Hook & Line)	—	—	—	—	—	—	—
N. Fishery (Trap)	100%	51%	49%	0.0%	0.0%	0.0%	25.2%
Rock Crab	100%	47%	53%	5.4%	5.4%	5.4%	7.5%
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	100%	50%	50%	0.5%	22.7%	17.1%	29.1%
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	100%	49%	51%	0.0%	0.0%	0.0%	0.0%
Squid	100%	57%	43%	4.4%	6.7%	6.1%	20.3%
Swordfish	—	—	—	—	—	—	—
Thornyhead	—	—	—	—	—	—	—
Urchin	—	—	—	—	—	—	—
All Fisheries	—	—	—	3.9%	6.2%	5.6%	20.6%

Table 5: Estimated Annual Net Economic Impact for Port Hueneme

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRS MPA Proposal 1	SCRS MPA Proposal 2	SCRS MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	\$19,373	\$10,152	\$9,222	\$904	\$1,209	\$1,167	\$1,354
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	\$767,935	\$427,164	\$340,771	\$3,764	\$18,185	\$12,075	\$28,647
Lobster	\$420,552	\$193,172	\$227,379	\$10,516	\$16,014	\$16,770	\$51,617
N. Fishery (Hook & Line)	\$49,637	\$25,613	\$24,024	\$65	\$7,817	\$7,656	\$9,453
N. Fishery (Trap)	\$61,447	\$31,374	\$30,073	\$0	\$602	\$769	\$769
Rock Crab	\$131,803	\$61,790	\$70,012	\$0	\$11	\$11	\$13,270
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	\$258,699	\$128,315	\$130,384	\$28,868	\$34,418	\$33,849	\$48,140
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	\$427,903	\$208,506	\$219,398	\$88,006	\$88,006	\$88,006	\$88,006
Squid	\$7,387,374	\$4,233,286	\$3,154,088	\$131,170	\$254,055	\$242,089	\$687,145
Swordfish	—	—	—	—	—	—	—
Thornyhead	—	—	—	—	—	—	—
Urchin	\$1,536,277	\$689,230	\$847,047	\$43,561	\$100,061	\$94,936	\$157,587
All Fisheries	\$11,061,000	\$6,008,602	\$5,052,398	\$306,853	\$520,378	\$497,327	\$1,085,988
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	100%	52%	48%	9.8%	13.1%	12.7%	14.7%
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	100%	56%	44%	1.1%	5.3%	3.5%	8.4%
Lobster	100%	46%	54%	4.6%	7.0%	7.4%	22.7%
N. Fishery (Hook & Line)	100%	52%	48%	0.3%	32.5%	31.9%	39.3%
N. Fishery (Trap)	100%	51%	49%	0.0%	2.0%	2.6%	2.6%
Rock Crab	100%	47%	53%	0.0%	0.0%	0.0%	19.0%
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	100%	50%	50%	22.1%	26.4%	26.0%	36.9%
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	100%	49%	51%	40.1%	40.1%	40.1%	40.1%
Squid	100%	57%	43%	4.2%	8.1%	7.7%	21.8%
Swordfish	—	—	—	—	—	—	—
Thornyhead	—	—	—	—	—	—	—
Urchin	100%	45%	55%	5.1%	11.8%	11.2%	18.6%
All Fisheries	—	—	—	6.1%	10.3%	9.8%	21.5%

Table 6: Estimated Annual Net Economic Impact for San Pedro

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRS MPA Proposal 1	SCRS MPA Proposal 2	SCRS MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	\$5,121,261	\$2,848,701	\$2,272,559	\$17,278	\$146,704	\$94,216	\$276,455
Lobster	\$980,389	\$450,323	\$530,066	\$801	\$51,032	\$46,626	\$73,303
N. Fishery (Hook & Line)	\$14,034	\$7,242	\$6,793	\$724	\$1,356	\$1,271	\$2,005
N. Fishery (Trap)	\$76,447	\$39,033	\$37,414	\$0	\$3,539	\$2,675	\$9,482
Rock Crab	\$136,953	\$64,205	\$72,748	\$0	\$56	\$34	\$90
Sablefish	\$68,707	\$38,647	\$30,059	\$0	\$13,487	\$18,571	\$12,481
Sea Cucumber (Diving)	\$164,935	\$81,808	\$83,127	\$2,346	\$12,832	\$12,326	\$17,368
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	\$389,257	\$189,674	\$199,583	\$0	\$5,274	\$3,557	\$16,496
Squid	\$10,719,087	\$6,142,503	\$4,576,584	\$144,248	\$319,216	\$290,500	\$802,714
Swordfish	—	—	—	—	—	—	—
Thornyhead	\$280,325	\$144,835	\$135,490	\$0	\$80,964	\$88,653	\$72,318
Urchin	\$2,189,956	\$982,494	\$1,207,462	\$62,461	\$169,301	\$167,292	\$246,373
All Fisheries	\$20,141,349	\$10,989,464	\$9,151,885	\$227,858	\$803,762	\$725,720	\$1,529,085
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	100%	56%	44%	0.8%	6.5%	4.1%	12.2%
Lobster	100%	46%	54%	0.2%	9.6%	8.8%	13.8%
N. Fishery (Hook & Line)	100%	52%	48%	10.7%	20.0%	18.7%	29.5%
N. Fishery (Trap)	100%	51%	49%	0.0%	9.5%	7.1%	25.3%
Rock Crab	100%	47%	53%	0.0%	0.1%	0.0%	0.1%
Sablefish	100%	56%	44%	0.0%	44.9%	61.8%	41.5%
Sea Cucumber (Diving)	100%	50%	50%	2.8%	15.4%	14.8%	20.9%
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	100%	49%	51%	0.0%	2.6%	1.8%	8.3%
Squid	100%	57%	43%	3.2%	7.0%	6.3%	17.5%
Swordfish	—	—	—	—	—	—	—
Thornyhead	100%	52%	48%	0.0%	59.8%	65.4%	53.4%
Urchin	100%	45%	55%	5.2%	14.0%	13.9%	20.4%
All Fisheries	—	—	—	2.5%	8.8%	7.9%	16.7%

Table 7: Estimated Annual Net Economic Impact for Dana Point

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs			SCRS MPA	SCRS MPA	SCRS MPA
				\$ Reduction in Profit			Proposal 1	Proposal 2	Proposal 3
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—	—	
Ca. Halibut (Trawl)	—	—	—	—	—	—	—	—	
Coastal Pelagics	—	—	—	—	—	—	—	—	
Lobster	\$914,095	\$419,872	\$494,223	\$0	\$66,927	\$38,319	\$100,690		
N. Fishery (Hook & Line)	—	—	—	—	—	—	—	—	
N. Fishery (Trap)	\$31,345	\$16,004	\$15,341	\$0	\$6,932	\$527	\$6,977		
Rock Crab	\$38,375	\$17,991	\$20,384	\$0	\$3,149	\$488	\$3,030		
Sablefish	\$127,274	\$71,591	\$55,682	\$0	\$24,984	\$34,401	\$23,119		
Sea Cucumber (Diving)	—	—	—	—	—	—	—	—	
Sea Cucumber (Trawl)	—	—	—	—	—	—	—	—	
Spot Prawn	\$300,792	\$146,568	\$154,224	\$0	\$23,101	\$9,477	\$15,377		
Squid	—	—	—	—	—	—	—	—	
Swordfish	\$196,774	\$130,362	\$66,411	\$2,458	\$20,996	\$11,090	\$22,450		
Thornyhead	\$160,858	\$83,110	\$77,748	\$0	\$51,204	\$53,378	\$45,449		
Urchin	\$90,579	\$40,637	\$49,942	\$0	\$2,916	\$635	\$3,777		
All Fisheries	\$1,860,091	\$926,136	\$933,955	\$2,458	\$200,210	\$148,315	\$220,869		
				% Reduction in Profit	% Reduction in Profit				
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—	—	
Ca. Halibut (Trawl)	—	—	—	—	—	—	—	—	
Coastal Pelagics	—	—	—	—	—	—	—	—	
Lobster	100%	46%	54%	0.0%	13.5%	7.8%	20.4%		
N. Fishery (Hook & Line)	—	—	—	—	—	—	—	—	
N. Fishery (Trap)	100%	51%	49%	0.0%	45.2%	3.4%	45.5%		
Rock Crab	100%	47%	53%	0.0%	15.4%	2.4%	14.9%		
Sablefish	100%	56%	44%	0.0%	44.9%	61.8%	41.5%		
Sea Cucumber (Diving)	—	—	—	—	—	—	—	—	
Sea Cucumber (Trawl)	—	—	—	—	—	—	—	—	
Spot Prawn	100%	49%	51%	0.0%	15.0%	6.1%	10.0%		
Squid	—	—	—	—	—	—	—	—	
Swordfish	100%	66%	34%	3.7%	31.6%	16.7%	33.8%		
Thornyhead	100%	52%	48%	0.0%	65.9%	68.7%	58.5%		
Urchin	100%	45%	55%	0.0%	5.8%	1.3%	7.6%		
All Fisheries	—	—	—	0.3%	21.4%	15.9%	23.6%		

Table 8: Estimated Annual Net Economic Impact for Oceanside

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRS MPA Proposal 1	SCRS MPA Proposal 2	SCRS MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	\$400,696	\$184,052	\$216,644	\$1,146	\$29,305	\$22,200	\$45,185
N. Fishery (Hook & Line)	—	—	—	—	—	—	—
N. Fishery (Trap)	\$21,205	\$10,827	\$10,378	\$0	\$198	\$144	\$379
Rock Crab	\$35,177	\$16,491	\$18,686	\$0	\$12	\$0	\$29
Sablefish	\$90,829	\$51,091	\$39,738	\$0	\$17,830	\$24,550	\$16,499
Sea Cucumber (Diving)	—	—	—	—	—	—	—
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	\$211,491	\$103,054	\$108,437	\$0	\$21,490	\$21,490	\$21,490
Squid	—	—	—	—	—	—	—
Swordfish	—	—	—	—	—	—	—
Thornyhead	\$207,737	\$107,331	\$100,406	\$0	\$64,591	\$68,141	\$57,407
Urchin	\$20,191	\$9,058	\$11,132	\$0	\$10,265	\$6,518	\$867
All Fisheries	\$987,326	\$481,905	\$505,421	\$1,146	\$143,690	\$143,044	\$141,856
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	100%	46%	54%	0.5%	13.5%	10.2%	20.9%
N. Fishery (Hook & Line)	—	—	—	—	—	—	—
N. Fishery (Trap)	100%	51%	49%	0.0%	1.9%	1.4%	3.7%
Rock Crab	100%	47%	53%	0.0%	0.1%	0.0%	0.2%
Sablefish	100%	56%	44%	0.0%	44.9%	61.8%	41.5%
Sea Cucumber (Diving)	—	—	—	—	—	—	—
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	100%	49%	51%	0.0%	19.8%	19.8%	19.8%
Squid	—	—	—	—	—	—	—
Swordfish	—	—	—	—	—	—	—
Thornyhead	100%	52%	48%	0.0%	64.3%	67.9%	57.2%
Urchin	100%	45%	55%	0.0%	92.2%	58.6%	7.8%
All Fisheries	—	—	—	0.2%	28.4%	28.3%	28.1%

Table 9: Estimated Annual Net Economic Impact for San Diego

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRSO MPA Proposal 1	SCRSO MPA Proposal 2	SCRSO MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	\$1,715,118	\$787,807	\$927,311	\$0	\$276,239	\$220,038	\$241,341
N. Fishery (Hook & Line)	\$3,291	\$1,698	\$1,593	\$0	\$325	\$355	\$264
N. Fishery (Trap)	\$107,924	\$55,105	\$52,819	\$0	\$14,681	\$10,034	\$12,622
Rock Crab	\$155,496	\$72,898	\$82,598	\$0	\$11,499	\$10,403	\$4,411
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	\$7,712	\$3,825	\$3,887	\$0	\$1,505	\$1,367	\$501
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	\$254,984	\$124,247	\$130,737	\$0	\$24,684	\$25,046	\$26,050
Squid	—	—	—	—	—	—	—
Swordfish	\$169,952	\$112,593	\$57,359	\$168	\$1,100	\$919	\$1,152
Thornyhead	—	—	—	—	—	—	—
Urchin	\$678,742	\$304,508	\$374,234	\$0	\$61,472	\$36,906	\$66,906
All Fisheries	\$3,093,219	\$1,462,682	\$1,630,538	\$168	\$391,505	\$305,068	\$353,248
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	—	—	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—	—	—
Lobster	100%	46%	54%	0.0%	29.8%	23.7%	26.0%
N. Fishery (Hook & Line)	100%	52%	48%	0.0%	20.4%	22.3%	16.6%
N. Fishery (Trap)	100%	51%	49%	0.0%	27.8%	19.0%	23.9%
Rock Crab	100%	47%	53%	0.0%	13.9%	12.6%	5.3%
Sablefish	—	—	—	—	—	—	—
Sea Cucumber (Diving)	100%	50%	50%	0.0%	38.7%	35.2%	12.9%
Sea Cucumber (Trawl)	100%	25%	75%	—	—	—	—
Spot Prawn	100%	49%	51%	0.0%	18.9%	19.2%	19.9%
Squid	—	—	—	—	—	—	—
Swordfish	100%	66%	34%	0.3%	1.9%	1.6%	2.0%
Thornyhead	—	—	—	—	—	—	—
Urchin	100%	45%	55%	0.0%	16.4%	9.9%	17.9%
All Fisheries	—	—	—	0.0%	24.0%	18.7%	21.7%

