APPENDIX A

CALIFORNIA NORTH CENTRAL COAST CPFV 2011 BASELINE CHARACTERIZATION

The 2010 data set is presented in the main body of this report as the survey sample in this first year of data collection was significantly more robust and thus more representative and reliable as a baseline characterization of the North Central Coast region CPFV fleet. Reasons as to why the second year of data collection (2011 fishing year) did not yield as robust of a survey sample is explained in detail in our lessons learned section in the main body of the report.

Here we present the data collected in the second year of the project (collected in 2012 inquiring about the entire 2011 fishing year) summarized at the study regional level below. Additional port specific data can be found in the accompanying data workbooks, maps, and spatial data sets included in the deliverables package of this project which can be found on the OceanSpaces website: (http://oceanspaces.org).

In San Francisco one individual we interviewed was an owner only and provided information his captain was unable to provide (Table 1). The rest of the respondents were either owner/operators or just operators. In both Bodega Bay and Sausalito we were only able to interview one operator while in Half Moon Bay we interviewed 5 operators. The average respondent across the study region was 48.7 years old, had 17.3 years experience owning a CPFV vessel (if applicable), and 20.1 years experience operating a CPFV vessel (Table 2). Additionally, the average respondent reported that they made an average of 69.2 percent of their personal income from CPFV fishing in 2011. When asked what factors had changed between 2010 and 2011 that had impacted the percent of their revenue generated by CPFV operations, respondents provided a variety of responses (Table 3). Two individuals noted that they felt their revenue had gone up because salmon was doing better. Another respondent noted that his revenue had gone down and he felt this was due to there being fewer customers in 2011.

Table 1. Number of CPFV interviews completed, North Central Coast Region

Port	Individuals interviewed
Bodega Bay	1
Sausalito	1
Berkeley	4
Emeryville	4
San Francisco	3*
Half Moon Bay	5
Grand Total	18

Source: Current study

** One individual interviewed in San Francisco is an owner only and provided revenue information for his operator.*

Table 2. CPFV survey response statistics, 2011, North Central Coast

	Response	Standard deviation	Number responding
Individuals interviewed	18	n/a	n/a
Owner only	1	n/a	n /a
Average age	48.7	10.5	18
Average number of years owning CPFV boat/s	17.3	10.5	16
Average number of years operating CPFV boat/s	20.1	11.0	17
Average percent income from CPFV operations in 2011	69.2%	34.4%	18

Source: Current study

Table 3. Cause in change in percent of total income from CPFV from 2010 - 2011, North Central Coast

	Response	Number responding
Increase	No longer receiving salmon subsidies	1
	No longer focusing on other work	1
	2010 was a bad year	1
	Made more money fishing commercially in 2010	1
	Other work required more time in 2010	2
	Fewer salmon in 2010	2
Decrease	Fewer customers in 2011	1
	Total number responding	5

Source: Current study

Respondents were asked if they had additional sources of income other than CPFV operations. Eight respondents indicated that they did, and five indicated the source was another type of fishing related work such as commercial fishing (Table 4).

Table 4. Sources of income in 2011 in addition to CPFV operation, North Central Coast Region

Response	Number responding
Commercial fishing/other fishing related job	5
Dental practice	1
Gold mining	2
Harbor related work	2
Investments	2
Real estate	1
Total number responding	8

Source: Current study

Across the entire North Central Coast study region the average CPFV operator and/or owner reported making a gross economic revenue (GER) of $132,000 in 2011 (Table 5). Additionally, respondents reported they spent an average of 26.8 percent of their GER on fuel, 11.5 percent on crew, and 29.3 percent on other operational expenses, which left operators with an average net revenue of $42,783.

Table 5. Average CPFV gross economic revenue (GER) to operating costs, North Central Coast

	Number responding	Average response	Standard deviation
Total GER 2011	16	$132,000	$86,073
% GER to fuel	17	26.8%	9.3%
% GER to crew	17	11.5%	8.1%
% GER to other operating costs	17	29.3%	15.7%

Source: Current study

Most respondents (58.8 percent) reported that operating costs in 2011 were average compared to 2010. The remainder felt that their 2011 expenses were either somewhat higher (29.3 percent) or significantly higher (11.8 percent) than in 2010 (Table 6).

Table 6. Change in overall commercial fishing operating costs in 2011 compared to 2010, North Central Coast

	Fishery/activity	Number responding	Significantly higher	Somewhat higher	Average	Somewhat lower	Significantly lower
Fishery	California halibut	9	22.2%	33.3%	44.4%	—	—
	Dungeness crab	8	—	25.0%	75.0%	—	—
	Rockfish	16	12.5%	25.0%	62.5%	—	—
	Salmon	16	12.5%	25.0%	62.5%	—	—
	Striped bass	4	25.0%	25.0%	50.0%	—	—
	Tuna/dorado	3	—	33.3%	66.7%	—	—
Activity	Funeral services	3	—	—	100.0%	—	—
	Whale watching	3	—	—	100.0%	—	—
	Other^	6	—	16.7%	83.3%	—	—
All fisheries/activities (unique individuals)		17	11.8%	29.4%	58.8%	—	—

Source: Current study

— indicates that the port/fishery was not sampled or a zero value data point

^ includes bird watching, research trips, leisure cruises, and nature trips

All seven individuals who provided reasons for their increase in operating costs included rising fuel costs. Some respondents reported additional reasons which can be seen in Table 7.

