

# Marine Life Protection Act Initiative



## **Summary of Potential Impacts of December 2007 MPA Proposals on Commercial and Recreational Fisheries**

**Prepared by Dr. Sarah Kruse - Ecotrust**

**North Central Coast Regional Stakeholder Group Meeting**

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# Outline

- **Methods: seen many times before...**
- **Overview**
- **Commercial Fisheries**
  - Potential Impacts on Fishing Grounds (Area and Value)
  - Consideration of Existing Closures
  - Potential Impacts on Individual Fishermen
  - Potential Socioeconomic Impacts
- **Recreational Fisheries**
  - Potential Impacts on Fishing Grounds (Area and Value)



# Overview

## **Commercial Fisheries**

- Focused on eight fisheries (California Halibut, Coastal Pelagics, Market Squid, Rockfish – Deeper Nearshore, Rockfish – Nearshore, Urchin, Dungeness Crab and Salmon)
- Results reported at study region and port group level

## **Recreational Fisheries**

- Focused on five fisheries (California halibut, Dungeness crab, salmon, rockfish/lingcod complex and striped bass –pier/shore only)
- Results reported by user group and by sub-region



# Impacts on Commercial Fishing Grounds

Draft Proposals

Fisheries		1	2	3	4	A
P o i n t  A r e n a	California Halibut	—	—	—	—	—
	Coastal Pelagics	—	—	—	—	—
	Market Squid	—	—	—	—	—
	Deeper Nearshore Rockfish	37.2%	39.1%	38.0%	37.7%	16.9%
	Nearshore Rockfish	34.9%	36.6%	33.7%	34.3%	20.3%
	Urchin	25.8%	20.8%	34.8%	26.3%	21.5%
	Dungeness Crab	20.5%	7.3%	18.3%	21.8%	7.3%
	Salmon	13.1%	2.4%	10.3%	14.5%	2.6%
B o d e g a  B a y	California Halibut	27.0%	16.8%	35.0%	28.9%	12.9%
	Coastal Pelagics	—	—	—	—	—
	Market Squid	—	—	—	—	—
	Deeper Nearshore Rockfish	28.5%	21.2%	28.1%	31.3%	20.7%
	Nearshore Rockfish	33.4%	34.5%	39.6%	33.0%	16.9%
	Urchin	26.7%	21.9%	30.9%	26.3%	20.2%
	Dungeness Crab	19.3%	5.0%	16.7%	21.2%	7.4%
	Salmon	13.1%	4.7%	12.9%	16.1%	4.9%

Percentage **area** of commercial fishing grounds within the **study area** affected by landing port (Table 8)

Draft Proposals

Fisheries		1	2	3	4	A
P o i n t  A r e n a	California Halibut	—	—	—	—	—
	Coastal Pelagics	—	—	—	—	—
	Market Squid	—	—	—	—	—
	Deeper Nearshore Rockfish	36.0%	40.9%	36.0%	36.8%	7.0%
	Nearshore Rockfish	34.5%	38.2%	32.0%	35.5%	11.6%
	Urchin	14.5%	12.8%	9.7%	13.1%	13.9%
	Dungeness Crab	34.2%	13.2%	31.5%	34.7%	24.4%
	Salmon	10.2%	26.3%	27.4%	27.0%	26.3%
B o d e g a  B a y	California Halibut	12.3%	8.0%	15.7%	13.7%	7.5%
	Coastal Pelagics	—	—	—	—	—
	Market Squid	—	—	—	—	—
	Deeper Nearshore Rockfish	43.5%	19.4%	31.2%	46.5%	16.0%
	Nearshore Rockfish	24.6%	23.7%	44.3%	23.2%	22.5%
	Urchin	40.9%	28.6%	40.4%	38.4%	7.4%
	Dungeness Crab	16.3%	3.4%	10.1%	15.6%	3.4%
	Salmon	10.0%	4.3%	12.3%	12.0%	5.2%

Percentage **value** of commercial fishing grounds within the **study area** affected by landing port (Table 10)