Table 10: Estimated Annual Net Economic Impact for the SCSR

Fishery	Baseline GER	Estimated Costs	Baseline NER (Profit)	C.I. MPAs	SCRSO MPA Proposal 1	SCRSO MPA Proposal 2	SCRSO MPA Proposal 3
				\$ Reduction in Profit	\$ Reduction in Profit		
Ca. Halibut (Hook & Line)	\$108,209	\$56,702	\$51,508	\$4,794	\$10,274	\$9,212	\$14,217
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	\$5,889,196	\$3,275,865	\$2,613,331	\$21,043	\$164,889	\$106,291	\$305,102
Lobster	\$6,360,856	\$2,921,739	\$3,439,117	\$55,518	\$571,952	\$445,222	\$728,948
N. Fishery (Hook & Line)	\$217,200	\$112,075	\$105,125	\$11,668	\$24,297	\$24,220	\$28,505
N. Fishery (Trap)	\$372,719	\$190,306	\$182,413	\$1,266	\$28,772	\$16,236	\$39,018
Rock Crab	\$1,469,292	\$688,818	\$780,474	\$31,005	\$91,529	\$80,740	\$99,356
Sablefish	\$286,809	\$161,330	\$125,479	\$0	\$56,302	\$77,522	\$52,099
Sea Cucumber (Diving)	\$500,296	\$248,147	\$252,149	\$32,868	\$56,305	\$53,615	\$76,308
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	\$1,741,435	\$848,554	\$892,881	\$88,006	\$167,261	\$152,385	\$172,229
Squid	\$22,459,304	\$12,870,158	\$9,589,146	\$357,317	\$698,018	\$645,132	\$1,866,541
Swordfish	\$366,725	\$242,956	\$123,770	\$2,626	\$22,097	\$12,009	\$23,602
Thornyhead	\$648,920	\$335,275	\$313,645	\$0	\$196,759	\$210,172	\$175,173
Urchin	\$7,580,148	\$3,400,730	\$4,179,418	\$275,201	\$549,740	\$503,579	\$707,813
All Fisheries⁴	\$48,001,110	\$25,352,655	\$22,648,455	\$881,311	\$2,638,195	\$2,336,335	\$4,288,910
				% Reduction in Profit	% Reduction in Profit		
Ca. Halibut (Hook & Line)	100%	52%	48%	9.3%	19.9%	17.9%	27.6%
Ca. Halibut (Trawl)	—	—	—	—	—	—	—
Coastal Pelagics	100%	56%	44%	0.8%	6.3%	4.1%	11.7%
Lobster	100%	46%	54%	1.6%	16.6%	12.9%	21.2%
N. Fishery (Hook & Line)	100%	52%	48%	11.1%	23.1%	23.0%	27.1%
N. Fishery (Trap)	100%	51%	49%	0.7%	15.8%	8.9%	21.4%
Rock Crab	100%	47%	53%	4.0%	11.7%	10.3%	12.7%
Sablefish	100%	56%	44%	0.0%	44.9%	61.8%	41.5%
Sea Cucumber (Diving)	100%	50%	50%	13.0%	22.3%	21.3%	30.3%
Sea Cucumber (Trawl)	—	—	—	—	—	—	—
Spot Prawn	100%	49%	51%	9.9%	18.7%	17.1%	19.3%
Squid	100%	57%	43%	3.7%	7.3%	6.7%	19.5%
Swordfish	100%	66%	34%	2.1%	17.9%	9.7%	19.1%
Thornyhead	100%	52%	48%	0.0%	62.7%	67.0%	55.9%
Urchin	100%	45%	55%	6.6%	13.2%	12.0%	16.9%
All Fisheries	—	—	—	3.9%	11.6%	10.3%	18.9%

⁴ Santa Barbara Ca. Halibut (Trawl) and Sea Cucumber (Trawl) are not included in this total. Please see Table 3 for estimated impacts on these two fisheries.

3.3 Potential Gross Economic Impacts on Commercial Fisheries

A key assumption of our analysis is that each of the MPA proposals completely eliminates fishing opportunities in areas closed to specific fisheries and that fishermen are unable to adjust or mitigate in any way. In other words, the analysis assumes that all fishing in an area affected by an MPA is lost completely, when in reality it is more likely that fishermen will shift their efforts areas outside the MPA. The effect of this assumption is most likely an overestimation of the impacts, or a “worst case scenario.”

Unlike net economic impact, gross economic impact does not account for fishermen’s operating costs. Therefore, the percentage reduction in gross economic revenue on SCSR commercial fisheries considered is less than the percentage reduction in net economic revenue (i.e., profit). However, the dollar reduction in gross economic revenue is greater than the dollar reduction in net economic revenue. Figures 3–4 compare the potential annual gross economic impact with the potential net economic impact on SCSR commercial fisheries considered.

On average, SCRSG MPA Proposal 2 is estimated to have the lowest potential annual gross economic impact across the study region, while SCRSG MPA Proposal 3 is estimated to have the highest potential impact.

The potential annual gross economic impacts from each proposal are further broken down by port in Figure 5 and Table 11. On average, San Pedro is the port estimated to see the lowest potential gross economic impacts (as a %), while Oceanside is estimated to see the highest potential impacts (as a %). Tables 12–19 show potential impacts by fishery for each port and for the SCSR.

In terms of potential gross economic impact across the SCSR for the top six commercial species (based on % contribution to overall SCSR ex-vessel values), several patterns emerge from the analysis of the three proposals:

- The rock crab fishery sees the lowest range of potential impacts (in dollars). SCRSG MPA Proposal 3 has the highest potential impact on the rock crab fishery (\$121,188), while SCRSG MPA Proposal 2 has the lowest potential impact (\$98,481).
- The squid fishery sees the highest range of potential impacts (in dollars). SCRSG MPA Proposal 3 has the highest potential impact on the squid fishery (\$2,995,979), while SCRSG MPA Proposal 2 has the lowest potential impact (\$1,035,499).
- The coastal pelagics fishery sees the lowest range of potential impacts (as a %). SCRSG MPA Proposal 3 has the highest potential impact on the coastal pelagics fishery (8.1%), while SCRSG MPA Proposal 2 has the lowest potential impact (2.8%).
- The lobster and spot prawn fisheries see the highest range of potential impacts (as a %). SCRSG MPA Proposal 3 has the highest potential impact on the lobster fishery (14.0%), while SCRSG MPA Proposal 2 has the lowest potential impact on the spot prawn fishery (11.1%).

Figure 3: Estimated Gross Economic Impact (GEI) (% Reduction in Revenue) and Net Economic Impact (NEI) (% Reduction in Profit) on Commercial Fisheries

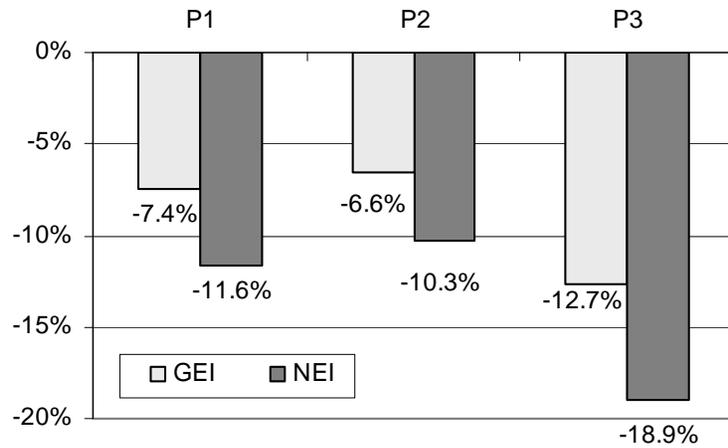


Figure 4: Estimated Gross Economic Impact (GEI) (\$ Reduction in Revenue) and Net Economic Impact (NEI) (\$ Reduction in Profit) on Commercial Fisheries

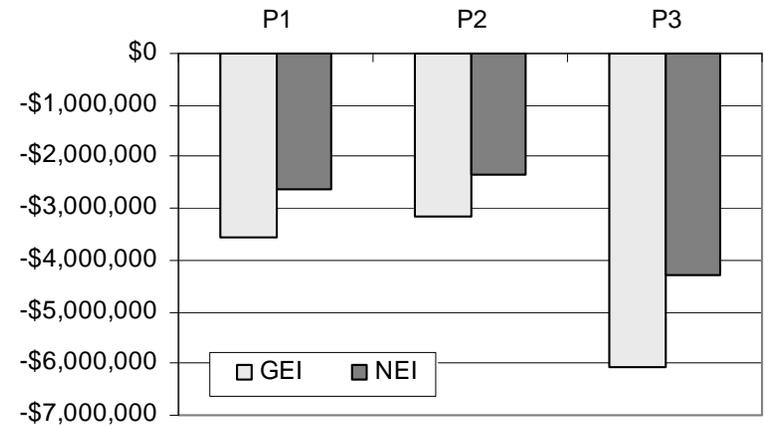


Figure 5: Estimated Annual Gross Economic Impact on Commercial Fisheries by Port (% Reduction in Revenue)

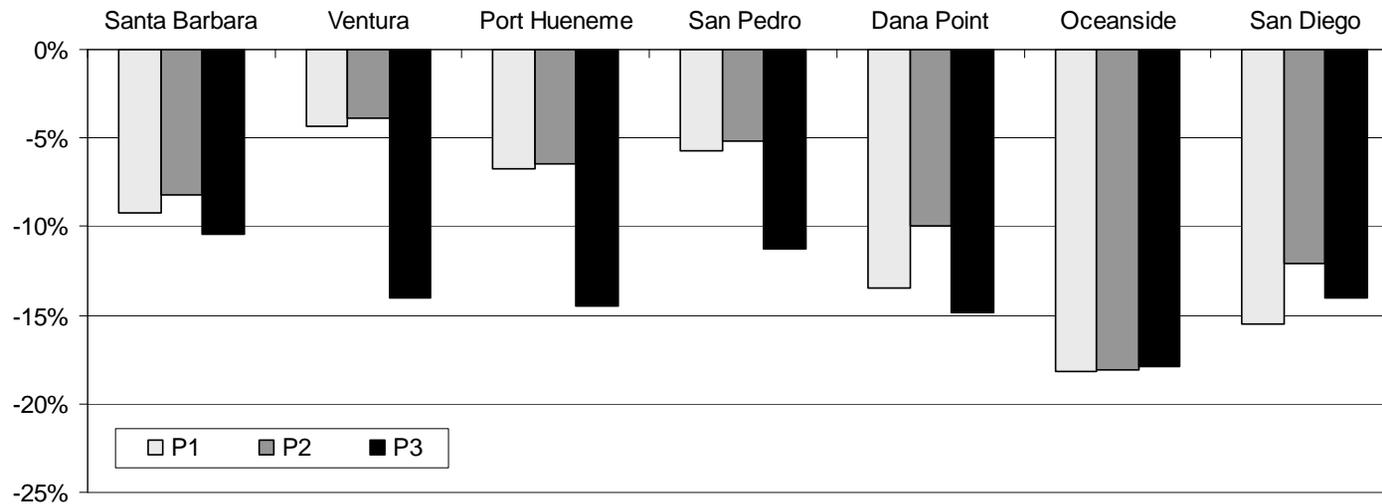


Table 11: Estimated Annual Gross Economic Impact on Commercial Fisheries by Port (Reduction in Revenue)

Port	Baseline GER	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Santa Barbara	\$5,796,804	\$310,585	\$534,801	\$475,440	\$606,467
Ventura	\$5,061,321	\$137,310	\$218,454	\$197,537	\$707,578
Port Hueneme	\$11,061,000	\$431,308	\$744,006	\$709,212	\$1,604,309
San Pedro	\$20,141,349	\$338,475	\$1,156,335	\$1,031,833	\$2,272,557
Dana Point	\$1,860,091	\$3,227	\$250,601	\$185,179	\$275,425
Oceanside	\$987,326	\$1,402	\$179,002	\$178,496	\$176,747
San Diego	\$3,093,219	\$221	\$480,374	\$374,726	\$433,254
Study Region	\$48,001,110⁵	\$1,222,527	\$3,563,572	\$3,152,424	\$6,076,337
		% Reduction in Revenue	% Reduction in Revenue		
Santa Barbara	100%	5.4%	9.2%	8.2%	10.5%
Ventura	100%	0.1%	4.3%	3.9%	14.0%
Port Hueneme	100%	3.9%	6.7%	6.4%	14.5%
San Pedro	100%	1.7%	5.7%	5.1%	11.3%
Dana Point	100%	0.2%	13.5%	10.0%	14.8%
Oceanside	100%	0.1%	18.1%	18.1%	17.9%
San Diego	100%	0.0%	15.5%	12.1%	14.0%
Study Region	—	2.5%	7.4%	6.6%	12.7%

⁵ This total includes all the port-fishery combinations considered in Tables 12–18 except for Santa Barbara Ca. Halibut (Trawl) and Sea Cucumber (Trawl). Please see Table 12 for estimated impacts on these two fisheries.