Additionally, respondents were asked regarding what factors may have impacted their total gross economic revenue in 2011. Responses were varied with some individuals mentioning that 2011 had better fishing than 2010, that they had changed or added a fishery, and that they were able to fish salmon in 2011. Additional reasons are listed in Table 8.

Table 7. Cause in change in percent gross economic revenue towards CPFV operating costs, North Central Coast

Response	Number responding
Increase in fuel prices	7
Increase in bait prices	2
Overhaul/large maintenance of vessel	1
Increase in gear prices	1
Increase in crew wages	1
Total number responding	7

Source: Current study

Table 8. Cause in change in overall income from CPFV in 2011, North Central Coast

	Response	Number responding
Increase	Better fishing	3
	Changed/added fishery	2
	Put in more time/effort	1
	Better weather	1
	Was able to fish some salmon	2
	Better economy	1
	Was able to fish longer into the season	1
	More clients	1
	Charged higher prices	1
Decrease	Fished fewer months than normal	1
	Fewer squid	1
	Fewer customers	1
Total number responding		9

Source: Current study

Of the seventeen respondents (the owner only is not included here) eight reported conducting non-consumptive activities in 2011. On average, respondents reported operating fishing trips most frequently (91.2 days as opposed to 67.5 days for non consumptive activities). The average number of passengers per trip, price per trip, and crew per trip were similar for both consumptive and non consumptive trips. More information can be found below in Table 9.

Table 9. CPFV trip statistics, 2011, North Central Coast

	Consumptive trips			Non consumptive trips		
	Number responding	Response	Standard deviation	Number responding	Response	Standard deviation
Number of people reporting trips	n/a	17	n/a	n/a	8	n/a
Average number of trips	17	91.2	37.2	8	67.5	135.5
Average number of passengers(per trip)	17	13.5	5.3	8	13.6	11.9
Average price per passenger (per trip)	17	$110	$37	6	$106	$68
Average number of crew (per trip)	16	0.9	0.6	8	0.8	0.5

Source: Current study

Half of the respondents we spoke to who targeted Dungeness crab in 2011 indicated that they had added the fishery since 2010. Three respondents shared their reasons for doing so and they are listed below in Table 11.

Table 10. CPFV fisheries added/dropped since 2010 or not fished in 2011, North Central Coast

			Percent responding		
	Fishery/activity	Number responding	Added	Dropped	Not fished in 2011
Fishery	California halibut	9	—	—	—
	Dungeness crab	8	50%	—	—
	Rockfish	16	—	—	—
	Salmon	16	—	—	—
	Striped bass	4	—	—	—
	Tuna/dorado	3	—	—	—
Activity	Funeral services	3	—	—	—
	Whale watching	3	—	—	—
	Other^	6	—	—	—

Source: Current study

— indicates that the port/fishery was not sampled or a zero value data point

^ includes bird watching, research trips, leisure cruises, and nature trips

Table 11. Reason for adding/dropping a fishery since 2010 or not fishing in 2011, North Central Coast

Response	Number responding
Saw opportunity to increase profit	1
Less competition due to commercial strike	1
Had the gear from commercial fishing	1
Reinvested salmon disaster money into crab gear	1
Total number responding	3

Source: Current study

For each fishery or activity they targeted in 2011, CPFV fishermen were asked how many days they spent targeting that fishery/activity and what percent of their gross economic revenue (GER) they earned from that fishery or activity. Rockfish generated the most revenue, 43.8 percent of the average respondent's GER, followed by salmon (30.4 percent), and striped bass (22.3 percent). The only fishery that generated less revenue than any of the non consumptive activities was tuna/dorado which only generated, on average, 2.3 percent of an individual's CPFV operator's GER and was only targeted an average of 2.3 days per year. Additional information is found below in Table 12.

Table 12. Number of days and percent GER targeting fishery/activity in 2011, CPFV, North Central Coast

			Number of days targeting species (2011)			Percent of GER from fishery/activity (2011)		
	Fishery/activity	Number interviewed	Number responding	Average	Standard deviation	Number responding	Average	Standard deviation
Fishery	California halibut	9	9	48.0	38.1	9	20.4%	14.2%
	Dungeness crab	8	8	23.4	17.1	8	11.9%	8.9%
	Rockfish/lingcod	16	16	44.7	26.9	16	43.8%	33.0%
	Salmon	16	16	35.6	36.7	16	30.4%	29.4%
	Striped bass	4	4	71.3	35.7	4	22.3%	12.7%
	Tuna/dorado	3	3	2.3	1.5	3	2.3%	2.5%
Activity	Funeral services	3	3	16.7	16.5	3	7.0%	5.2%
	Whale watching	3	3	4.0	3.5	3	4.0%	5.2%
	Other^	6	6	5.7	4.3	6	7.5%	8.7%

Source: Current study

^ includes bird watching, research trips, leisure cruises, and nature trips

All CPFV operators were asked to compare the success in each of their target fisheries and non consumptive activities in 2011 to the previous five years. As shown below in Table 13 respondents were given the option of responding in one of the following categories: 1) significantly better; 2) somewhat better; 3) the same; 4) somewhat worse; and 5) significantly worse. Respondents were then asked what factors they felt had contributed to the level of success in their fishery. This question was asked in an open ended manner and responses were later coded, categorized, and divided into four types of categories: regulatory, environmental, economic, and other as seen in the tables below.

