

## Marine Life Protection Act Initiative



### Overview of Fisheries Uses and Values Project

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Presentation to the MLPA Master Plan Science Advisory Team  
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## Presentation Outline

- Project overview
- Data collection process
- Current status of datasets
- Examples of datasets
- Marine protected area (MPA) impact analyses
- Availability and use of data



## Project Overview

- Ecotrust contracted by the MLPA Initiative to:
  - Supplement existing data
  - Collect data on commercial and recreational fishing (use and values) to characterize the spatial extent and relative importance
  - Evaluate the maximum potential economic impact (gross and net) of MPA proposals
  - Focus is on the fisheries, and not on regional multipliers of economic impact



## Use of Survey Information

- Planning: Data is to be used to inform the marine protected area design process through use of regional and port level maps and summary statistics
- Evaluation: Use the survey data and maps to:
  - Evaluate the maximum potential impacts of various MPA proposals on the commercial and recreational fishing grounds
  - Evaluate maximum potential economic impact on commercial fisheries



## Data Collection Process

- Data collection components involve:
  - Outreach through informational one-on-one and group meetings and working with port liaisons
  - Survey design
  - Data collection – Open OceanMap (desktop and on-line)
  - Quality assurance and control
  - Analysis
  - Presentation of results



## Survey Design

- Identify key fisheries in the region
  - Differentiate in terms of practices (target strategy) and/or gear configurations (e.g., lobster-trap, urchin-dive, spot prawn-trap)
- Stratified study area into port complexes
- At least 50% of the total ex-vessel revenue from 2000-07 by fishery, gear type, and port complex
- At least 5 fishermen except in cases where the overall population is <5, then 100%



## Survey Design - Commercial

- Target commercial fisheries: urchin, lobster, squid, coastal pelagics, spot prawn, rock crab, nearshore fishery, and live bait
- Also collected data for other fisheries (i.e., Ca. halibut, sea cucumber, sablefish, thornyheads....)
- Port complexes: Santa Barbara, Ventura, Port Hueneme/Channel Islands Harbor, San Pedro, Newport/Dana Point, Oceanside, and San Diego



## Survey Design - Recreational

- Recreational user groups: commercial passenger fishing vessels (CPFV captains), divers, kayak anglers, private boaters, pier and shore anglers
- Target recreational species: white sea bass, lobster, Ca. halibut, yellowtail, calico bass, sand bass, Ca. sheephead, Ca. scorpionfish, rockfish, lingcod, croaker, barracuda, surfperch, and tuna
- Species vary per user group, not full list