# Impacts on Commercial Fishing Grounds

**Draft Proposals**

Fisheries		1	2	3	4	A	
S a n	California Halibut	0.5%	0.4%	0.7%	0.5%	0.1%	
	Coastal Pelagics	----	----	----	----	----	
	Market Squid	----	----	----	----	----	
F r a n c i s c o	Rockfish - Deeper Nearshore	21.2%	12.7%	18.8%	26.2%	13.7%	
	Rockfish - Nearshore	14.1%	11.0%	14.3%	15.6%	5.4%	
	Urchin	29.5%	28.8%	25.8%	26.8%	7.6%	
	Dungeness Crab	2.2%	0.8%	2.4%	2.6%	1.1%	
	Salmon	2.2%	0.5%	2.1%	2.6%	0.6%	
	H a l i f	California Halibut	0.7%	0.2%	0.6%	27.1%	0.2%
		Coastal Pelagics	0.2%	0.0%	0.9%	0.0%	0.0%
		Market Squid	0.5%	0.2%	22.7%	27.3%	5.6%
M o o n	Rockfish - Deeper Nearshore	13.8%	5.1%	9.2%	18.4%	4.8%	
	Rockfish - Nearshore	1.9%	1.9%	1.9%	1.9%	1.9%	
B a y	Urchin	----	----	----	----	----	
	Dungeness Crab	1.4%	0.5%	1.2%	1.8%	0.5%	
	Salmon	3.0%	0.7%	2.6%	3.0%	0.7%	

**Percentage value of total commercial fishing grounds affected by landing port (Table 9)**

**Draft Proposals**

Fisheries		1	2	3	4	A	
S a n	California Halibut	0.6%	0.4%	0.7%	0.5%	0.2%	
	Coastal Pelagics	----	----	----	----	----	
	Market Squid	----	----	----	----	----	
F r a n c i s c o	Rockfish - Deeper Nearshore	26.4%	15.8%	23.3%	32.6%	17.1%	
	Rockfish - Nearshore	24.6%	19.2%	24.9%	27.3%	9.4%	
	Urchin	29.8%	24.0%	26.1%	27.1%	7.7%	
	Dungeness Crab	5.2%	1.8%	5.5%	6.0%	2.4%	
	Salmon	9.6%	2.4%	0.2%	11.3%	2.4%	
	H a l i f	California Halibut	0.7%	0.2%	0.6%	27.2%	0.2%
		Coastal Pelagics	5.6%	0.0%	22.8%	0.0%	0.0%
		Market Squid	0.5%	0.2%	22.7%	27.3%	5.6%
M o o n	Rockfish - Deeper Nearshore	18.1%	6.6%	12.0%	24.0%	6.3%	
	Rockfish - Nearshore	1.9%	1.9%	1.9%	1.9%	1.9%	
B a y	Urchin	----	----	----	----	----	
	Dungeness Crab	7.5%	2.4%	6.4%	9.5%	2.5%	
	Salmon	10.1%	2.2%	8.7%	10.0%	2.3%	

**Percentage value of commercial fishing grounds within the study area affected by landing port (Table 10)**

# Consideration of Existing Closures



Fisheries		Draft Proposals				
		1	2	3	4	A
Point Arena →	Deeper Nearshore Rockfish – No RCA	36.0%	40.8%	35.9%	36.7%	7.0%
	<b>Deeper Nearshore Rockfish – RCA</b>	<b>36.3%</b>	<b>41.3%</b>	<b>35.8%</b>	<b>37.1%</b>	<b>5.2%</b>
	Nearshore Rockfish – No RCA	31.9%	35.3%	29.5%	32.8%	10.7%
	<b>Nearshore Rockfish – RCA</b>	<b>31.4%</b>	<b>34.6%</b>	<b>28.1%</b>	<b>32.4%</b>	<b>9.4%</b>
Bodega Bay →	Deeper Nearshore Rockfish – No RCA	28.9%	12.9%	20.7%	30.9%	10.6%
	<b>Deeper Nearshore Rockfish – RCA</b>	<b>39.8%</b>	<b>15.0%</b>	<b>23.2%</b>	<b>42.6%</b>	<b>12.4%</b>
	Nearshore Rockfish – No RCA	23.6%	22.8%	42.6%	22.3%	21.7%
	<b>Nearshore Rockfish – RCA</b>	<b>23.7%</b>	<b>22.8%</b>	<b>42.9%</b>	<b>22.4%</b>	<b>21.9%</b>
Bollinas	Deeper Nearshore Rockfish – No RCA	31.6%	6.0%	24.1%	35.9%	8.7%
	<b>Deeper Nearshore Rockfish – RCA</b>	<b>50.9%</b>	<b>12.1%</b>	<b>30.8%</b>	<b>60.4%</b>	<b>16.7%</b>
San Francisco →	Deeper Nearshore Rockfish – No RCA	21.2%	12.7%	18.8%	26.2%	13.7%
	<b>Deeper Nearshore Rockfish – RCA</b>	<b>22.3%</b>	<b>12.3%</b>	<b>19.3%</b>	<b>28.1%</b>	<b>14.2%</b>
	Nearshore Rockfish – No RCA	14.1%	11.0%	14.3%	15.6%	5.4%
	<b>Nearshore Rockfish – RCA</b>	<b>13.7%</b>	<b>9.9%</b>	<b>14.0%</b>	<b>15.3%</b>	<b>5.6%</b>
Half Moon Bay →	Deeper Nearshore Rockfish – No RCA	13.8%	5.1%	9.2%	18.4%	4.8%
	<b>Deeper Nearshore Rockfish – RCA</b>	<b>13.9%</b>	<b>5.1%</b>	<b>9.2%</b>	<b>18.4%</b>	<b>4.8%</b>
	Nearshore Rockfish – No RCA	1.9%	1.9%	1.9%	1.9%	1.9%
	<b>Nearshore Rockfish – RCA</b>	<b>1.9%</b>	<b>1.9%</b>	<b>1.9%</b>	<b>1.9%</b>	<b>1.9%</b>