An equal number of respondents (33.3 percent) indicated they felt the California halibut fishery was either the same, significantly worse, or somewhat worse than it had been in the previous five years. Respondents primarily indicated this was due to environmental factors having to do with oceanic conditions, lack of bait, and low quantity and quality of halibut. Responses in the Dungeness crab fishery were varied, with 25 percent of respondents indicating their fishery was significantly better and another 25 percent indicating it was somewhat worse. One person who thought it was doing worse mentioned that there had been an increased effort by the commercial crab fishery, creating more competition. Those who felt Dungeness crab was doing better mentioned that it was the peak year of a natural cycle. Similarly, responses for rockfish were varied. Half of the respondents who targeted rockfish in 2011 indicated their fishery was the same as it had been in the previous five years. Of the remaining respondents, 25 percent felt rockfish was somewhat worse, 6.3 percent felt it was significantly worse, 12.5 percent felt it was somewhat better, and 6.3 percent if was significantly better. Those who said rockfish was doing better mentioned good oceanic conditions and fewer private boats targeting rockfish. Those who indicated rockfish was doing worse indicated regulatory factors such as MPAs or the RCA as well as some environmental factors such as small fish, low quantity of fish, and poor oceanic conditions. Fishermen reported that the most important factor impacting success in the salmon fishery was that they were allowed more days of fishing. Few responses for non consumptive activities were given. One respondent indicated that the generally poor economy contributed to them losing whale watching customers. More responses for each fishery and activity can be found below in Table 14.

Table 13. Overall success in CPFV fishery/activity in 2011 compared to past five years, North Central Coast

			Percent response					
		Number responding	Did not participate in previous seasons	Significantly better	Somewhat better	The same	Somewhat worse	Significantly worse
Fishery	California halibut	9	—	—	—	33.3%	33.3%	33.3%
	Dungeness crab	8	25.0%	25.0%	12.5%	12.5%	25.0%	—
	Rockfish	16	—	6.3%	12.5%	50.0%	25.0%	6.3%
	Salmon	16	—	18.8%	31.3%	37.5%	6.3%	6.3%
	Striped bass	4	—	—	25.0%	50.0%	25.0%	—
	Tuna/dorado	3	—	—	—	33.3%	33.3%	33.3%
Activity	Funeral services	3	—	—	—	100.0%	—	—
	Whale watching	3	—	33.3%	—	33.3%	—	33.3%
	Other^	6	—	16.7%	—	83.3%	—	—

Source: Current study

— indicates that the port/fishery was not sampled or a zero value data point

^ includes bird watching, research trips, leisure cruises, and nature trips

Table 14. Factors influencing success in specific CPFV fishery/activity in 2011 compared to previous five years, North Central Coast

		Number responding							
		Fishery							
		California halibut	Dungeness crab	Rockfish	Salmon	Striped bass	Tuna/ dorado	Whale watching	Other^
	Regulatory factors	**2**	**—**	**4**	**6**	**1**	**—**	**—**	**—**
Worse	MPAs	1	—	4	—	—	—	—	—
	More pressure on fishery due to lack of salmon season and/or MPAs	1	—	—	—	—	—	—	—
	RCA	—	—	1	—	—	—	—	—
	Water management issues	—	—	—	2	1	—	—	—
Better	Allowed fishing days	—	—	—	4	—	—	—	—
	Fishery closed in previous seasons	—	—	—	1	—	—	—	—
	Environmental factors	**4**	**3**	**4**	**5**	**1**	**2**	**2**	**—**
Worse	Bad weather	—	—	—	—	—	1	1	—
	Poor ocean conditions	1	—	1	—	—	1	1	—
	Loss of salmon spawning grounds	—	—	—	2	—	—	—	—
	Low of natural cycle	1	—	—	—	—	—	—	—
	Lack of bait feed	2	—	—	—	—	—	—	—
	Small fish	1	—	1	—	—	—	—	—
	Low quantity of fish	1	—	1	—	—	—	—	—
Better	Good ocean conditions	—	—	2	2	1	—	1	—
	High quantity of fish	—	—	—	2	—	—	—	—
	Peak of natural cycle	—	3	—	—	—	—	—	—
	Economic factors	**—**	**—**	**—**	**—**	**—**	**—**	**1**	**—**
Worse	Bad economy	—	—	—	—	—	—	1	—
	Other factors	**1**	**1**	**1**	**1**	**—**	**1**	**—**	**1**
Worse	Put less effort into fishery	—	—	—	—	—	1	—	—
	Increase commercial effort	1	1	—	—	—	—	—	—
Better	Fewer private boats	—	—	1	—	—	—	—	—
	Did more advertising	—	—	—	—	—	—	—	1

Source: Current study

— indicates that the port/fishery was not sampled or a zero value data point

^ includes bird watching, research trips, leisure cruises, and nature trips

North Central Coast Region MPAs and the CPFV Sector

Determining and measuring the impact of MPAs upon CPFV operations is challenging to quantify and unravel from the multitude of environmental, regulatory, and economic factors influencing systems of fishing. Despite this, we sought to capture information from fishermen as to how they perceive they have been impacted by MPAs and the specific MPAs which are impacting their fisheries. This section provides information at the region and port levels and summarizes the response from the following three questions which were asked for each fishery during interviews:

1) Has your fishery been directly impacted by the recently established MPAs?;
2) If so, how have you been impacted?; and,
3) What MPAs have impacted your specific fishery?