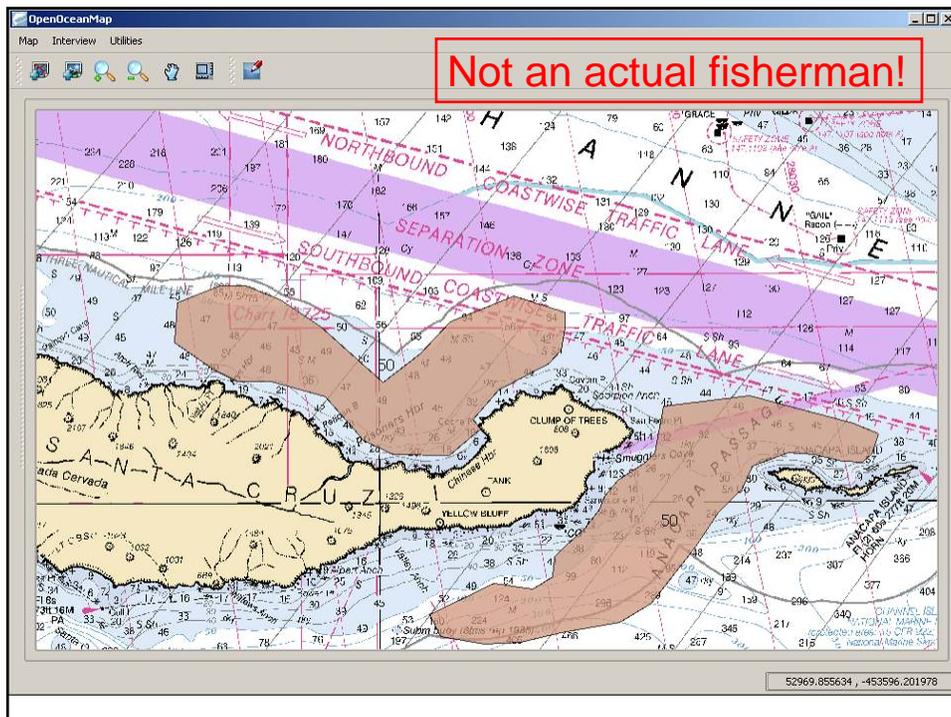
## Survey Process

- Conduct outreach and work with port liaisons on survey design and identifying fishermen
- Use computer based map interface to administer survey and collect data – Open OceanMap
  - In-person interviews for commercial and CPFV
  - Web-based survey for recreational
- Have fishermen map the extent and stated importance of their fishing grounds for commercial and recreational fisheries



## Data Collection

- All interviews follow a shared protocol for each fishery which the interviewee participates:
  - Fishermen are asked to identify all fishing areas/locations that are of economic importance over their cumulative fishing experience and to rank these using a weight percentage – an imaginary “bag of 100 pennies”
  - For recreational fishermen, “economic” is removed and just “importance” is used
  - Non-spatial information pertaining to demographics and basic operations (costs) are also collected



## Quality Assurance and Control

- Edits may need to be made: e.g., for shape A. fishermen F12345 – 10 fathoms shore side and 50 fathoms ocean side, from Pt. Loma to....
- After editing, we send each fisherman a set of his/her maps (paper or electronic) for review
- Follow up meetings with participants and fishing community to verify results
- Work with fishing community to ensure confidentiality of any publically displayed information



## Summary Statistics – Commercial

- 254 interviews resulting in 488 individual fishing grounds
- Example representation – # of fishermen and % of total ex-vessel revenue, 2000-07:
  - Lobster/trap – 101 fishermen (71%)
  - Urchin/dive – 76 fishermen (47%)
  - Squid/seine – 30 fishermen (43%)
  - Coastal pelagics/seine – 25 fishermen (58%)
  - Rock crab/trap – 47 fishermen (58%)
  - Nearshore rockfish/trap – 25 fishermen (65%)
  - Spot prawn/trap – 16 fishermen (88%)
  - Live bait – 7 fishermen