# Individual Impacts (Commercial)

## Example: Draft Proposal 4

Fishery	n=	Annual Ex-vessel Revenue Loss (%)					Annual Ex-vessel Revenue Loss (\$ 2006)				
		Less than 20%	20%-40%	40%-60%	60%-80%	More than 80%	Less than \$5k	\$5-\$10k	\$10-\$15k	\$15-\$20k	More than \$20k
C. Halibut	14	10	4	0	0	0	14	0	0	0	0
Coastal Pelagics	1	1	0	0	0	0	1	0	0	0	0
Market Squid	1	1	0	0	0	0	0	0	0	1	0
D.N. Rockfish	15	5	8	1	1	0	15	0	0	0	0
N. Rockfish	9	4	5	0	0	0	8	1	0	0	0
Urchin	22	12	8	1	0	1	20	2	0	0	0
D. Crab	102	94	7	1	0	0	93	6	2	1	0
Salmon	136	133	3	0	0	0	135	1	0	0	0
<b>All Fisheries</b>	<b>172</b>	<b>154</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>155</b>	<b>11</b>	<b>4</b>	<b>0</b>	<b>2</b>



# Socioeconomic Impacts (Commercial)

## Example: Point Arena

### Draft Proposals

#### Estimated Annual Net Economic Impact of Draft Proposal (\$ 2006)

Fishery	Baseline GER	Baseline NER (Profit)	Estimated Annual Net Economic Impact of Draft Proposal (\$ 2006)				
			1	2	3	4	A
Halibut	—	—					
Coastal Pelagics	—	—					
Squid	—	—					
D. N. Rockfish	\$1,424	\$699	\$396	\$450	\$396	\$405	\$77
N. Rockfish	\$64,259	\$31,544	\$15,852	\$17,533	\$14,688	\$16,309	\$5,301
Urchin	\$608,226	\$366,963	\$60,577	\$53,614	\$40,634	\$54,758	\$58,389
Dungeness Crab	\$46,951	\$24,201	\$5,576	\$2,159	\$5,147	\$5,660	\$3,987
Salmon	\$77,890	\$41,610	\$3,254	\$8,438	\$8,773	\$8,639	\$8,431
<b>All Fisheries</b>	<b>\$798,750</b>	<b>\$465,016</b>	<b>\$85,655</b>	<b>\$82,193</b>	<b>\$69,638</b>	<b>\$85,771</b>	<b>\$76,185</b>

#### Net Economic Impact (% reduction in Profit)

Fishery	Net Economic Impact (% reduction in Profit)				
	1	2	3	4	A
Halibut					
Coastal Pelagics					
Squid					
D. N. Rockfish	56.7%	64.4%	56.6%	57.9%	11.1%
N. Rockfish	50.3%	55.6%	46.6%	51.7%	16.8%
Urchin	16.5%	14.6%	11.1%	14.9%	15.9%
Dungeness Crab	23.0%	8.9%	21.3%	23.4%	16.5%
Salmon	7.8%	20.3%	21.1%	20.8%	20.3%
<b>All Fisheries</b>	<b>18.4%</b>	<b>17.7%</b>	<b>15.0%</b>	<b>18.4%</b>	<b>16.4%</b>