Question one was posed as a simple yes or no response and questions two and three were open-ended questions in which responses were later coded and categorized into the tables below. Additionally, fishermen were given a map of the MPAs in the North Central Coast to aid in identifying and naming the MPAs impacting them. The questions above were asked for every fishery an individual participated in.

Rockfish was reported by the most respondents (93.8 percent) as being impacted by MPAs. After the loss of traditional fishing grounds, which impacted 94.1 percent of individuals in the study region, the most frequently reported type of impact was spending more time fishing and traveling for fishing, which were mentioned by 47.1 percent of all respondents. Of all the fisheries that were reported as having some sort of impact, salmon was indicated less frequently, although striped bass and tuna/dorado, were not indicated as being impacted by any respondents. More information regarding the types of impacts for each fishery and activity can be found below in Table 15. CPFV respondents indicated they had been impacted by 20 of the 31 MPAs in the North Central Coast, which are listed in Table 16. The MPAs surrounding the Farallon Islands were indicated by the largest percentage of individuals (70 – 76.5 percent), particularly for rockfish (75 to 81.3 percent) as impacting them.

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Table 15. Percent of individuals indicating direct impacts from MPAs for each fishery in 2011, CPFV fishermen, North Central Coast

	Fishery					Activity		
	California halibut	Dungeness crab	Rockfish	Salmon	Striped bass	Whale watching	Other^	Unique individuals
Number responding	9	8	16	16	4	3	6	17
Percent indicating direct impacts from MPAs	33.3%	37.5%	93.8%	18.8%	—	—	33.3%	94.1%
Response	**Percent responding**							
Loss of traditional fishing grounds	33.3%	37.5%	93.8%	18.8%	—	—	33.3%	94.1%
Spending more time fishing/traveling for fishing	—	25.0%	50.0%	18.8%	—	—	—	47.1%
Fishing more in areas with worse/less predictable weather	—	—	12.5%	6.3%	—	—	—	17.6%
Increased fishing pressure/crowding in open areas	—	—	18.8%	—	—	—	—	17.6%
Fewer passengers	—	—	12.5%	—	—	—	—	11.8%
Increase in fuel	—	—	12.5%	—	—	—	—	11.8%
Getting paid for MPA research	—	—	—	—	—	—	16.7%	5.9%
Catching fewer fish	—	—	6.3%	—	—	—	—	5.9%
Catching smaller fish	—	—	6.3%	—	—	—	—	5.9%

Source: Current study

— indicates that the port/fishery was not sampled or a zero value data point

^ includes bird watching, research trips, leisure cruises, and nature trips

Table 16. MPAs impacting specific CPFV fisheries/activities in 2011, North Central Coast

	Fishery					Activity		
MPA	California halibut	Dungeness crab	Rockfish	Salmon	Striped bass	Whale watching	Other^	Unique individuals
Number responding	9	8	16	16	4	3	6	17
Bodega Head SMCA	—	—	6.3%	—	—	—	—	5.9%
Bodega Head SMR	—	—	6.3%	6.3%	—	—	—	5.9%
Double Point/Stormy Stack SC	11.1%	—	6.3%	—	—	—	—	5.9%
Drake's Estero SMCA	—	—	6.3%	—	—	—	—	5.9%
Duxbury Reef SMCA	11.1%	—	31.3%	—	—	—	—	35.3%
Egg (Devil's Slide) Rock to Devil's Slide SC	—	—	6.3%	—	—	—	33.3%	5.9%
Montara SMR	11.1%	25.0%	43.8%	12.5%	—	—	—	41.2%
North Farallon Islands SC	—	12.5%	75.0%	—	—	—	—	70.6%
North Farallon Islands SMR	—	12.5%	81.3%	6.3%	—	—	—	76.5%
Pillar Point SMCA	—	12.5%	43.8%	6.3%	—	—	—	41.2%
Point Resistance Rock SC	11.1%	—	6.3%	—	—	—	—	5.9%
Point Reyes Headlands SC	—	—	25.0%	—	—	—	—	23.5%
Point Reyes SMCA	22.2%	—	56.3%	—	—	—	—	52.9%
Point Reyes SMR	22.2%	—	43.8%	6.3%	—	—	—	41.2%
Russian River SMCA	—	—	6.3%	6.3%	—	—	—	5.9%
Southeast Farallon Island SC	—	12.5%	75.0%	—	—	—	50.0%	70.6%
Southeast Farallon Island SMCA	—	12.5%	81.3%	—	—	—	—	76.5%
Southeast Farallon Island SMR	—	12.5%	81.3%	6.3%	—	—	33.3%	76.5%
Stewarts Point SMR	—	—	6.3%	—	—	—	—	5.9%
Number of MPAs impacting fishery	6	7	19	7	—	—	3	19

Source: Current study

— indicates that the port/fishery was not sampled or a zero value data point

^ includes bird watching, research trips, leisure cruises, and nature trips

North Central Coast CPFV 2011 Spatial Baseline

In the following section we provide maps of baseline data depicting the spatial fishing patterns of specific CPFV fisheries at the port and region level. The full detailed methodology of how these data were collected, analyzed, and reviewed can be found in the methods section of the main report. The GIS data layers with associated metadata of these spatial data sets are also available and were included in the deliverables package of this project which can be found on the OceanSpaces website: (http://oceanspaces.org).