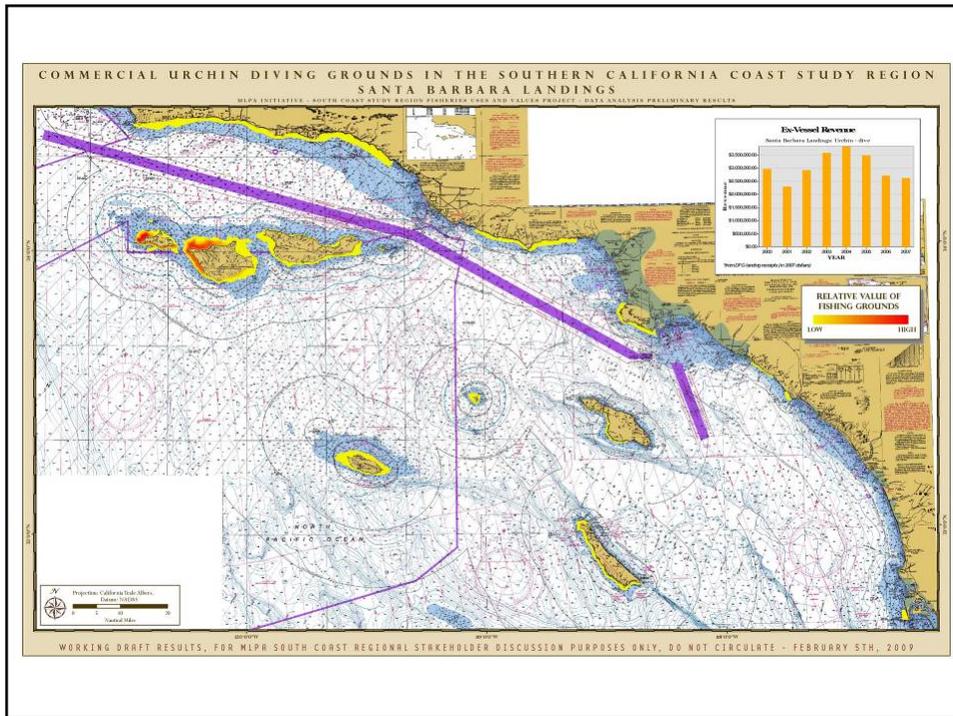
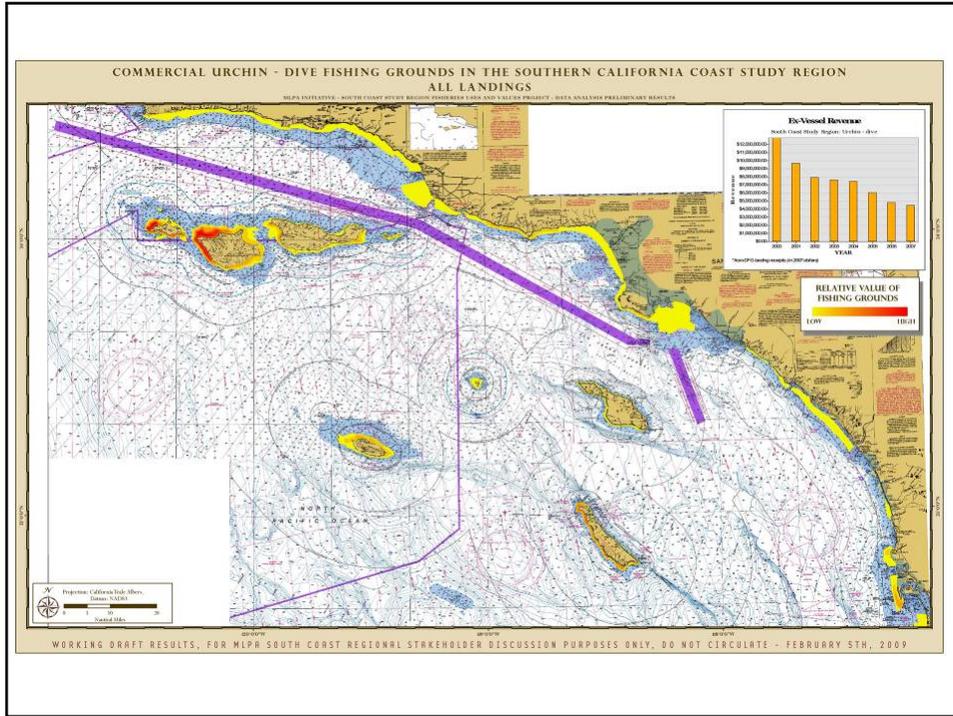
## Current Status of Datasets - Commercial