# Socioeconomic Impacts (Commercial)

## Draft Proposals

### Net Economic Impact under each Alternative (in Dollars)

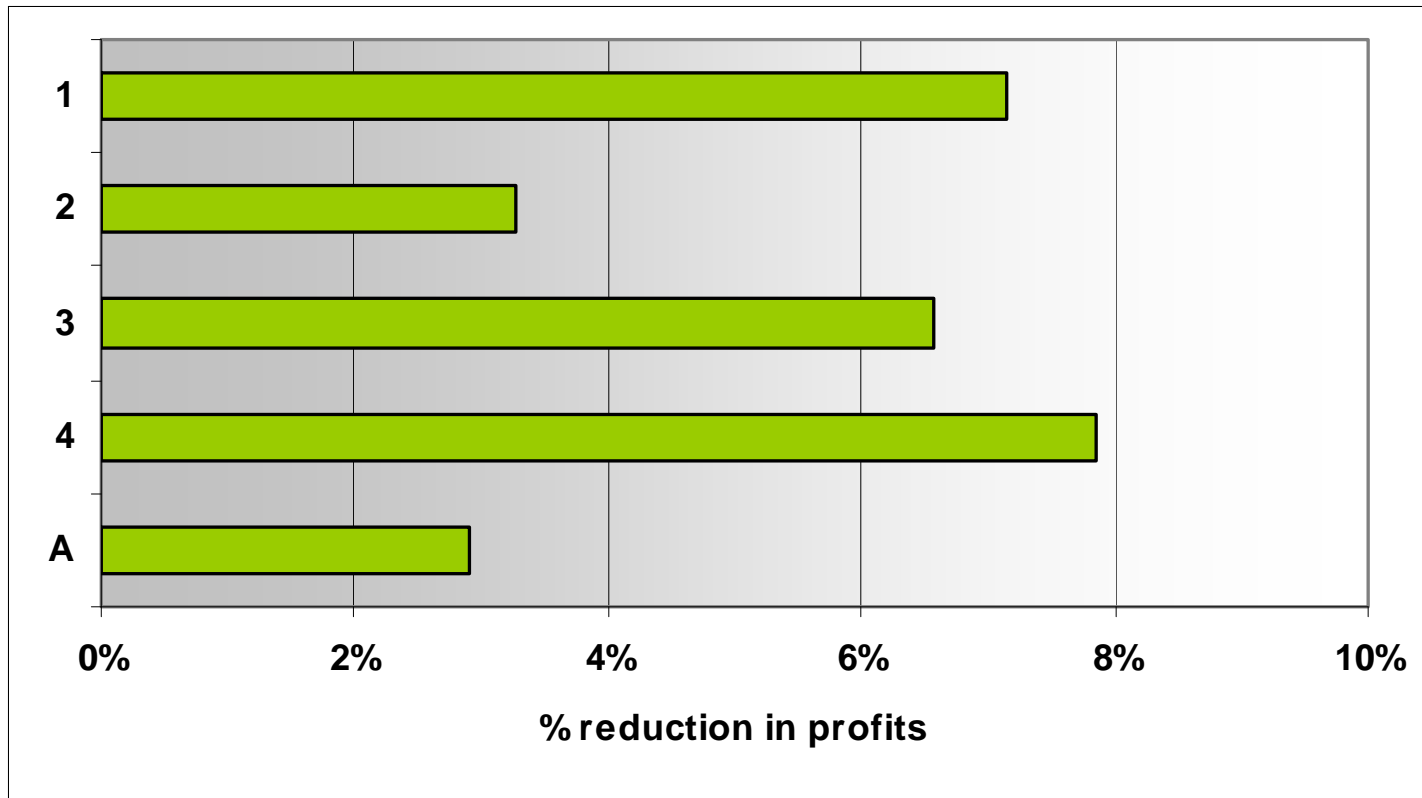
Port	Baseline GER	Baseline NER (Profit)	Net Economic Impact under each Alternative (in Dollars)				
			1	2	3	4	A
Point Arena	\$798,750	\$465,016	\$85,655	\$82,193	\$69,638	\$85,771	\$76,185
Bodega Bay	\$4,654,206	\$2,457,152	\$327,842	\$128,923	\$281,002	\$327,954	\$93,058
Bolinas	\$151,214	\$78,783	\$6,322	\$2,559	\$7,334	\$6,442	\$2,841
San Francisco	\$6,059,387	\$3,166,680	\$113,686	\$41,743	\$115,727	\$133,531	\$47,064
Half Moon Bay	\$4,110,888	\$2,122,436	\$64,021	\$16,769	\$74,656	\$102,483	\$22,162
NCC	\$15,889,359	\$8,336,602	\$596,732	\$271,930	\$547,694	\$655,381	\$241,613