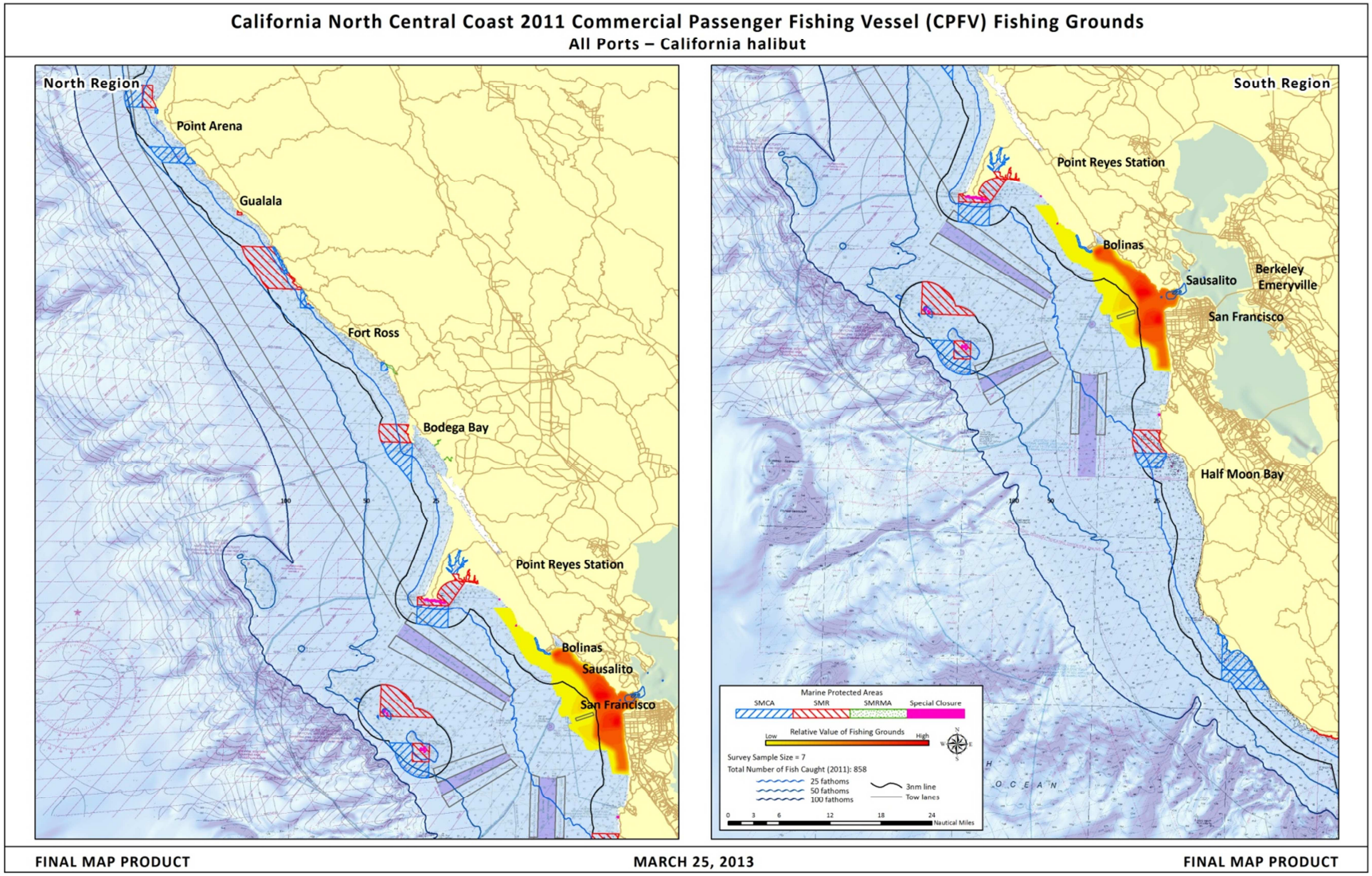
The following map products and spatial data sets for the North Central Coast region CPFV fleet for the 2011 season are provided in Table 17 below. The table below also indicated the total number of fish caught for each port-fishery or region-fishery combination. As detailed in our methods section in the main body of the report, the total number of fish caught for a given fishery in a port was used to weight port level data when aggregating data to a region level spatial data set. This was done to control for possible sample bias across ports. Only maps with 3 or more fishermen are available for use due to confidentiality protocols as indicated in the table below.