Table 12: Estimated Annual Gross Economic Impact for Santa Barbara

Fishery	Baseline GER	C.I. MPAs			
		\$ Reduction in Revenue			
			SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
Ca. Halibut (Hook & Line)	\$70,658	\$3,922	\$10,380	\$9,129	\$15,375
Ca. Halibut (Trawl)	\$200,567	\$0	\$13,438	\$13,779	\$21,942
Coastal Pelagics	—	—	—	—	—
Lobster	\$1,558,845	\$52,689	\$157,132	\$118,472	\$185,191
N. Fishery (Hook & Line)	\$150,237	\$14,092	\$19,170	\$19,351	\$21,739
N. Fishery (Trap)	\$39,144	\$1,679	\$3,738	\$2,767	\$5,903
Rock Crab	\$845,105	\$33,382	\$89,243	\$80,708	\$89,666
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	\$19,874	\$1,958	\$2,478	\$2,335	\$3,933
Sea Cucumber (Trawl)	\$163,088	\$0	\$5,480	\$4,730	\$7,208
Spot Prawn	\$48,537	\$0	\$5,975	\$6,106	\$6,106
Squid	—	—	—	—	—
Swordfish	—	—	—	—	—
Thornyhead	—	—	—	—	—
Urchin	\$3,064,404	\$202,864	\$246,685	\$236,572	\$278,554
All Fisheries	\$6,160,459	\$310,585	\$553,718	\$493,948	\$635,618
		% Reduction in Revenue			
Ca. Halibut (Hook & Line)	100.0%	5.6%	14.7%	12.9%	21.8%
Ca. Halibut (Trawl)	100.0%	0.0%	6.7%	6.9%	10.9%
Coastal Pelagics	—	—	—	—	—
Lobster	100.0%	3.4%	10.1%	7.6%	11.9%
N. Fishery (Hook & Line)	100.0%	9.4%	12.8%	12.9%	14.5%
N. Fishery (Trap)	100.0%	4.3%	9.6%	7.1%	15.1%
Rock Crab	100.0%	4.0%	10.6%	9.6%	10.6%
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	100.0%	9.9%	12.5%	11.8%	19.8%
Sea Cucumber (Trawl)	100.0%	0.0%	3.4%	2.9%	4.4%
Spot Prawn	100.0%	0.0%	12.3%	12.6%	12.6%
Squid	—	—	—	—	—
Swordfish	—	—	—	—	—
Thornyhead	—	—	—	—	—
Urchin	100.0%	6.6%	8.1%	7.7%	9.1%
All Fisheries	—	5.0%	9.0%	8.0%	10.3%

Table 13: Estimated Annual Gross Economic Impact for Ventura

Fishery	Baseline GER	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Ca. Halibut (Hook & Line)	\$18,178	\$1,271	\$1,720	\$1,609	\$1,792
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	\$371,161	\$0	\$4,936	\$5,456	\$80,134
N. Fishery (Hook & Line)	—	—	—	—	—
N. Fishery (Trap)	\$35,207	\$0	\$0	\$0	\$5,753
Rock Crab	\$126,384	\$4,436	\$4,436	\$4,436	\$6,117
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	\$49,076	\$147	\$7,131	\$5,393	\$9,172
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$108,471	\$0	\$0	\$0	\$0
Squid	\$4,352,843	—	\$200,231	\$180,643	\$604,610
Swordfish	—	—	—	—	—
Thornyhead	—	—	—	—	—
Urchin	—	—	—	—	—
All Fisheries	\$5,061,321	\$5,854	\$218,454	\$197,537	\$707,578
		% Reduction in Revenue	% Reduction in Revenue		
Ca. Halibut (Hook & Line)	100%	7.0%	9.5%	8.9%	9.9%
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	100%	0.0%	1.3%	1.5%	21.6%
N. Fishery (Hook & Line)	—	—	—	—	—
N. Fishery (Trap)	100%	0.0%	0.0%	0.0%	16.3%
Rock Crab	100%	3.5%	3.5%	3.5%	4.8%
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	100%	0.3%	14.5%	11.0%	18.7%
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	0.0%	0.0%	0.0%	0.0%
Squid	100%	3.0%	4.6%	4.2%	13.9%
Swordfish	—	—	—	—	—
Thornyhead	—	—	—	—	—
Urchin	—	—	—	—	—
All Fisheries	—	0.1%	4.3%	3.9%	14.0%

Table 14: Estimated Annual Gross Economic Impact for Port Hueneme

Fishery	Baseline GER	C.I. MPAs			
		\$ Reduction in Revenue			
		SCRS MPA Proposal 1	SCRS MPA Proposal 2	SCRS MPA Proposal 3	
Ca. Halibut (Hook & Line)	\$19,373	\$1,207	\$1,614	\$1,558	\$1,808
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	\$767,935	\$5,913	\$28,567	\$18,968	\$45,001
Lobster	\$420,552	\$12,869	\$19,598	\$20,523	\$63,167
N. Fishery (Hook & Line)	\$49,637	\$84	\$10,126	\$9,918	\$12,245
N. Fishery (Trap)	\$61,447	\$0	\$799	\$1,020	\$1,020
Rock Crab	\$131,803	\$0	\$13	\$13	\$16,185
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	\$258,699	\$36,735	\$43,798	\$43,073	\$61,260
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$427,903	\$111,726	\$111,726	\$111,726	\$111,726
Squid	\$7,387,374	\$210,540	\$407,783	\$388,576	\$1,102,935
Swordfish	—	—	—	—	—
Thornyhead	—	—	—	—	—
Urchin	\$1,536,277	\$52,233	\$119,983	\$113,838	\$188,962
All Fisheries	\$11,061,000	\$431,308	\$744,006	\$709,212	\$1,604,309
		% Reduction in Revenue			
Ca. Halibut (Hook & Line)	100%	6.2%	8.3%	8.0%	9.3%
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	100%	0.8%	3.7%	2.5%	5.9%
Lobster	100%	3.1%	4.7%	4.9%	15.0%
N. Fishery (Hook & Line)	100%	0.2%	20.4%	20.0%	24.7%
N. Fishery (Trap)	100%	0.0%	1.3%	1.7%	1.7%
Rock Crab	100%	0.0%	0.0%	0.0%	12.3%
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	100%	14.2%	16.9%	16.7%	23.7%
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	26.1%	26.1%	26.1%	26.1%
Squid	100%	2.9%	5.5%	5.3%	14.9%
Swordfish	—	—	—	—	—
Thornyhead	—	—	—	—	—
Urchin	100%	3.4%	7.8%	7.4%	12.3%
All Fisheries	—	3.9%	6.7%	6.4%	14.5%

Table 15: Estimated Annual Gross Economic Impact for San Pedro

Fishery	Baseline GER	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	\$5,121,261	\$27,143	\$230,457	\$148,004	\$434,283
Lobster	\$980,389	\$980	\$62,451	\$57,059	\$89,706
N. Fishery (Hook & Line)	\$14,034	\$937	\$1,757	\$1,646	\$2,598
N. Fishery (Trap)	\$76,447	\$0	\$4,694	\$3,547	\$12,576
Rock Crab	\$136,953	\$0	\$68	\$41	\$110
Sablefish	\$68,707	\$0	\$16,661	\$22,941	\$15,418
Sea Cucumber (Diving)	\$164,935	\$2,985	\$16,329	\$15,685	\$22,101
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$389,257	\$0	\$6,695	\$4,515	\$20,942
Squid	\$10,719,087	\$231,532	\$512,372	\$466,280	\$1,288,434
Swordfish	—	—	—	—	—
Thornyhead	\$280,325	\$0	\$101,842	\$111,513	\$90,965
Urchin	\$2,189,956	\$74,896	\$203,009	\$200,600	\$295,425
All Fisheries	\$20,141,349	\$338,475	\$1,156,335	\$1,031,833	\$2,272,557
		% Reduction in Revenue	% Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	100%	0.5%	4.5%	2.9%	8.5%
Lobster	100%	0.1%	6.4%	5.8%	9.2%
N. Fishery (Hook & Line)	100%	6.7%	12.5%	11.7%	18.5%
N. Fishery (Trap)	100%	0.0%	6.1%	4.6%	16.5%
Rock Crab	100%	0.0%	0.1%	0.0%	0.1%
Sablefish	100%	0.0%	24.3%	33.4%	22.4%
Sea Cucumber (Diving)	100%	1.8%	9.9%	9.5%	13.4%
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	0.0%	1.7%	1.2%	5.4%
Squid	100%	2.2%	4.8%	4.4%	12.0%
Swordfish	—	—	—	—	—
Thornyhead	100%	0.0%	36.3%	39.8%	32.5%
Urchin	100%	3.4%	9.3%	9.2%	13.5%
All Fisheries	—	1.7%	5.7%	5.1%	11.3%

Table 16: Estimated Annual Gross Economic Impact for Dana Point

Fishery	Baseline GER	C.I. MPAs	SCRS MPA Proposal 1	SCRS MPA Proposal 2	SCRS MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	\$914,095	\$0	\$81,903	\$46,893	\$123,220
N. Fishery (Hook & Line)	—	—	—	—	—
N. Fishery (Trap)	\$31,345	\$0	\$9,194	\$699	\$9,253
Rock Crab	\$38,375	\$0	\$3,841	\$595	\$3,696
Sablefish	\$127,274	\$0	\$30,864	\$42,497	\$28,560
Sea Cucumber (Diving)	—	—	—	—	—
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$300,792	\$0	\$29,327	\$12,032	\$19,521
Squid	—	—	—	—	—
Swordfish	\$196,774	\$3,227	\$27,568	\$14,561	\$29,477
Thornyhead	\$160,858	\$0	\$64,407	\$67,142	\$57,169
Urchin	\$90,579	\$0	\$3,496	\$761	\$4,529
All Fisheries	\$1,860,091	\$3,227	\$250,601	\$185,179	\$275,425
		% Reduction in Revenue	% Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	100%	0.0%	9.0%	5.1%	13.5%
N. Fishery (Hook & Line)	—	—	—	—	—
N. Fishery (Trap)	100%	0.0%	29.3%	2.2%	29.5%
Rock Crab	100%	0.0%	10.0%	1.6%	9.6%
Sablefish	100%	0.0%	24.3%	33.4%	22.4%
Sea Cucumber (Diving)	100%	—	—	—	—
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	0.0%	9.8%	4.0%	6.5%
Squid	—	—	—	—	—
Swordfish	100%	1.6%	14.0%	7.4%	15.0%
Thornyhead	100%	0.0%	40.0%	41.7%	35.5%
Urchin	100%	0.0%	3.9%	0.8%	5.0%
All Fisheries	—	0.2%	13.5%	10.0%	14.8%

Table 17: Estimated Annual Gross Economic Impact for Oceanside

Fishery	Baseline GER	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	\$400,696	\$1,402	\$35,862	\$27,167	\$55,296
N. Fishery (Hook & Line)	—	—	—	—	—
N. Fishery (Trap)	\$21,205	\$0	\$263	\$191	\$503
Rock Crab	\$35,177	\$0	\$14	\$0	\$35
Sablefish	\$90,829	\$0	\$22,026	\$30,328	\$20,382
Sea Cucumber (Diving)	—	—	—	—	—
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$211,491	\$0	\$27,282	\$27,282	\$27,282
Squid	—	—	—	—	—
Swordfish	—	—	—	—	—
Thornyhead	\$207,737	\$0	\$81,246	\$85,712	\$72,209
Urchin	\$20,191	\$0	\$12,308	\$7,816	\$1,040
All Fisheries	\$987,326	\$1,402	\$179,002	\$178,496	\$176,747
		% Reduction in Revenue	% Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	100%	0.4%	9.0%	6.8%	13.8%
N. Fishery (Hook & Line)	—	—	—	—	—
N. Fishery (Trap)	100%	0.0%	1.2%	0.9%	2.4%
Rock Crab	100%	0.0%	0.0%	0.0%	0.1%
Sablefish	100%	0.0%	24.3%	33.4%	22.4%
Sea Cucumber (Diving)	—	—	—	—	—
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	0.0%	12.9%	12.9%	12.9%
Squid	—	—	—	—	—
Swordfish	—	—	—	—	—
Thornyhead	100%	0.0%	39.1%	41.3%	34.8%
Urchin	100%	0.0%	61.0%	38.7%	5.2%
All Fisheries	—	0.1%	18.1%	18.1%	17.9%

Table 18: Estimated Annual Gross Economic Impact for San Diego

Fishery	Baseline GER	C.I. MPAs	SCRSB MPA Proposal 1	SCRSB MPA Proposal 2	SCRSB MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	\$1,715,118	\$0	\$338,050	\$269,274	\$295,343
N. Fishery (Hook & Line)	\$3,291	\$0	\$421	\$460	\$343
N. Fishery (Trap)	\$107,924	\$0	\$19,470	\$13,307	\$16,739
Rock Crab	\$155,496	\$0	\$14,026	\$12,688	\$5,380
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	\$7,712	\$0	\$1,915	\$1,740	\$638
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$254,984	\$0	\$31,338	\$31,797	\$33,071
Squid	—	—	—	—	—
Swordfish	\$169,952	\$221	\$1,445	\$1,207	\$1,513
Thornyhead	—	—	—	—	—
Urchin	\$678,742	\$0	\$73,711	\$44,254	\$80,227
All Fisheries	\$3,093,219	\$221	\$480,374	\$374,726	\$433,254
		% Reduction in Revenue	% Reduction in Revenue		
Ca. Halibut (Hook & Line)	—	—	—	—	—
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	—	—	—	—	—
Lobster	100%	0.0%	19.7%	15.7%	17.2%
N. Fishery (Hook & Line)	100%	0.0%	12.8%	14.0%	10.4%
N. Fishery (Trap)	100%	0.0%	18.0%	12.3%	15.5%
Rock Crab	100%	0.0%	9.0%	8.2%	3.5%
Sablefish	—	—	—	—	—
Sea Cucumber (Diving)	100%	0.0%	24.8%	22.6%	8.3%
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	0.0%	12.3%	12.5%	13.0%
Squid	100%	—	—	—	—
Swordfish	100%	0.1%	0.9%	0.7%	0.9%
Thornyhead	—	—	—	—	—
Urchin	100%	0.0%	10.9%	6.5%	11.8%
All Fisheries	—	0.0%	15.5%	12.1%	14.0%