### Net Economic Impact (% reduction in Profit)

Port	Net Economic Impact (% reduction in Profit)				
	1	2	3	4	A
Point Arena	18.4%	17.7%	15.0%	18.4%	16.4%
Bodega Bay	13.3%	5.2%	11.4%	13.3%	3.8%
Bolinas	8.0%	3.2%	9.3%	8.2%	3.6%
San Francisco	3.6%	1.3%	3.7%	4.2%	1.5%
Half Moon Bay	3.0%	0.8%	3.5%	4.8%	1.0%
NCC	7.2%	3.3%	6.6%	7.9%	2.9%



# Socioeconomic Impacts (Commercial)





# Recreational Fishery Impacts

- Identical approach to commercial fisheries with one exception—the analysis is done using only stated importance values from the interviews.
- The data should only be considered at the sub-region level, not at the entire study region level—Why?
  - The data are not representative of the entire population of recreational fishermen due to the less than desirable (less than statistically significant) sample size.
  - There was little or no data collected from recreational fishermen north of Bodega Bay.
  - The data represents interviewees' areas of value, not areas of effort.
  - The data represents interviewees' areas that are important to them over their entire recreational fishing experience, not necessarily the areas that are important to them currently.



# Recreational Fishery Impacts

## Draft Proposals

		Fisheries	1	2	3	4	A
CPFV	Region 3	California Halibut	13.2%	7.4%	12.6%	12.1%	8.1%
		Dungeness Crab	13.3%	4.4%	10.9%	19.0%	5.1%
		Rockfish	16.8%	15.3%	18.4%	18.2%	14.6%
		Salmon	1.6%	1.0%	3.6%	2.4%	1.2%
	Region 2	California Halibut	22.3%	10.3%	18.3%	21.2%	7.8%
		Dungeness Crab	0.6%	0.1%	0.4%	0.6%	0.1%
		Rockfish	20.5%	3.1%	13.3%	22.6%	5.3%
		Salmon	3.0%	0.7%	2.9%	3.9%	1.1%
	Region 1	California Halibut	12.8%	0.4%	7.5%	21.8%	0.4%
		Dungeness Crab	2.7%	1.1%	1.8%	2.1%	1.1%
		Rockfish	15.2%	6.6%	12.6%	21.3%	7.6%
		Salmon	2.6%	0.7%	2.5%	3.6%	0.9%

E.g. Percentage area of **total** recreational fishing grounds affected by landing port



# Recreational Fishery Impacts

Region 1 Fisheries		Draft Proposals				
		1	2	3	4	A
CPFV	California Halibut	16.8%	0.3%	9.6%	24.5%	0.3%
	Dungeness Crab	21.3%	8.4%	14.1%	15.4%	8.4%
	Rockfish	17.4%	7.8%	16.4%	28.6%	11.1%
	Salmon	10.3%	4.1%	10.9%	16.4%	4.7%
Private Vessels	California Halibut	20.7%	5.7%	14.7%	25.5%	5.7%
	Dungeness Crab	11.2%	4.8%	8.5%	9.4%	4.8%
	Rockfish	20.0%	9.3%	18.5%	30.1%	11.5%
	Salmon	4.6%	1.5%	5.0%	10.3%	1.7%
Kayak Anglers	California Halibut	3.5%	0.1%	0.5%	8.5%	0.1%
	Dungeness Crab	27.0%	12.8%	19.0%	20.7%	12.8%
	Rockfish	11.3%	5.6%	5.9%	12.6%	5.6%
	Salmon	0.5%	0.5%	0.6%	12.7%	0.5%
Pier/Shore	California Halibut	13.7%	3.4%	8.8%	14.7%	6.0%
	Dungeness Crab	4.7%	4.7%	5.3%	5.9%	4.7%
	Rockfish	10.7%	3.9%	8.5%	17.5%	4.2%
	Salmon	0.0%	0.0%	0.0%	0.0%	0.0%
	Striped Bass	13.1%	6.0%	9.9%	21.2%	6.0%

e.g. % **value** of recreational fishing grounds within the **study area** affected by landing port



# Next Steps

- **Next round of analysis for the North Central Coast**
- **Final report for North Central Coast**
  - Methods paper
  - Additional summary statistics
  - Port profiles
- **Beginning to think about data collection in the next region (i.e. South Coast)**