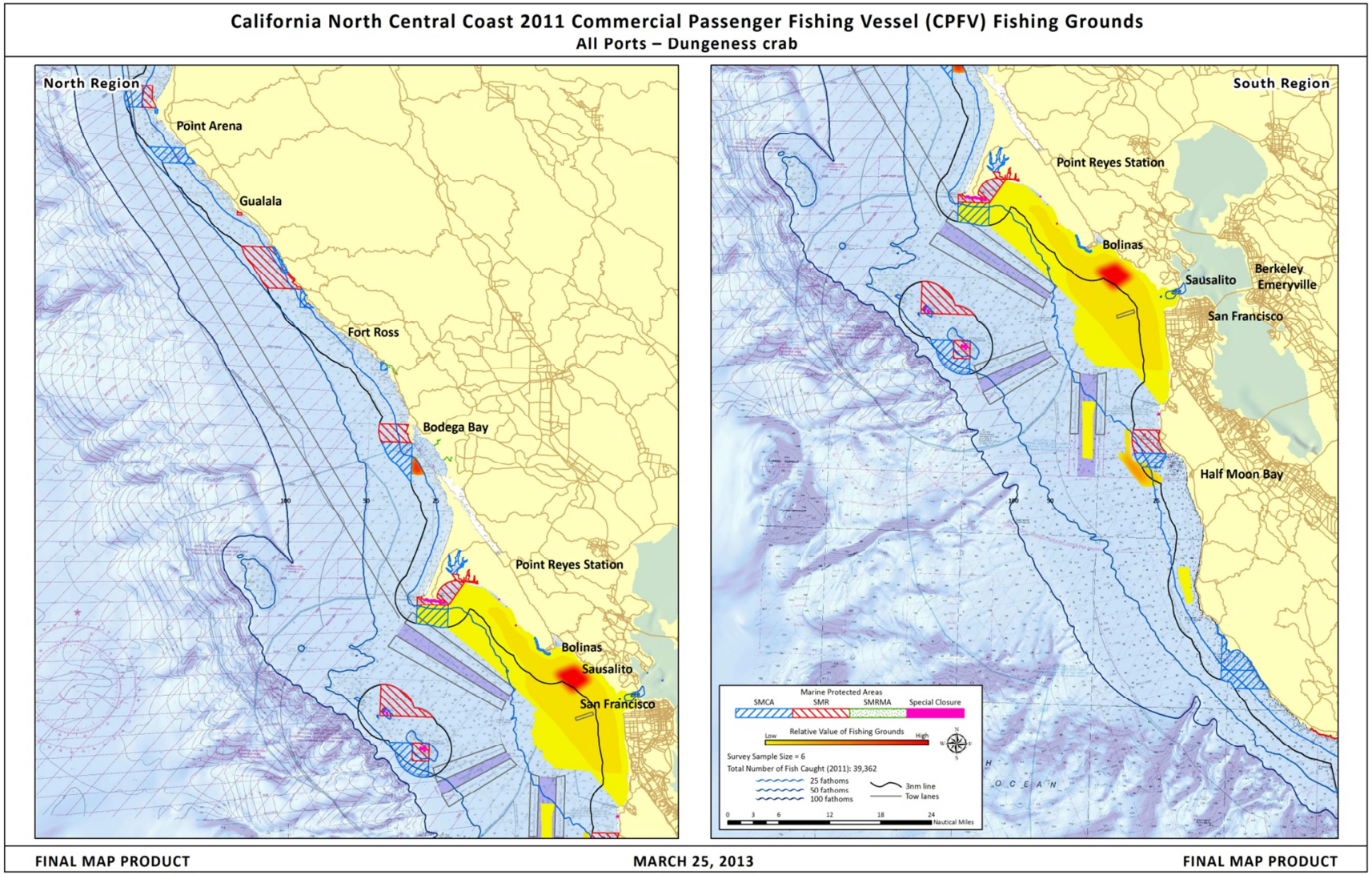
Table 17. 2011 Map products and spatial data sets developed and available