Table 19: Estimated Annual Gross Economic Impact for the SCSR

Fishery	Baseline GER	C.I. MPAs	SCRSB MPA Proposal 1	SCRSB MPA Proposal 2	SCRSB MPA Proposal 3
		\$ Reduction in Revenue	\$ Reduction in Revenue		
Ca. Halibut (Hook & Line)	\$108,209	\$6,399	\$13,713	\$12,295	\$18,975
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	\$5,889,196	\$33,056	\$259,024	\$166,972	\$479,284
Lobster	\$6,360,856	\$67,941	\$699,932	\$544,844	\$892,056
N. Fishery (Hook & Line)	\$217,200	\$15,114	\$31,474	\$31,375	\$36,925
N. Fishery (Trap)	\$372,719	\$1,679	\$38,157	\$21,532	\$51,746
Rock Crab	\$1,469,292	\$37,818	\$111,642	\$98,481	\$121,188
Sablefish	\$286,809	\$0	\$69,551	\$95,766	\$64,360
Sea Cucumber (Diving)	\$500,296	\$41,825	\$71,650	\$68,227	\$97,104
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	\$1,741,435	\$111,726	\$212,343	\$193,457	\$218,649
Squid	\$22,459,304	\$573,528	\$1,120,386	\$1,035,499	\$2,995,979
Swordfish	\$366,725	\$3,448	\$29,013	\$15,768	\$30,989
Thornyhead	\$648,920	\$0	\$247,495	\$264,368	\$220,344
Urchin	\$7,580,148	\$329,993	\$659,193	\$603,841	\$848,737
All Fisheries⁶	\$48,001,110	\$1,222,527	\$3,563,572	\$3,152,424	\$6,076,337
		% Reduction in Revenue	% Reduction in Revenue		
Ca. Halibut (Hook & Line)	100%	5.9%	12.7%	11.4%	17.5%
Ca. Halibut (Trawl)	—	—	—	—	—
Coastal Pelagics	100%	0.6%	4.4%	2.8%	8.1%
Lobster	100%	1.1%	11.0%	8.6%	14.0%
N. Fishery (Hook & Line)	100%	7.0%	14.5%	14.4%	17.0%
N. Fishery (Trap)	100%	0.5%	10.2%	5.8%	13.9%
Rock Crab	100%	2.6%	7.6%	6.7%	8.2%
Sablefish	100%	0.0%	24.3%	33.4%	22.4%
Sea Cucumber (Diving)	100%	8.4%	14.3%	13.6%	19.4%
Sea Cucumber (Trawl)	—	—	—	—	—
Spot Prawn	100%	6.4%	12.2%	11.1%	12.6%
Squid	100%	2.6%	5.0%	4.6%	13.3%
Swordfish	100%	0.9%	7.9%	4.3%	8.5%
Thornyhead	100%	0.0%	38.1%	40.7%	34.0%
Urchin	100%	4.4%	8.7%	8.0%	11.2%
All Fisheries	—	2.5%	7.4%	6.6%	12.7%

⁶ Santa Barbara Ca. Halibut (Trawl) and Sea Cucumber (Trawl) are not included in this total. Please see Table 12 for estimated impacts on these two fisheries.

3.4 Disproportionate Impacts on Commercial Fisheries

We also use the results of our analysis to evaluate whether there are port-fishery combinations that could be disproportionately affected by the three proposals considered.

To assess this impact, we used a box plot analysis (Figure A.1 in the Appendix) to identify outliers within each fishery (calculated using estimated impact on stated value of total fishing grounds). In a box plot analysis, outliers are defined as extreme values that deviate significantly from the rest of the sample. Box plot analysis results, presented in Table 20, can also inform convergence among MPA proposals within a fishery and relative potential impacts between fisheries.

Table 20: Disproportionately Impacted Commercial Fisheries

Port	Fishery	Proposal(s)	Estimated Impact on Stated Value of Total Fishing Grounds
Santa Barbara	Ca. Halibut (Hook and Line)	P3	21.8%
Dana Point	Nearshore Fishery (Trap)	P1, P3	29.3%, 29.5%
Port Hueneme	Spot Prawn (Trap)	P1, P2, P3	26.1%, 26.1%, 26.1%
Oceanside	Urchin (Diving)	P1, P2	61.0%, 38.7%

4. Results for Commercial Passenger Fishing Vessels (CPFV)

We summarize here our analyses of the potential impacts on the ten CPFV fisheries (i.e., Barracuda, Ca. Halibut, Calico Bass, Lingcod, Rockfish, Ca. Scorpionfish, Ca. Sheephead, Sand Bass, Whitefish, and White Seabass). The results for CPFV fisheries are broken out by study region and by port (i.e., Santa Barbara, Port Hueneme/Channel Islands Harbor, Santa Monica, San Pedro/Long Beach, Newport Beach, Dana Point, Oceanside, and San Diego).

4.1 Potential Impacts on CPFV Fishing Grounds (Area and Stated Value)

MPA proposals vary considerably in their effects, both between and across fisheries. As mentioned previously, this report only presents results. Evaluation methods are presented in a separate document. Each proposal affects the CPFV fisheries differently. For information on the potential impacts on CPFV fishing grounds for the 80 port-fishery combinations considered (both in terms of total area and total value), please see Tables A.3 and A.4 in the Appendix.

4.2 Potential Net Economic Impacts on CPFV Fisheries

Table 21 summarizes the MPA proposals with the estimated highest and lowest potential annual net economic impact by port (for associated values, see Table 22). On average, SCRSG MPA Proposal 2 is estimated to have the lowest potential net economic impact across the study region, while SCRSG MPA Proposal 3 is estimated to have the highest potential impact.

Figure 6 summarizes the potential annual net economic impact on all SCSR CPFV fisheries considered. Similar to our analysis of the commercial fisheries, we calculate the potential net economic impact for the CPFV fisheries as the average percentage reduction on net economic revenue (i.e., profit) for all ten species considered. The potential impacts from each proposal are further broken down by port in Figure 7. On average, San Pedro/Long Beach is the port estimated to see the lowest potential net economic impacts (as a %), while San Diego is estimated to see the highest potential impacts (as a %).

Table 21: Highest/Lowest Annual Estimated Net Economic Impact on CPFV Fisheries (% Reduction in Profit)

Port	MPA Proposal(s) with highest potential impact	MPA Proposal(s) with lowest potential impact
Santa Barbara	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Port Hueneme / Channel Islands Harbor	SCRSG MPA Proposal 3	SCRSG MPA Proposal 1
Santa Monica	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
San Pedro / Long Beach	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Newport Beach	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Dana Point	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2
Oceanside	SCRSG MPA Proposal 1	SCRSG MPA Proposal 3
San Diego	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2
Study Region	SCRSG MPA Proposal 3	SCRSG MPA Proposal 2

Figure 6: Estimated Annual Net Economic Impact on CPFV Fisheries (% Reduction in Profit)

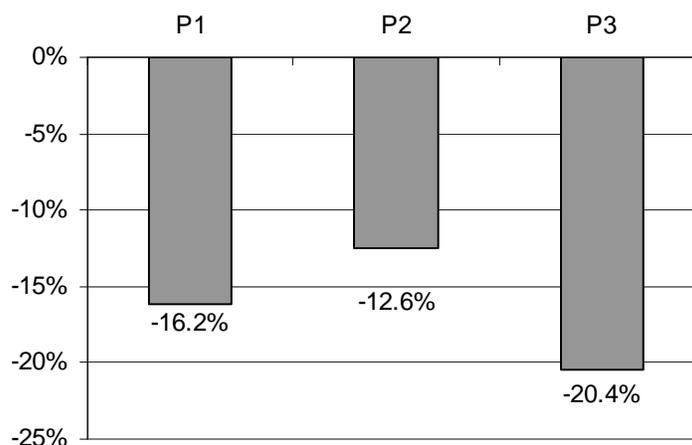
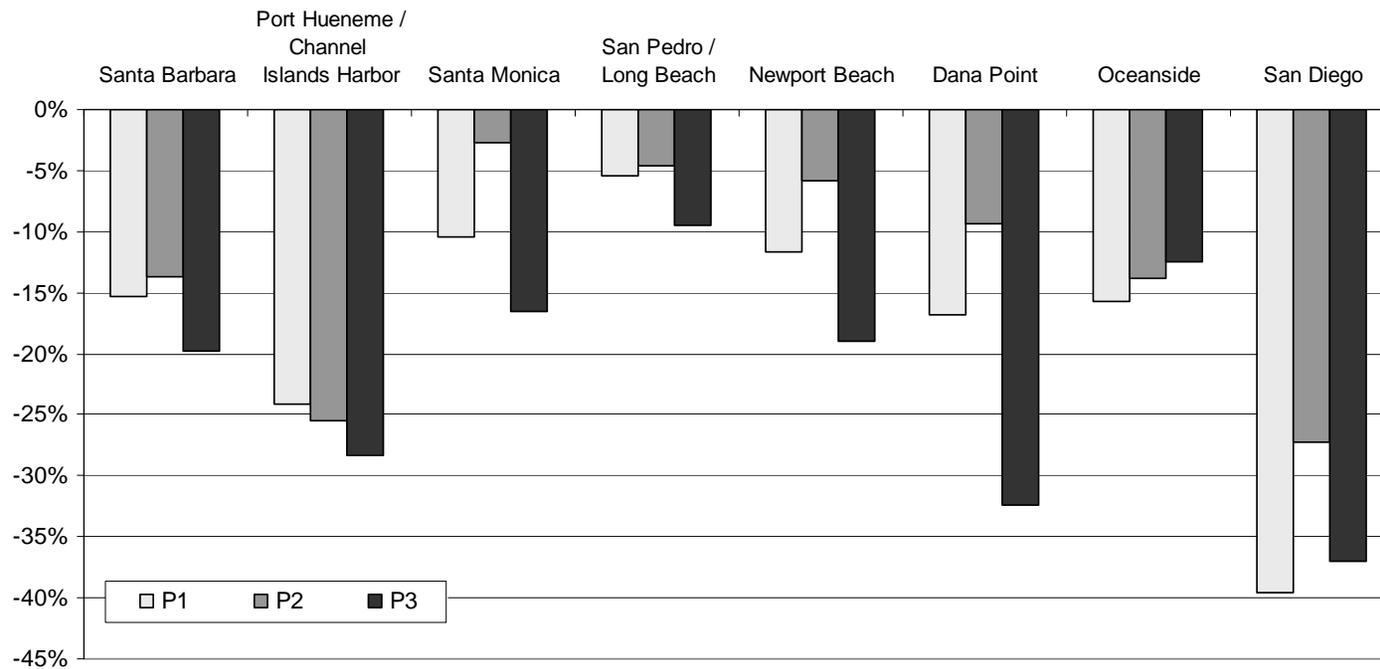


Table 22: Estimated Annual Net Economic Impact on CPFV Fisheries (% Reduction in Profit)

Port	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
	% Reduction in Profit	% Reduction in Profit		
Santa Barbara	7.5%	15.3%	13.7%	19.8%
Port Hueneme / Channel Islands Harbor	11.8%	24.1%	25.5%	28.3%
Santa Monica	0.0%	10.4%	2.7%	16.5%
San Pedro / Long Beach	0.0%	5.4%	4.7%	9.5%
Newport Beach	0.0%	11.7%	5.9%	19.0%
Dana Point	0.0%	16.8%	9.4%	32.4%
Oceanside	0.0%	15.7%	13.8%	12.5%
San Diego	2.1%	39.6%	27.2%	37.0%
Study Region	3.0%	16.2%	12.6%	20.4%

Figure 7: Estimated Annual Net Economic Impact on CPFV Fisheries by Port (% Reduction in Profit)



4.3 Disproportionate Impacts on CPFV Fisheries

For a discussion of the methods we use to identify whether there are port-fishery combinations that could be disproportionately affected by the MPA proposals considered, please see section 3.4.

Figure A.2 in the Appendix presents box plot analysis for the CPFV fisheries calculated using estimated impacts on the stated value of total fishing grounds. It should be noted that while no port-fishery combination was identified as a statistically significant outlier, those highlighted in Table 23 represent the four highest impacts across all port-fishery combinations.

Table 23: Disproportionately Impacted CPFV Fisheries

Port	Fishery	Proposal(s)	Estimated Impact on Stated Value of Total Fishing Grounds
Port Hueneme / Channel Islands Harbor	Ca. Halibut	P1, P2, P3	22.1%, 22.5%, 23.5%
Newport Beach	Ca. Sheephead	P3	22.3%

5. Results for Recreational Fisheries

We summarize here our analyses of the potential impacts on the 17 recreational fisheries (i.e., Barracuda, Bonito, Ca. Halibut, Calico Bass, Croaker, Lobster, Mackerels, Rockfish, Rock Crab, Scallops, Sheephead, Sand Bass, Squid, Surf Perch, Thresher Shark, White Seabass, and Yellowtail). The results for recreational fisheries are broken out by user group (i.e., dive, kayak, and private vessel) and by county (i.e., Santa Barbara, Ventura, Los Angeles, Orange, and San Diego).