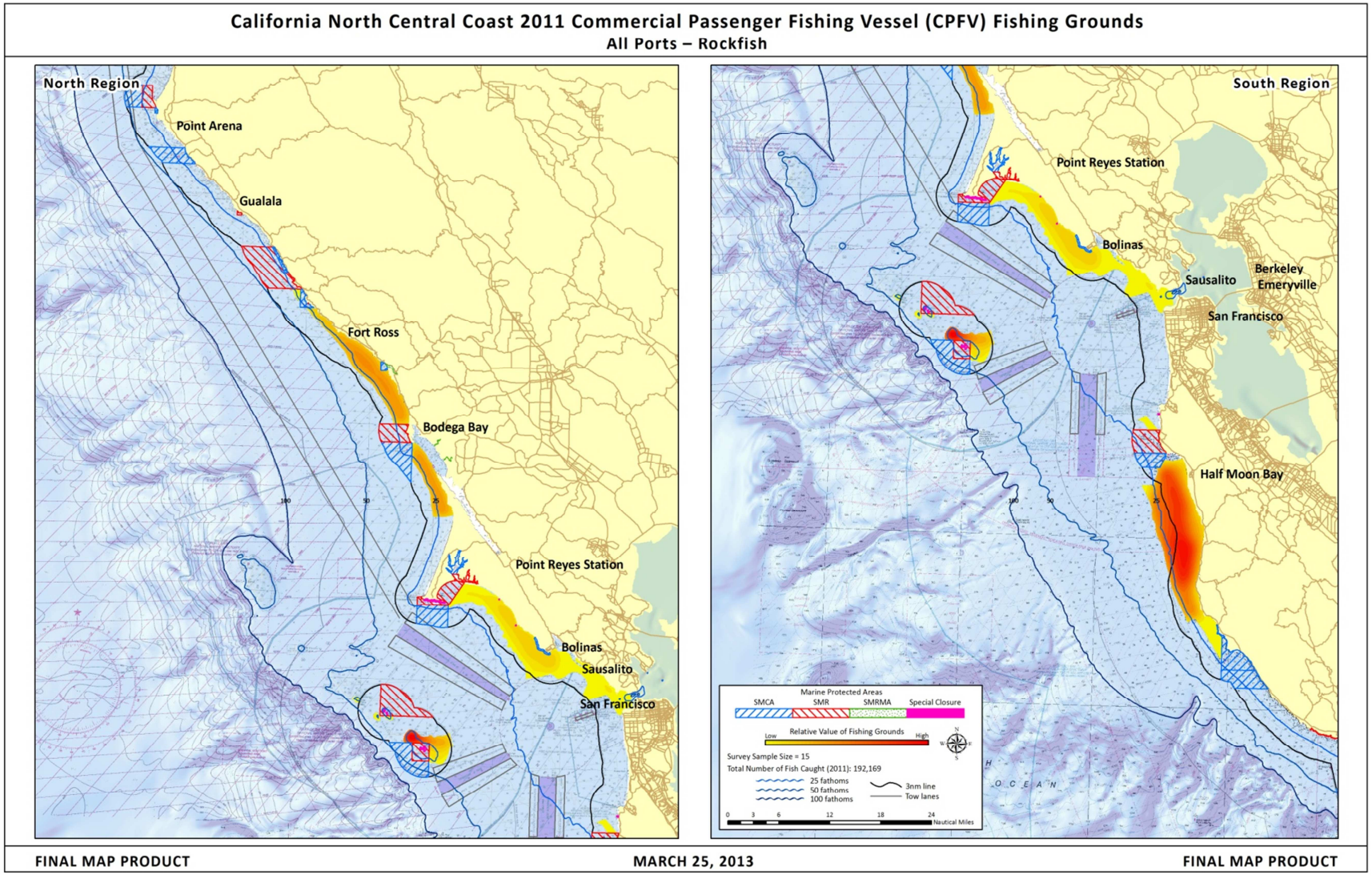
Port/Region	Fishery	Number of fish caught by CPFV operations	Number of fishermen who mapped	Map available
North Central Coast	California halibut	858	7	YES
North Central Coast	Dungeness crab	39,362	6	YES
North Central Coast	Rockfish	192,169	15	YES
North Central Coast	Salmon	8,700	15	YES
Bodega Bay	California halibut	—	—	—
Bodega Bay	Dungeness crab	12,744	1	NO
Bodega Bay	Rockfish	41,252	1	NO
Bodega Bay	Salmon	1,025	1	NO
Sausalito	California halibut	—	—	—
Sausalito	Dungeness crab	—	—	—
Sausalito	Rockfish	278	1	NO
Sausalito	Salmon	1,433	1	NO
Berkeley	California halibut	361	2	NO
Berkeley	Dungeness crab	3,914	1	NO
Berkeley	Rockfish	27,765	3	YES
Berkeley	Salmon	1,825	2	NO
Emeryville	California halibut	378	3	YES
Emeryville	Dungeness crab	14,763	2	NO
Emeryville	Rockfish	57,737	4	YES
Emeryville	Salmon	1,395	4	YES
San Francisco	California halibut	99	2	NO
San Francisco	Dungeness crab	—	—	—
San Francisco	Rockfish	819	1	NO
San Francisco	Salmon	2,200	2	NO
Half Moon Bay	California halibut	20	1	NO
Half Moon Bay	Dungeness crab	7,941	2	NO
Half Moon Bay	Rockfish	64,318	5	YES
Half Moon Bay	Salmon	822	5	YES

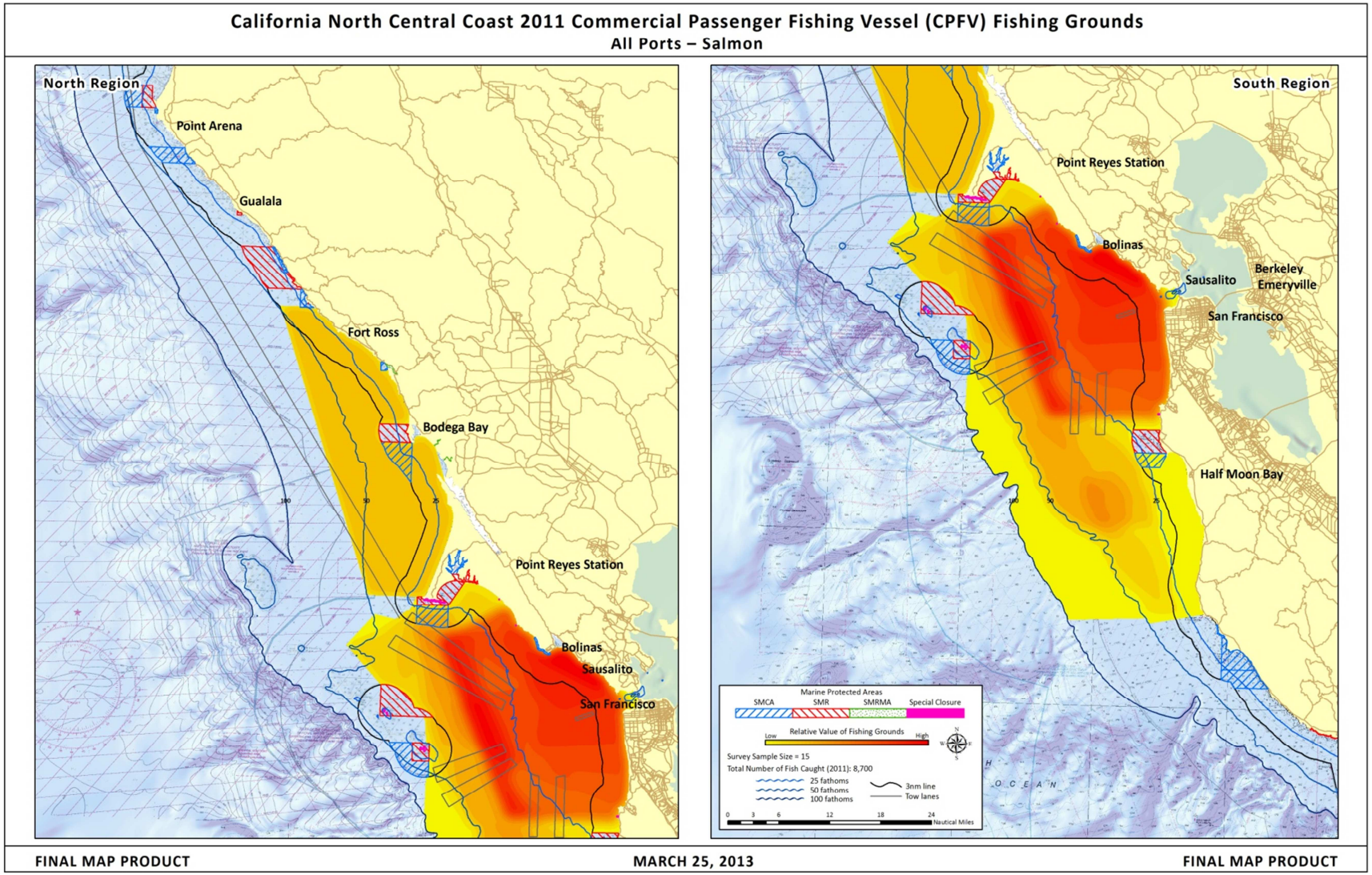
Source: California Department of Fish and Wildlife, Current study

— indicates that the port/fishery was not sampled or a zero value data point


California North Central Coast 2011 Commercial Passenger Fishing Vessel (CPFV) Fishing Grounds
All Ports – California halibut
North Region
Point Arena
Gualala
Fort Ross
Bodega Bay
Point Reyes Station
Bolinas
Sausalito
San Francisco
South Region
Point Reyes Station
Bolinas
Sausalito
Berkeley
Emeryville
San Francisco
Half Moon Bay
Marine Protected Areas
SMCA
SMR
SMRMA
Special Closure
Relative Value of Fishing Grounds
Low
High
Survey Sample Size = 7
Total Number of Fish Caught (2011): 858
25 fathoms
50 fathoms
100 fathoms
3nm line
Tow lanes
0 3 6 12 18 24
Nautical Miles
O C E A N
FINAL MAP PRODUCT
MARCH 25, 2013
FINAL MAP PRODUCT


California North Central Coast 2011 Commercial Passenger Fishing Vessel (CPFV) Fishing Grounds
All Ports – Dungeness crab
North Region
Point Arena
Gualala
Fort Ross
Bodega Bay
Point Reyes Station
Bolinas
Sausalito
San Francisco
South Region
Point Reyes Station
Bolinas
Sausalito
Berkeley
Emeryville
San Francisco
Half Moon Bay
Marine Protected Areas
SMCA
SMR
SMRMA
Special Closure
Relative Value of Fishing Grounds
Low
High
Survey Sample Size = 6
Total Number of Fish Caught (2011): 39,362
25 fathoms
50 fathoms
100 fathoms
3nm line
Tow lanes
Nautical Miles
FINAL MAP PRODUCT
MARCH 25, 2013
FINAL MAP PRODUCT


California North Central Coast 2011 Commercial Passenger Fishing Vessel (CPFV) Fishing Grounds
All Ports – Rockfish
North Region
Point Arena
Gualala
Fort Ross
Bodega Bay
Point Reyes Station
Bolinas
Sausalito
San Francisco
South Region
Point Reyes Station
Bolinas
Sausalito
Berkeley
Emeryville
San Francisco
Half Moon Bay
Marine Protected Areas
SMCA
SMR
SMRMA
Special Closure
Relative Value of Fishing Grounds
Low
High
Survey Sample Size = 15
Total Number of Fish Caught (2011): 192,169
25 fathoms
50 fathoms
100 fathoms
3nm line
Tow lanes
0 3 6 12 18 24
Nautical Miles
FINAL MAP PRODUCT
MARCH 25, 2013
FINAL MAP PRODUCT


California North Central Coast 2011 Commercial Passenger Fishing Vessel (CPFV) Fishing Grounds
All Ports – Salmon
North Region
Point Arena
Gualala
Fort Ross
Bodega Bay
Point Reyes Station
Bolinas
Sausalito
San Francisco
South Region
Point Reyes Station
Bolinas
Sausalito
Berkeley
Emeryville
San Francisco
Half Moon Bay
Marine Protected Areas
SMCA
SMR
SMRMA
Special Closure
Relative Value of Fishing Grounds
Low
High
Survey Sample Size = 15
Total Number of Fish Caught (2011): 8,700
25 fathoms
50 fathoms
100 fathoms
3nm line
Tow lanes
0 3 6 12 18 24
Nautical Miles
FINAL MAP PRODUCT
MARCH 25, 2013
FINAL MAP PRODUCT