5.1 Potential Impacts on Recreational Fishing Grounds (Area and Stated Value)

MPA proposals vary considerably in their effects, both between and across fisheries. Each proposal affects the recreational fisheries differently. Due to the large number of fisheries, user groups, and counties considered, we present potential impacts on total recreational fishing grounds (both in terms of total area and total value) in Tables A.5–A.12 in the Appendix.

Appendix A: Summary Tables of Potential Impacts

Table A.1 Percentage Area of Total Commercial Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSB MPA Proposal 1	SCRSB MPA Proposal 2	SCRSB MPA Proposal 3
Santa Barbara	Ca. Halibut (Hook & Line)	3.7%	9.0%	8.7%	19.5%
	Ca. Halibut (Trawl)	0.0%	3.3%	3.5%	4.9%
	Coastal Pelagics	—	—	—	—
	Live Bait	—	—	—	—
	Lobster	5.8%	9.9%	9.6%	17.9%
	N. Fishery (Hook & Line)	9.8%	14.2%	13.6%	16.9%
	N. Fishery (Trap)	1.6%	7.8%	6.7%	16.7%
	Rock Crab	3.9%	9.7%	9.4%	11.9%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	10.4%	15.7%	14.1%	19.7%
	Sea Cucumber (Trawl)	0.0%	2.2%	2.3%	3.8%
	Spot Prawn	0.0%	13.2%	12.9%	12.9%
	Squid	—	—	—	—
	Swordfish	—	—	—	—
	Thornyhead	—	—	—	—
	Urchin	7.2%	13.2%	11.8%	20.2%
Ventura	Ca. Halibut (Hook & Line)	9.2%	13.8%	12.7%	14.5%
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	—	—	—	—
	Lobster	0.1%	1.8%	1.7%	14.6%
	N. Fishery (Hook & Line)	—	—	—	—
	N. Fishery (Trap)	10.5%	12.6%	12.3%	16.7%
	Rock Crab	1.8%	1.8%	1.8%	3.1%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	11.7%	14.6%	13.7%	19.2%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	0.0%	0.0%	0.0%
	Squid	3.1%	8.1%	7.2%	11.3%
	Swordfish	—	—	—	—
	Thornyhead	—	—	—	—
	Urchin	—	—	—	—
Port Hueneme	Ca. Halibut (Hook & Line)	7.1%	12.2%	12.0%	15.5%
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	3.8%	7.9%	6.8%	9.2%
	Live Bait	—	—	—	—
	Lobster	1.0%	3.5%	3.4%	11.7%
	N. Fishery (Hook & Line)	7.0%	15.5%	15.4%	19.2%
	N. Fishery (Trap)	0.0%	6.3%	8.1%	8.1%
	Rock Crab	0.0%	1.3%	1.5%	8.3%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	9.5%	15.5%	13.9%	19.4%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	25.6%	25.6%	25.6%	25.6%
	Squid	4.0%	9.6%	8.9%	13.1%
	Swordfish	—	—	—	—
	Thornyhead	—	—	—	—
	Urchin	5.5%	7.5%	7.1%	11.3%

Table A.1 (continued) Percentage Area of Total Commercial Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSB MPA	SCRSB MPA	SCRSB MPA
			Proposal 1	Proposal 2	Proposal 3
San Pedro / Terminal Island	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	3.0%	8.2%	7.1%	9.6%
	Live Bait	0.0%	3.3%	0.9%	7.4%
	Lobster	0.4%	6.1%	5.4%	8.0%
	N. Fishery (Hook & Line)	8.6%	14.4%	13.6%	17.9%
	N. Fishery (Trap)	0.0%	5.4%	5.5%	14.5%
	Rock Crab	0.0%	2.0%	0.7%	2.1%
	Sablefish	0.0%	38.9%	46.0%	29.7%
	Sea Cucumber (Diving)	7.1%	14.6%	13.2%	19.6%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	5.8%	3.9%	7.3%
	Squid	3.6%	8.7%	7.9%	11.7%
	Swordfish	—	—	—	—
	Thornyhead	0.0%	38.9%	46.0%	29.7%
	Urchin	5.9%	8.8%	8.3%	11.0%
Dana Point	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	0.0%	5.1%	0.0%	5.4%
	Lobster	0.0%	4.7%	3.2%	10.8%
	N. Fishery (Hook & Line)	—	—	—	—
	N. Fishery (Trap)	0.0%	14.7%	2.3%	14.8%
	Rock Crab	0.0%	11.7%	2.3%	9.9%
	Sablefish	0.0%	38.9%	46.0%	29.7%
	Sea Cucumber (Diving)	—	—	—	—
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	12.7%	7.2%	11.3%
	Squid	—	—	—	—
	Swordfish	0.9%	1.9%	1.7%	2.1%
	Thornyhead	0.0%	38.9%	46.0%	29.7%
	Urchin	0.0%	4.5%	2.8%	5.3%
Oceanside	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	0.0%	13.1%	14.3%	3.0%
	Lobster	0.5%	11.0%	10.3%	9.3%
	N. Fishery (Hook & Line)	—	—	—	—
	N. Fishery (Trap)	0.0%	10.3%	7.8%	8.1%
	Rock Crab	0.0%	1.6%	0.0%	4.6%
	Sablefish	0.0%	38.9%	46.0%	29.7%
	Sea Cucumber (Diving)	—	—	—	—
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	8.5%	8.5%	8.5%
	Squid	—	—	—	—
	Swordfish	—	—	—	—
	Thornyhead	0.0%	38.9%	46.0%	29.7%
	Urchin	0.0%	34.7%	26.0%	19.3%

Table A.1 (continued): Percentage Area of Total Commercial Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
San Diego	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	0.0%	0.0%	0.0%	5.4%
	Lobster	0.0%	7.8%	6.9%	9.6%
	N. Fishery (Hook & Line)	0.0%	6.1%	6.4%	5.5%
	N. Fishery (Trap)	0.0%	7.7%	5.8%	9.4%
	Rock Crab	0.0%	12.4%	9.6%	10.4%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	0.0%	26.0%	23.9%	11.1%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	12.0%	12.1%	12.9%
	Squid	—	—	—	—
	Swordfish	0.1%	0.9%	0.7%	0.9%
	Thornyhead	—	—	—	—
	Urchin	0.0%	16.9%	10.1%	17.6%

Table A.2: Percentage Value of Total Commercial Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
Santa Barbara	Ca. Halibut (Hook & Line)	5.6%	14.7%	12.9%	21.8%
	Ca. Halibut (Trawl)	0.0%	6.7%	6.9%	10.9%
	Coastal Pelagics	—	—	—	—
	Live Bait	—	—	—	—
	Lobster	3.4%	10.1%	7.6%	11.9%
	N. Fishery (Hook & Line)	9.4%	12.8%	12.9%	14.5%
	N. Fishery (Trap)	4.3%	9.6%	7.1%	15.1%
	Rock Crab	4.0%	10.6%	9.6%	10.6%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	9.9%	12.5%	11.8%	19.8%
	Sea Cucumber (Trawl)	0.0%	3.4%	2.9%	4.4%
	Spot Prawn	0.0%	12.3%	12.6%	12.6%
	Squid	—	—	—	—
	Swordfish	—	—	—	—
	Thornyhead	—	—	—	—
	Urchin	6.6%	8.1%	7.7%	9.1%
Ventura	Ca. Halibut (Hook & Line)	7.0%	9.5%	8.9%	9.9%
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	—	—	—	—
	Lobster	0.0%	1.3%	1.5%	21.6%
	N. Fishery (Hook & Line)	—	—	—	—
	N. Fishery (Trap)	0.0%	0.0%	0.0%	16.3%
	Rock Crab	3.5%	3.5%	3.5%	4.8%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	0.3%	14.5%	11.0%	18.7%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	0.0%	0.0%	0.0%
	Squid	3.0%	4.6%	4.2%	13.9%
	Swordfish	—	—	—	—
	Thornyhead	—	—	—	—
	Urchin	—	—	—	—
Port Hueneme	Ca. Halibut (Hook & Line)	6.2%	8.3%	8.0%	9.3%
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	0.8%	3.7%	2.5%	5.9%
	Live Bait	—	—	—	—
	Lobster	3.1%	4.7%	4.9%	15.0%
	N. Fishery (Hook & Line)	0.2%	20.4%	20.0%	24.7%
	N. Fishery (Trap)	0.0%	1.3%	1.7%	1.7%
	Rock Crab	0.0%	0.0%	0.0%	12.3%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	14.2%	16.9%	16.7%	23.7%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	26.1%	26.1%	26.1%	26.1%
	Squid	2.9%	5.5%	5.3%	14.9%
	Swordfish	—	—	—	—
	Thornyhead	—	—	—	—
	Urchin	3.4%	7.8%	7.4%	12.3%

Table A.2 (continued): Percentage Value of Total Commercial Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSG MPA	SCRSG MPA	SCRSG MPA
			Proposal 1	Proposal 2	Proposal 3
San Pedro / Terminal Island	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	0.5%	4.5%	2.9%	8.5%
	Live Bait	0.0%	1.6%	0.4%	3.9%
	Lobster	0.1%	6.4%	5.8%	9.2%
	N. Fishery (Hook & Line)	6.7%	12.5%	11.7%	18.5%
	N. Fishery (Trap)	0.0%	6.1%	4.6%	16.5%
	Rock Crab	0.0%	0.1%	0.0%	0.1%
	Sablefish	0.0%	24.3%	33.4%	22.4%
	Sea Cucumber (Diving)	1.8%	9.9%	9.5%	13.4%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	1.7%	1.2%	5.4%
	Squid	2.2%	4.8%	4.4%	12.0%
	Swordfish	—	—	—	—
	Thornyhead	0.0%	36.3%	39.8%	32.5%
	Urchin	3.4%	9.3%	9.2%	13.5%
Dana Point	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	0.0%	6.3%	0.0%	6.8%
	Lobster	0.0%	9.0%	5.1%	13.5%
	N. Fishery (Hook & Line)	—	—	—	—
	N. Fishery (Trap)	0.0%	29.3%	2.2%	29.5%
	Rock Crab	0.0%	10.0%	1.6%	9.6%
	Sablefish	0.0%	24.3%	33.4%	22.4%
	Sea Cucumber (Diving)	—	—	—	—
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	9.8%	4.0%	6.5%
	Squid	—	—	—	—
	Swordfish	1.6%	14.0%	7.4%	15.0%
	Thornyhead	0.0%	40.0%	41.7%	35.5%
	Urchin	0.0%	3.9%	0.8%	5.0%
Oceanside	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	0.0%	1.4%	1.5%	0.3%
	Lobster	0.4%	9.0%	6.8%	13.8%
	N. Fishery (Hook & Line)	—	—	—	—
	N. Fishery (Trap)	0.0%	1.2%	0.9%	2.4%
	Rock Crab	0.0%	0.0%	0.0%	0.1%
	Sablefish	0.0%	24.3%	33.4%	22.4%
	Sea Cucumber (Diving)	—	—	—	—
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	12.9%	12.9%	12.9%
	Squid	—	—	—	—
	Swordfish	—	—	—	—
	Thornyhead	0.0%	39.1%	41.3%	34.8%
	Urchin	0.0%	61.0%	38.7%	5.2%

Table A.2 (continued): Percentage Value of Total Commercial Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSB MPA Proposal 1	SCRSB MPA Proposal 2	SCRSB MPA Proposal 3
San Diego	Ca. Halibut (Hook & Line)	—	—	—	—
	Ca. Halibut (Trawl)	—	—	—	—
	Coastal Pelagics	—	—	—	—
	Live Bait	0.0%	0.0%	0.0%	5.7%
	Lobster	0.0%	19.7%	15.7%	17.2%
	N. Fishery (Hook & Line)	0.0%	12.8%	14.0%	10.4%
	N. Fishery (Trap)	0.0%	18.0%	12.3%	15.5%
	Rock Crab	0.0%	9.0%	8.2%	3.5%
	Sablefish	—	—	—	—
	Sea Cucumber (Diving)	0.0%	24.8%	22.6%	8.3%
	Sea Cucumber (Trawl)	—	—	—	—
	Spot Prawn	0.0%	12.3%	12.5%	13.0%
	Squid	—	—	—	—
	Swordfish	0.1%	0.9%	0.7%	0.9%
	Thornyhead	—	—	—	—
Urchin	0.0%	10.9%	6.5%	11.8%	

Table A.3: Percentage Area of Total CPFV Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSB MPA Proposal 1	SCRSB MPA Proposal 2	SCRSB MPA Proposal 3
Santa Barbara	Barracuda	8.3%	8.9%	8.3%	11.7%
	Ca. Halibut	9.5%	12.3%	11.7%	19.0%
	Calico Bass	9.3%	12.8%	12.5%	18.5%
	Lingcod	7.1%	11.0%	10.9%	13.6%
	Rockfish	7.2%	10.8%	10.7%	13.5%
	Ca. Scorpionfish	8.5%	9.4%	8.7%	13.6%
	Ca. Sheephead	6.6%	12.2%	12.1%	15.7%
	Sand Bass	0.0%	5.7%	3.0%	19.9%
	Whitefish	9.2%	11.3%	10.6%	13.3%
	White Seabass	8.1%	12.0%	11.8%	15.8%
Port Hueneme / Channel Islands Harbor	Barracuda	5.9%	6.9%	8.0%	13.1%
	Ca. Halibut	14.6%	18.5%	18.2%	21.7%
	Calico Bass	4.5%	7.7%	7.3%	12.7%
	Lingcod	10.4%	11.4%	11.4%	13.5%
	Rockfish	11.6%	12.5%	12.5%	13.3%
	Ca. Scorpionfish	6.9%	9.0%	9.0%	10.8%
	Ca. Sheephead	5.4%	7.5%	7.5%	11.1%
	Sand Bass	0.0%	3.4%	3.2%	10.2%
	Whitefish	10.8%	13.7%	13.5%	16.7%
	White Seabass	10.1%	14.6%	14.5%	15.2%
Santa Monica	Barracuda	0.0%	3.4%	1.8%	7.2%
	Ca. Halibut	0.0%	3.9%	2.1%	6.1%
	Calico Bass	0.0%	4.5%	3.4%	6.3%
	Lingcod	0.0%	6.9%	5.0%	8.4%
	Rockfish	0.0%	8.8%	6.5%	10.4%
	Ca. Scorpionfish	0.0%	3.0%	1.8%	4.8%
	Ca. Sheephead	0.0%	7.5%	5.9%	9.7%
	Sand Bass	0.0%	1.5%	1.0%	2.4%
	Whitefish	0.0%	2.2%	1.1%	6.9%
	White Seabass	0.0%	5.5%	4.3%	6.9%
San Pedro / Long Beach	Barracuda	0.0%	4.4%	3.2%	7.7%
	Ca. Halibut	0.0%	2.4%	2.3%	4.2%
	Calico Bass	0.6%	4.8%	4.3%	7.0%
	Lingcod	0.4%	11.1%	10.8%	11.6%
	Rockfish	0.3%	10.4%	9.6%	8.7%
	Ca. Scorpionfish	0.2%	4.2%	3.3%	7.2%
	Ca. Sheephead	0.1%	6.7%	4.4%	9.0%
	Sand Bass	0.0%	0.7%	1.1%	1.5%
	Whitefish	0.2%	5.4%	4.3%	7.6%
	White Seabass	0.0%	5.6%	4.2%	8.6%

Table A.3 (continued): Percentage Area of Total CPFV Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
Newport Beach	Barracuda	0.0%	3.6%	2.4%	8.6%
	Ca. Halibut	0.0%	2.2%	0.9%	5.4%
	Calico Bass	0.0%	3.7%	2.1%	7.0%
	Lingcod	0.0%	9.5%	6.6%	13.1%
	Rockfish	0.0%	9.4%	6.5%	11.7%
	Ca. Scorpionfish	0.0%	3.6%	1.8%	7.3%
	Ca. Sheephead	0.0%	9.6%	3.2%	10.0%
	Sand Bass	0.0%	1.9%	0.9%	4.6%
	Whitefish	0.0%	4.0%	2.2%	7.5%
	White Seabass	0.0%	7.2%	4.3%	9.8%
Dana Point	Barracuda	0.0%	4.7%	2.9%	8.4%
	Ca. Halibut	0.0%	4.2%	1.7%	10.5%
	Calico Bass	0.0%	7.4%	4.7%	14.1%
	Lingcod	0.0%	9.6%	7.6%	13.7%
	Rockfish	0.0%	14.1%	11.8%	17.0%
	Ca. Scorpionfish	0.0%	11.4%	8.5%	15.6%
	Ca. Sheephead	0.0%	10.2%	3.4%	10.8%
	Sand Bass	0.0%	3.5%	1.7%	8.4%
	Whitefish	0.0%	15.3%	12.8%	22.6%
	White Seabass	0.0%	3.0%	0.8%	9.1%
Oceanside	Barracuda	0.0%	7.5%	6.6%	7.0%
	Ca. Halibut	0.0%	6.9%	6.6%	5.0%
	Calico Bass	0.0%	7.5%	6.0%	6.5%
	Lingcod	0.0%	6.9%	6.8%	5.7%
	Rockfish	0.0%	7.8%	8.1%	6.9%
	Ca. Scorpionfish	0.0%	7.6%	6.1%	6.3%
	Ca. Sheephead	0.0%	8.8%	6.7%	7.2%
	Sand Bass	0.0%	7.2%	6.7%	6.1%
	Whitefish	0.0%	9.4%	8.6%	7.1%
	White Seabass	0.0%	9.3%	6.4%	10.6%
San Diego	Barracuda	2.7%	8.2%	7.6%	8.0%
	Ca. Halibut	1.5%	9.6%	7.4%	8.9%
	Calico Bass	0.2%	9.1%	7.1%	10.3%
	Lingcod	8.7%	13.2%	12.4%	12.6%
	Rockfish	9.6%	12.8%	12.6%	12.2%
	Ca. Scorpionfish	1.2%	8.1%	6.8%	7.4%
	Ca. Sheephead	1.3%	8.2%	6.6%	7.9%
	Sand Bass	0.0%	9.4%	7.6%	9.4%
	Whitefish	3.0%	13.7%	10.6%	12.8%
	White Seabass	1.8%	13.0%	10.1%	14.2%

Table A.4: Percentage Value of Total CPFV Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSB MPA Proposal 1	SCRSB MPA Proposal 2	SCRSB MPA Proposal 3
Santa Barbara	Barracuda	2.7%	3.2%	2.7%	9.8%
	Ca. Halibut	5.5%	11.4%	10.2%	13.9%
	Calico Bass	1.2%	7.8%	6.2%	9.7%
	Lingcod	4.8%	10.3%	10.1%	12.0%
	Rockfish	3.7%	7.9%	7.9%	9.6%
	Ca. Scorpionfish	3.7%	4.2%	3.7%	4.6%
	Ca. Sheephead	5.3%	10.0%	9.6%	11.7%
	Sand Bass	0.0%	5.8%	3.2%	8.3%
	Whitefish	8.2%	9.9%	9.2%	11.6%
	White Seabass	3.6%	8.2%	7.5%	10.2%
Port Hueneme / Channel Islands Harbor	Barracuda	3.4%	5.1%	10.2%	14.7%
	Ca. Halibut	12.0%	22.1%	22.5%	23.5%
	Calico Bass	3.3%	14.8%	14.8%	18.1%
	Lingcod	10.6%	14.0%	14.2%	14.6%
	Rockfish	12.1%	14.6%	14.8%	15.0%
	Ca. Scorpionfish	4.3%	12.9%	13.2%	14.6%
	Ca. Sheephead	7.0%	14.8%	15.1%	16.7%
	Sand Bass	0.0%	3.2%	3.3%	4.2%
	Whitefish	5.2%	14.8%	15.2%	16.7%
	White Seabass	6.6%	15.5%	15.8%	16.7%
Santa Monica	Barracuda	0.0%	4.6%	1.0%	7.5%
	Ca. Halibut	0.0%	2.9%	1.3%	4.3%
	Calico Bass	0.0%	6.2%	2.3%	9.5%
	Lingcod	0.0%	3.9%	0.6%	6.5%
	Rockfish	0.0%	3.8%	0.5%	6.7%
	Ca. Scorpionfish	0.0%	2.2%	0.6%	4.0%
	Ca. Sheephead	0.0%	5.7%	1.6%	9.3%
	Sand Bass	0.0%	2.4%	0.2%	2.6%
	Whitefish	0.0%	4.7%	1.5%	7.5%
	White Seabass	0.0%	5.5%	1.2%	8.4%
San Pedro / Long Beach	Barracuda	0.0%	1.2%	1.5%	2.5%
	Ca. Halibut	0.0%	1.2%	0.9%	3.1%
	Calico Bass	0.0%	3.3%	2.7%	5.9%
	Lingcod	0.0%	5.2%	4.9%	8.7%
	Rockfish	0.0%	5.0%	4.6%	6.2%
	Ca. Scorpionfish	0.0%	2.4%	2.8%	3.5%
	Ca. Sheephead	0.0%	3.8%	3.3%	6.3%
	Sand Bass	0.0%	0.1%	0.4%	0.5%
	Whitefish	0.0%	1.8%	1.8%	3.7%
	White Seabass	0.0%	6.1%	3.5%	13.2%

Table A.4 (continued): Percentage Value of Total CPFV Fishing Grounds Affected by Port

Port	Fishery	C.I. MPAs	SCRSG MPA Proposal 1	SCRSG MPA Proposal 2	SCRSG MPA Proposal 3
Newport Beach	Barracuda	0.0%	2.7%	1.4%	5.6%
	Ca. Halibut	0.0%	3.2%	1.5%	8.0%
	Calico Bass	0.0%	6.9%	3.9%	15.1%
	Lingcod	0.0%	16.1%	13.1%	22.3%
	Rockfish	0.0%	6.8%	4.5%	9.2%
	Ca. Scorpionfish	0.0%	1.1%	0.6%	2.3%
	Ca. Sheephead	0.0%	17.4%	3.6%	17.8%
	Sand Bass	0.0%	2.5%	1.2%	6.5%
	Whitefish	0.0%	4.2%	2.1%	7.6%
	White Seabass	0.0%	9.3%	3.5%	19.3%
Dana Point	Barracuda	0.0%	2.5%	1.8%	7.1%
	Ca. Halibut	0.0%	3.3%	1.5%	10.0%
	Calico Bass	0.0%	3.2%	1.9%	8.6%
	Lingcod	0.0%	6.7%	5.5%	11.6%
	Rockfish	0.0%	6.5%	5.2%	10.4%
	Ca. Scorpionfish	0.0%	5.7%	4.0%	10.8%
	Ca. Sheephead	0.0%	13.3%	2.1%	14.1%
	Sand Bass	0.0%	1.3%	0.5%	4.7%
	Whitefish	0.0%	10.7%	8.1%	20.5%
	White Seabass	0.0%	2.9%	0.7%	10.4%
Oceanside	Barracuda	0.0%	7.8%	6.7%	6.3%
	Ca. Halibut	0.0%	6.9%	6.0%	5.1%
	Calico Bass	0.0%	6.7%	5.5%	5.0%
	Lingcod	0.0%	9.4%	8.9%	7.8%
	Rockfish	0.0%	6.7%	5.9%	6.8%
	Ca. Scorpionfish	0.0%	6.9%	5.7%	5.5%
	Ca. Sheephead	0.0%	10.0%	8.7%	8.3%
	Sand Bass	0.0%	6.4%	5.2%	5.8%
	Whitefish	0.0%	15.6%	14.6%	9.6%
	White Seabass	0.0%	7.1%	5.9%	6.0%
San Diego	Barracuda	0.7%	11.0%	8.5%	11.0%
	Ca. Halibut	0.1%	12.4%	6.9%	11.5%
	Calico Bass	0.0%	16.3%	12.3%	16.2%
	Lingcod	2.4%	12.9%	9.8%	10.9%
	Rockfish	2.5%	10.1%	9.4%	8.1%
	Ca. Scorpionfish	0.4%	11.3%	6.7%	10.4%
	Ca. Sheephead	0.2%	14.5%	9.0%	11.5%
	Sand Bass	0.0%	7.9%	5.1%	9.1%
	Whitefish	0.4%	16.7%	9.7%	15.4%
	White Seabass	0.1%	14.0%	10.2%	14.8%

Table A.5: Percentage Area of Total Recreational Fishing Grounds Affected by County for Channel Islands MPAs

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			0.2%	0.0%	0.0%	3.4%		2.8%		1.6%						5.4%	3.7%
	Kayak			0.0%	0.0%		0.0%						0.0%			0.0%		
	Private Vessel	0.0%		1.2%	0.0%		0.0%		10.3%				0.0%			0.2%	0.6%	0.0%
Ventura	Dive	0.0%		14.9%	13.6%		7.2%		0.0%		14.2%	0.0%	0.0%				9.1%	13.3%
	Kayak	0.0%		0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
	Private Vessel	6.3%	11.9%	7.9%	3.4%	0.0%	7.5%	0.0%	1.6%							0.0%	6.1%	4.7%
Los Angeles	Dive	0.0%	0.0%	0.6%	0.1%	0.0%	0.6%		0.0%		0.0%	0.0%	0.0%				4.4%	1.7%
	Kayak	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	4.8%	0.0%
	Private Vessel	0.0%	0.0%	0.1%	0.2%	0.0%	0.0%	0.0%	0.6%			0.5%	0.0%		0.0%	0.0%	0.4%	0.4%
Orange	Dive		0.0%	0.0%	0.0%	0.0%	0.0%		0.0%		0.0%	0.0%	0.0%				0.0%	0.0%
	Kayak	0.0%	0.0%	0.1%	0.0%		0.0%	0.0%	0.0%			0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
	Private Vessel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%		0.0%	0.0%	0.5%	0.0%
San Diego	Dive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%		0.0%	0.0%	0.0%				0.0%	0.0%
	Kayak	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
	Private Vessel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%		0.0%	0.0%	0.0%	0.0%

Table A.6: Percentage Area of Total Recreational Fishing Grounds Affected by County for SCRSG MPA Proposal 1

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail	
Santa Barbara	Dive			5.5%	9.2%	13.8%	8.6%		6.7%		7.4%						7.2%	3.7%	
	Kayak			9.0%	11.9%		0.0%						27.6%			1.0%			
	Private Vessel	0.5%		9.2%	8.0%		2.3%		11.3%				0.0%			0.8%	5.0%	0.2%	
Ventura	Dive	3.7%		17.9%	16.1%		14.2%		10.2%		16.4%	0.0%	11.6%					10.5%	14.0%
	Kayak	5.0%		8.9%	13.1%		13.9%	2.3%	11.4%	0.0%		16.0%	18.5%	11.3%		1.8%	10.4%	26.9%	
	Private Vessel	8.5%	11.9%	10.5%	8.8%	0.0%	17.3%	0.0%	2.2%							7.3%	8.9%	11.4%	
Los Angeles	Dive	15.2%	36.5%	13.0%	9.2%	18.2%	7.9%		20.7%		14.7%	26.5%	22.0%					9.6%	13.0%
	Kayak	3.5%	9.8%	4.5%	5.2%		9.8%	11.4%	13.7%	0.0%		5.8%	4.5%	19.0%		2.9%	10.5%	15.9%	
	Private Vessel	4.3%	4.5%	4.2%	4.7%	0.0%	4.4%	1.2%	8.1%				5.3%	2.6%		1.7%	6.0%	7.3%	4.4%
Orange	Dive		12.7%	3.1%	10.0%	18.3%	5.4%		4.5%		7.0%	12.7%	11.1%					7.6%	4.2%
	Kayak	3.4%	7.0%	2.6%	4.9%		10.1%	0.0%	11.8%			17.3%	2.9%	21.9%		4.5%	8.6%	19.0%	
	Private Vessel	4.3%	2.5%	3.6%	3.3%	11.7%	6.2%	1.8%	9.7%			23.1%	2.6%		0.0%	1.2%	6.2%	1.9%	
San Diego	Dive	14.5%	17.4%	19.9%	15.2%	13.0%	9.6%		33.9%		28.3%	34.5%	11.0%					9.9%	9.5%
	Kayak	21.3%	13.2%	16.2%	16.9%		20.5%	21.6%	17.8%	20.6%		34.1%	15.2%	31.0%		28.7%	14.4%	12.6%	
	Private Vessel	4.4%	2.7%	7.7%	8.8%	10.1%	9.4%	10.4%	8.9%			9.5%	5.9%		18.0%	1.4%	8.4%	1.8%	

Table A.7: Percentage Area of Total Recreational Fishing Grounds Affected by County for SCRSG MPA Proposal 2

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			6.8%	11.1%	16.6%	7.5%		7.9%		6.4%						7.4%	3.7%
	Kayak			6.1%	4.9%		0.0%						3.1%			3.8%		
	Private Vessel	0.3%		8.0%	5.8%		0.0%		11.6%				0.0%			0.4%	4.0%	0.2%
Ventura	Dive	0.0%		17.2%	15.4%		12.2%		9.1%		16.0%	0.0%	9.6%				10.0%	13.8%
	Kayak	8.5%		7.8%	7.6%		10.7%	10.2%	11.2%	0.0%		12.3%	16.1%	0.0%		0.0%	9.1%	4.6%
	Private Vessel	6.5%	11.9%	9.3%	6.8%	0.0%	9.0%	0.0%	3.6%						18.0%	7.4%	6.6%	
Los Angeles	Dive	7.4%	16.2%	7.9%	7.0%	11.2%	3.8%		28.2%		14.9%	9.5%	15.7%				7.7%	10.1%
	Kayak	8.9%	3.2%	3.5%	3.5%		3.3%	4.2%	12.6%	0.0%		8.8%	2.7%	4.9%		5.4%	8.5%	13.4%
	Private Vessel	3.4%	3.2%	3.6%	4.0%	0.0%	3.0%	1.0%	6.7%			4.3%	1.6%		0.0%	7.7%	5.3%	3.5%
Orange	Dive		5.0%	1.7%	6.1%	7.1%	3.5%		3.2%		4.6%	4.6%	4.9%				5.1%	2.8%
	Kayak	1.7%	2.5%	2.2%	1.9%		2.9%	0.0%	6.9%			2.6%	1.4%	12.1%		2.6%	4.7%	14.9%
	Private Vessel	4.2%	1.6%	2.7%	2.3%	6.6%	2.0%	0.8%	7.2%			20.3%	1.6%		0.0%	1.2%	4.2%	1.7%
San Diego	Dive	11.6%	13.6%	14.2%	8.8%	2.5%	7.5%		18.7%		16.3%	19.5%	6.1%				6.6%	7.8%
	Kayak	15.1%	11.5%	11.4%	14.9%		15.3%	20.5%	7.9%	9.3%		26.2%	13.1%	15.4%		23.8%	11.2%	10.9%
	Private Vessel	3.9%	2.6%	5.1%	6.4%	5.5%	5.2%	8.0%	7.1%			7.0%	4.3%		11.4%	1.4%	6.4%	1.5%

Table A.8: Percentage Area of Total Recreational Fishing Grounds Affected by County for SCRSG MPA Proposal 3

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			19.8%	17.6%	21.8%	18.5%		14.0%		6.4%						14.6%	3.7%
	Kayak			18.6%	21.8%		13.0%						29.6%			15.6%		
	Private Vessel	5.3%		12.0%	10.0%		0.0%		12.7%				0.0%			5.5%	9.6%	0.4%
Ventura	Dive	11.1%		18.6%	18.1%		15.8%		11.5%		16.8%	0.0%	13.1%				14.8%	15.4%
	Kayak	17.7%		10.2%	19.7%		17.7%	12.6%	13.0%	1.9%		18.2%	21.1%	12.9%		12.7%	11.9%	33.5%
	Private Vessel	9.0%	11.9%	10.5%	13.7%	0.0%	18.9%	0.0%	5.2%							26.8%	11.2%	17.2%
Los Angeles	Dive	26.5%	62.2%	25.3%	15.9%	54.1%	11.8%		42.9%		37.8%	37.6%	34.1%				14.3%	21.3%
	Kayak	15.6%	21.4%	8.1%	10.4%		8.0%	17.8%	18.4%	0.0%		16.1%	9.1%	29.5%		9.9%	17.0%	19.4%
	Private Vessel	5.0%	6.0%	6.0%	6.3%	30.0%	7.0%	3.0%	10.3%			11.6%	5.8%		2.2%	8.7%	9.8%	6.1%
Orange	Dive		15.1%	11.8%	20.2%	55.6%	8.2%		10.2%		9.4%	27.2%	27.4%				16.0%	8.2%
	Kayak	7.9%	18.2%	6.5%	12.1%		4.6%	0.0%	28.0%			16.9%	9.4%	25.9%		15.7%	20.3%	21.8%
	Private Vessel	4.7%	3.4%	7.1%	6.3%	24.0%	5.8%	2.3%	13.6%			29.4%	6.4%		0.0%	2.2%	9.3%	2.4%
San Diego	Dive	16.5%	20.7%	14.1%	20.0%	28.9%	8.6%		18.9%		21.3%	28.2%	13.6%				13.3%	9.8%
	Kayak	29.9%	29.4%	11.8%	19.9%		14.0%	23.6%	35.5%	18.8%		23.2%	12.3%	45.8%		21.4%	15.3%	11.2%
	Private Vessel	4.1%	2.8%	6.8%	9.8%	12.5%	9.7%	8.7%	9.4%			7.7%	6.0%		17.6%	1.3%	9.3%	2.9%

Table A.9: Percentage Value of Total Recreational Fishing Grounds Affected by County for Channel Islands MPAs

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			0.0%	0.0%	0.0%	0.4%		0.7%		4.3%						0.9%	0.6%
	Kayak			0.0%	0.0%		0.0%						0.0%			0.0%		
	Private Vessel	0.0%		0.4%	0.0%		0.0%		6.7%				0.0%			0.1%	0.2%	0.0%
Ventura	Dive	0.0%		0.2%	0.2%		1.5%		0.0%		3.7%	0.0%	0.0%				1.1%	12.0%
	Kayak	0.0%		0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
	Private Vessel	6.2%	1.2%	1.0%	2.6%	0.0%	4.6%	0.0%	4.4%							0.0%	2.3%	11.0%
Los Angeles	Dive	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%		0.0%		0.0%	0.0%	0.0%				0.6%	1.0%
	Kayak	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	1.5%	0.0%
	Private Vessel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%			0.4%	0.0%		0.0%	0.0%	0.1%	0.1%
Orange	Dive		0.0%	0.0%	0.0%	0.0%	0.0%		0.0%		0.0%	0.0%	0.0%				0.0%	0.0%
	Kayak	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%			0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
	Private Vessel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%		0.0%	0.0%	0.1%	0.0%
San Diego	Dive	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		0.0%		0.0%	0.0%	0.0%				0.0%	0.0%
	Kayak	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%		0.0%	0.0%	0.0%
	Private Vessel	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%			0.0%	0.0%		0.0%	0.0%	0.0%	0.0%

Table A.10: Percentage Value of Total Recreational Fishing Grounds Affected by County for SCRSG MPA Proposal 1

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			7.9%	12.0%	12.2%	9.6%		6.0%		10.0%						4.9%	0.6%
	Kayak			12.2%	12.2%		0.0%						18.9%			1.7%		
	Private Vessel	0.4%		14.7%	12.1%		2.8%		8.7%				0.0%			0.3%	5.9%	0.0%
Ventura	Dive	1.8%		20.2%	15.8%		17.0%		10.8%		13.7%	0.0%	11.6%				3.0%	12.8%
	Kayak	5.5%		15.9%	17.8%		13.6%	4.1%	15.5%	0.0%		25.0%	21.8%	11.3%		2.2%	13.8%	24.3%
	Private Vessel	9.6%	1.2%	4.0%	6.9%	0.0%	16.7%	0.0%	5.7%							7.3%	5.0%	15.7%
Los Angeles	Dive	25.6%	29.0%	11.7%	12.4%	34.0%	9.8%		20.7%		4.0%	22.6%	12.4%				8.9%	12.3%
	Kayak	7.2%	12.4%	5.2%	9.7%		12.0%	14.1%	19.1%	0.0%		10.9%	3.8%	19.0%		5.2%	12.2%	18.6%
	Private Vessel	3.3%	4.9%	2.1%	4.6%	0.0%	6.1%	0.8%	8.5%			7.5%	0.3%		2.0%	7.2%	11.2%	6.3%
Orange	Dive		16.9%	15.1%	32.9%	25.4%	17.1%		8.3%		11.9%	60.2%	35.5%				12.8%	10.5%
	Kayak	1.3%	14.9%	4.1%	7.2%		32.6%	0.0%	7.3%			39.4%	6.4%	15.2%		10.0%	7.5%	15.5%
	Private Vessel	3.6%	4.0%	2.1%	6.1%	8.9%	15.1%	3.5%	9.3%			33.5%	2.0%		0.0%	4.4%	11.5%	3.1%
San Diego	Dive	19.9%	18.9%	31.6%	26.2%	37.6%	19.1%		31.2%		30.2%	43.7%	18.1%				19.1%	13.1%
	Kayak	15.5%	15.4%	23.2%	19.9%		19.7%	13.9%	17.7%	18.3%		27.2%	20.1%	13.3%		18.6%	15.5%	15.5%
	Private Vessel	8.6%	6.0%	9.3%	17.9%	6.2%	17.2%	15.0%	10.0%			14.6%	5.7%		22.9%	2.4%	12.9%	3.9%

Table A.11: Percentage Value of Total Recreational Fishing Grounds Affected by County for SCRSG MPA Proposal 2

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			9.2%	13.8%	18.4%	6.3%		7.1%		9.0%						5.0%	0.6%
	Kayak			9.1%	2.8%		0.0%						4.1%			2.1%		
	Private Vessel	0.1%		9.3%	7.5%		0.0%		8.5%				0.0%			0.1%	4.2%	0.0%
Ventura	Dive	0.0%		16.5%	12.4%		11.3%		8.9%		12.1%	0.0%	9.6%				1.1%	12.4%
	Kayak	8.1%		13.8%	13.3%		10.5%	14.5%	15.3%	0.0%		8.4%	14.6%	0.0%		0.0%	9.6%	5.2%
	Private Vessel	6.5%	1.2%	2.1%	5.4%	0.0%	6.5%	0.0%	8.7%							18.0%	4.6%	12.0%
Los Angeles	Dive	13.3%	39.5%	9.5%	10.0%	14.0%	6.6%		28.2%		19.8%	15.9%	8.4%				5.4%	10.6%
	Kayak	6.1%	3.6%	3.0%	7.1%		5.2%	4.6%	10.2%	0.0%		5.5%	2.0%	4.9%		4.8%	7.7%	13.4%
	Private Vessel	3.0%	5.1%	1.4%	3.7%	0.0%	3.3%	0.8%	7.5%			8.0%	0.3%		0.0%	6.8%	4.5%	3.9%
Orange	Dive		6.7%	6.9%	14.8%	10.0%	9.2%		5.3%		7.3%	10.4%	15.4%				7.4%	8.5%
	Kayak	0.4%	6.8%	2.0%	3.0%		3.1%	0.0%	3.7%			4.7%	2.9%	6.4%		5.2%	3.0%	9.8%
	Private Vessel	3.8%	2.4%	1.1%	3.5%	7.7%	3.4%	1.5%	7.3%			25.0%	0.9%		0.0%	4.8%	4.2%	2.2%
San Diego	Dive	12.1%	4.3%	11.2%	11.8%	3.2%	11.6%		14.7%		9.5%	14.2%	9.0%				9.1%	7.8%
	Kayak	4.2%	3.3%	11.0%	7.8%		12.0%	8.7%	3.2%	5.0%		12.9%	10.2%	4.8%		14.2%	3.9%	6.0%
	Private Vessel	7.1%	5.0%	5.2%	12.0%	3.6%	9.4%	10.6%	7.2%			8.4%	2.4%		19.9%	2.4%	7.7%	2.9%

Table A.12: Percentage Value of Total Recreational Fishing Grounds Affected by County for SCRSG MPA Proposal 3

County	Sector	Barracuda	Bonito	Ca. Halibut	Calico Bass	Croaker	Lobster	Mackerels	Rockfish	Rock Crab	Scallops	Sheephead	Sand Bass	Squid	Surf Perch	Thresher Shark	White Seabass	Yellowtail
Santa Barbara	Dive			17.2%	22.8%	21.6%	17.5%		14.4%		9.0%						12.0%	0.6%
	Kayak			14.4%	20.9%		2.8%						21.6%			8.2%		
	Private Vessel	2.5%		17.8%	13.7%		0.0%		9.6%				0.0%			23.5%	10.9%	0.1%
Ventura	Dive	9.2%		23.2%	22.2%		19.7%		11.7%		15.1%	0.0%	13.1%				6.7%	16.1%
	Kayak	17.6%		19.2%	20.8%		16.0%	18.8%	19.2%	1.6%		32.4%	25.6%	12.9%		6.9%	16.5%	27.7%
	Private Vessel	10.9%	1.2%	4.0%	10.7%	0.0%	18.6%	0.0%	11.8%							26.8%	9.3%	20.1%
Los Angeles	Dive	47.6%	70.8%	23.2%	22.7%	84.5%	16.4%		42.9%		40.1%	35.8%	27.1%				20.9%	22.9%
	Kayak	16.6%	21.2%	9.8%	17.8%		20.3%	21.9%	26.9%	0.0%		16.5%	7.5%	29.5%		12.3%	24.3%	22.7%
	Private Vessel	3.8%	4.7%	3.0%	8.3%	9.7%	11.0%	1.6%	9.7%			10.9%	1.0%		2.6%	11.1%	20.9%	10.5%
Orange	Dive		18.6%	37.2%	78.3%	77.4%	21.8%		20.7%		14.8%	66.1%	83.2%				31.7%	18.8%
	Kayak	6.9%	29.6%	16.6%	24.1%		10.1%	0.0%	41.9%			39.0%	25.2%	19.9%		36.1%	35.0%	28.7%
	Private Vessel	5.1%	5.9%	5.8%	13.9%	25.6%	11.8%	4.1%	12.0%			52.6%	5.3%		0.0%	7.3%	21.3%	4.6%
San Diego	Dive	27.7%	46.7%	33.2%	37.9%	54.3%	25.2%		20.8%		30.3%	41.3%	26.6%				30.2%	20.8%
	Kayak	38.8%	38.4%	27.8%	37.3%		20.2%	33.7%	35.3%	29.9%		30.1%	29.3%	38.2%		30.0%	36.9%	36.9%
	Private Vessel	8.9%	6.2%	9.1%	18.0%	6.6%	13.3%	15.2%	10.4%			13.5%	8.3%		11.5%	2.4%	21.1%	5.7%

Figure A.1: Disproportionate Impacts on Commercial Fisheries

Each dot in Figure A.1 represents one port/proposal impact on stated value for total fishing grounds for a specific fishery (from Table A.2). All points not in a box or on a line are considered statistically significant outliers (i.e., port-fishery combinations that would be disproportionately affected). Please see page 25 for further information on box plot analysis for commercial fisheries as well as identification of the potential outliers.

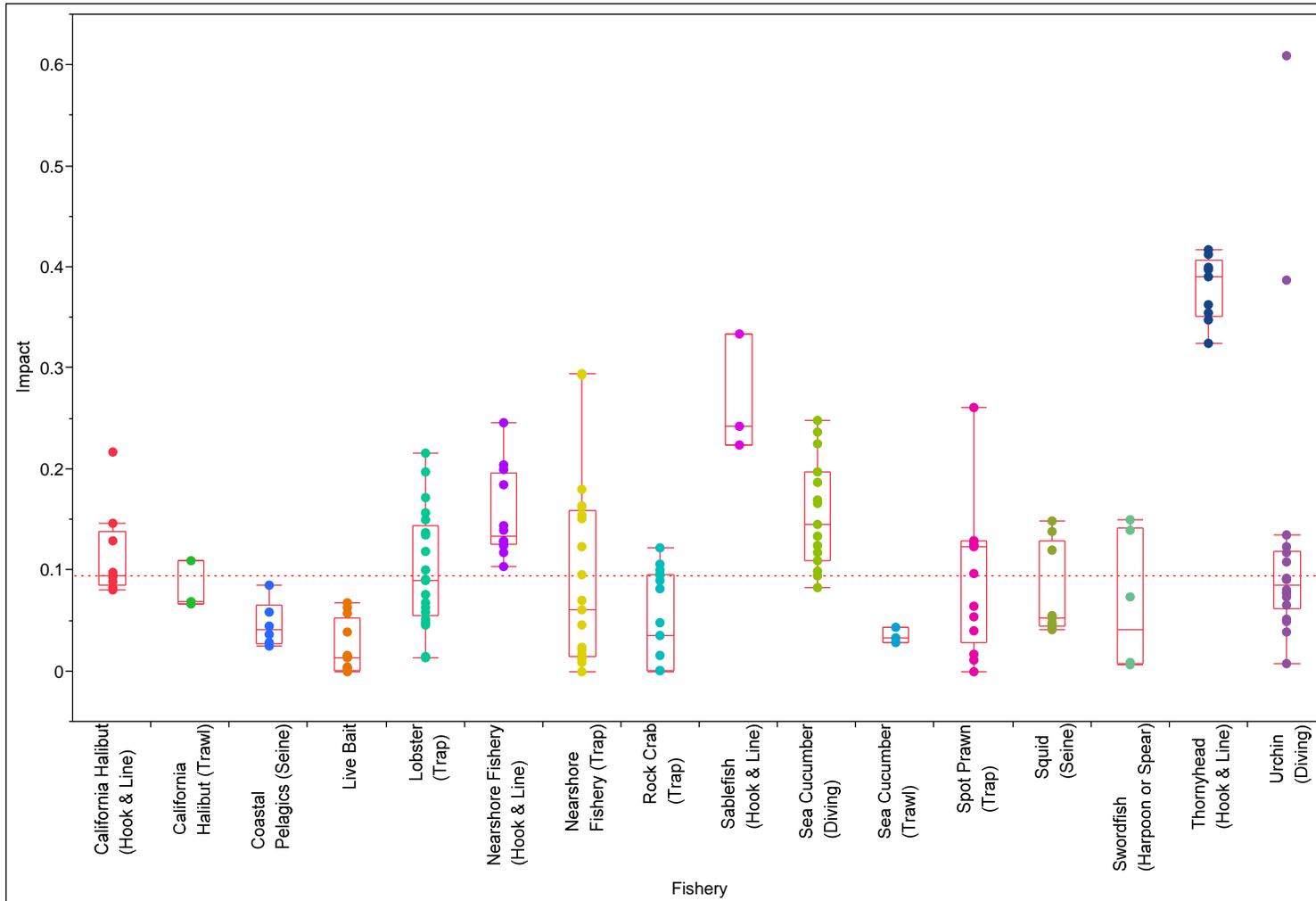
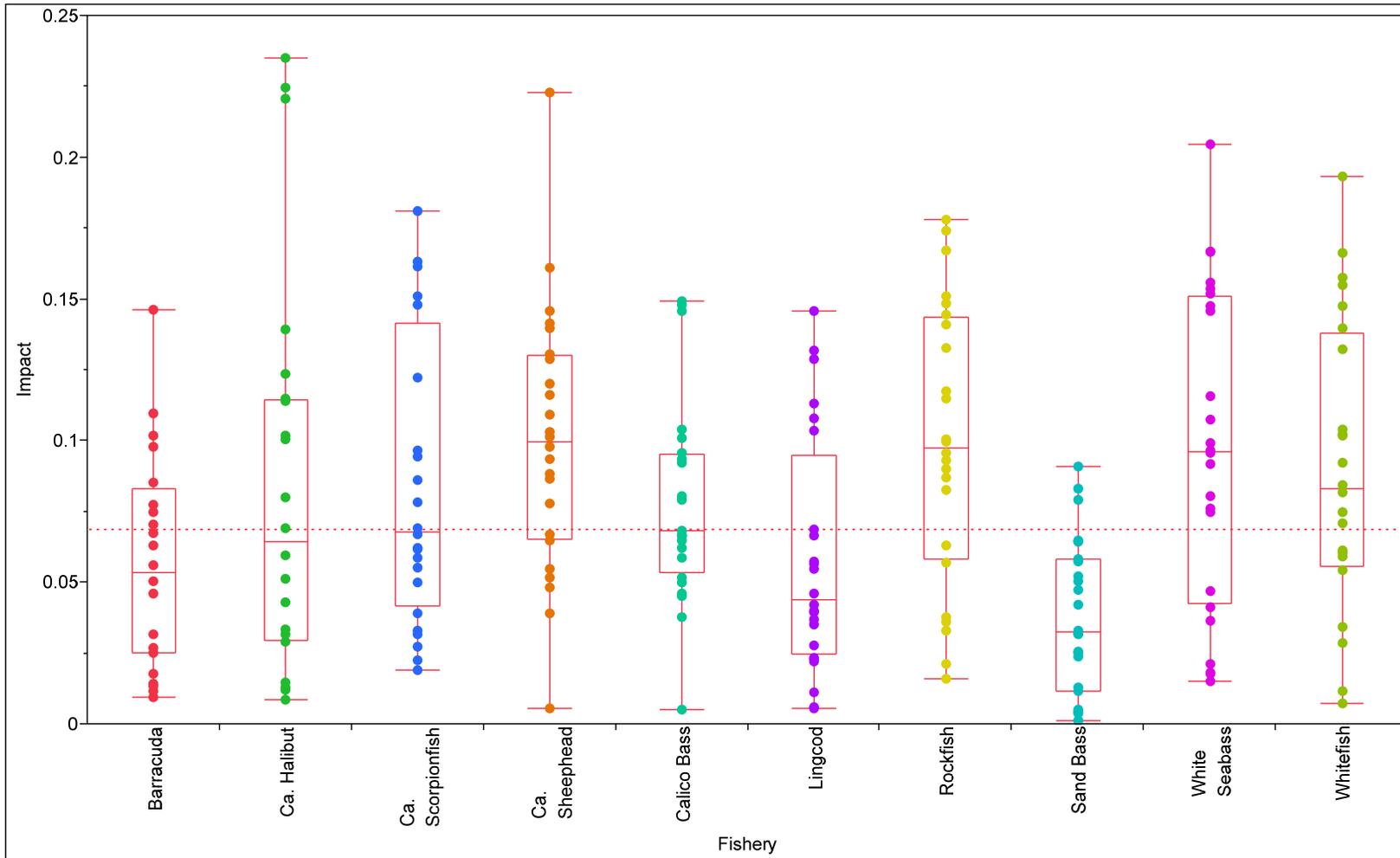


Figure A.2: Disproportionate Impacts on CPFV Fisheries

Each dot in Figure A.2 represents one port/proposal impact on stated value for total fishing grounds for a specific fishery (from Table A.4). All points not in a box or on a line are considered statistically significant outliers (i.e., port-fishery combinations that would be disproportionately affected). Please see page 28 for further information on box plot analysis for CPFV fisheries.



Example of Why Potential Impact on Profit (as a %) Can Exceed 100%

Cases where the potential net economic impact of a given MPA proposal on a commercial fishery exceeds 100% are not mistakes. Rather, they are directly related to how we account for operating costs.

In an effort to alleviate concerns over why potential impact can exceed 100%, we provide the following example.

The potential impact of a given MPA proposal is the impact to the baseline gross economic revenue (BGER), also known as ex-vessel landing value for the fishery. Assume a hypothetical fishery for which BGER is \$196,774 and a given MPA proposal that has a 58% impact on that fishery. To estimate gross economic impact (GEI), we multiply BGER * 58%, which equals \$114,207. Then we calculate the potential gross economic revenue (GER) if the MPA proposal went into effect by subtracting the GEI from BGER. In this case, $GER = BGER - GEI = \$82,566$.

To determine net economic revenue (NER) (i.e., profit) prior to the MPA, we consider fishermen's costs. The total estimated cost for this hypothetical fishery is 66% of BGER, or $66\% * \$196,774 = \$130,362$. NER is calculated as BGER minus estimated costs, or $\$196,774 - \$130,362 = \$66,412$.

To determine NER (i.e., profit) post impact, we consider how the MPA proposal will affect fishermen's costs. Total costs are equal to fixed costs + variable costs. Fixed costs⁷, which are calculated as a percentage of BGER, will not change. In this case, fixed costs are 42% of BGER, or $42\% * \$196,774 = \$83,457$.

However, the MPA proposal will affect fishermen's variable costs because fishermen will no longer be able to fish in certain areas. Variable costs are broken out by crew (11%) and fuel (13%) and are based on GER after considering the impact of the MPA. In this case, variable costs = fuel ($11\% * \$82,566$) + crew ($13\% * \$82,566$) = \$19,682.

Therefore, NER (i.e., profit) after the MPA proposal = $GER - \text{fixed costs} - \text{variable costs} = \$82,566 - \$83,457 - \$19,683 = -\$20,572$.

Net economic impact (NEI) after the MPA proposal (i.e., change in profit) is calculated as $BNER - NER$. In this case, $\$66,411 - (-\$20,572) = \$86,983$. Finally, to estimate the % NEI we divide NEI by BNER, or $\$86,983 / \$66,412 = 130.9\%$. Because fishermen are likely to incur fixed costs regardless of the MPA proposal, the impact of the MPA on fishermen's profit exceeds 100%.

For additional details, please see Section 12 of the *SAT Draft Methods Used to Evaluate Marine Protected Area Proposals for the MLPA South Coast Region*.

⁷ We assume fixed costs to be anything other than crew and fuel (a bit of a simplifying assumption, but generally appropriate). Examples of fixed costs could be payment on a boat, docking/mooring fees, permit fees, gear costs, etc.