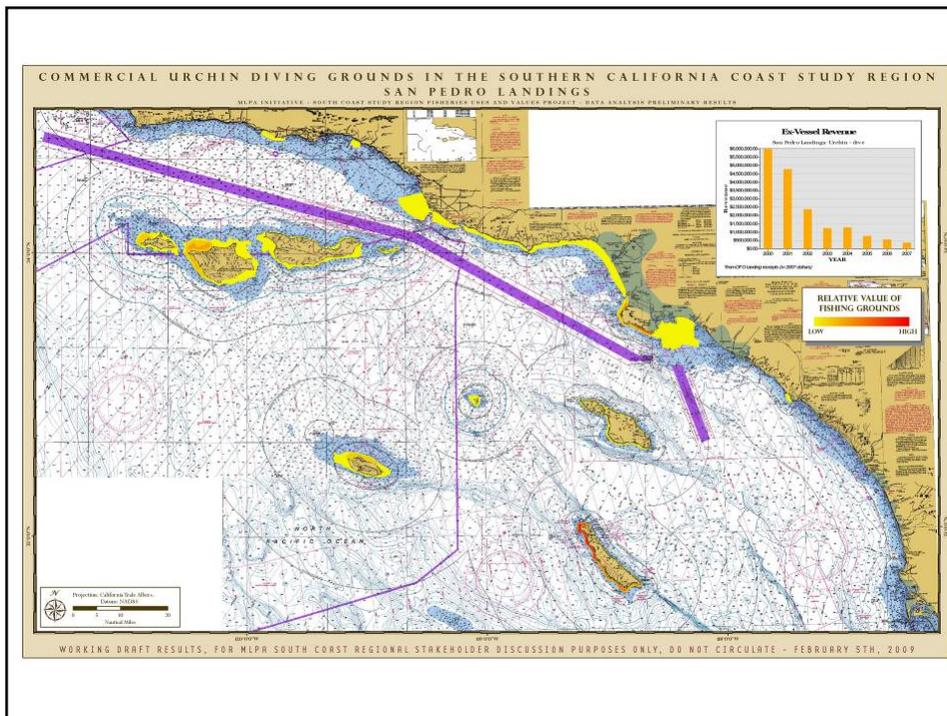
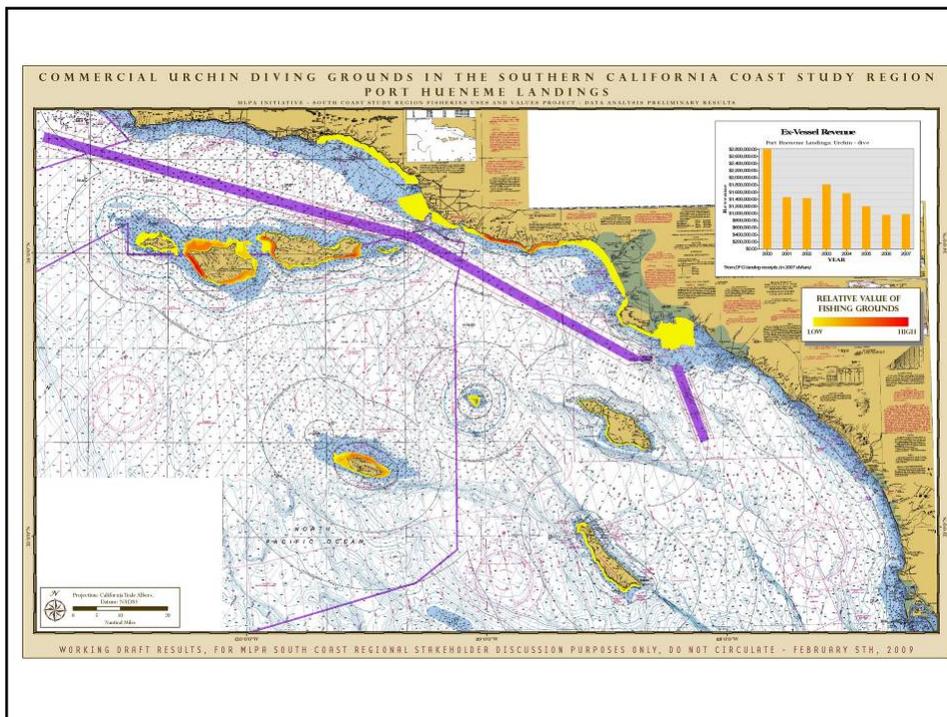
### Finalized and Available

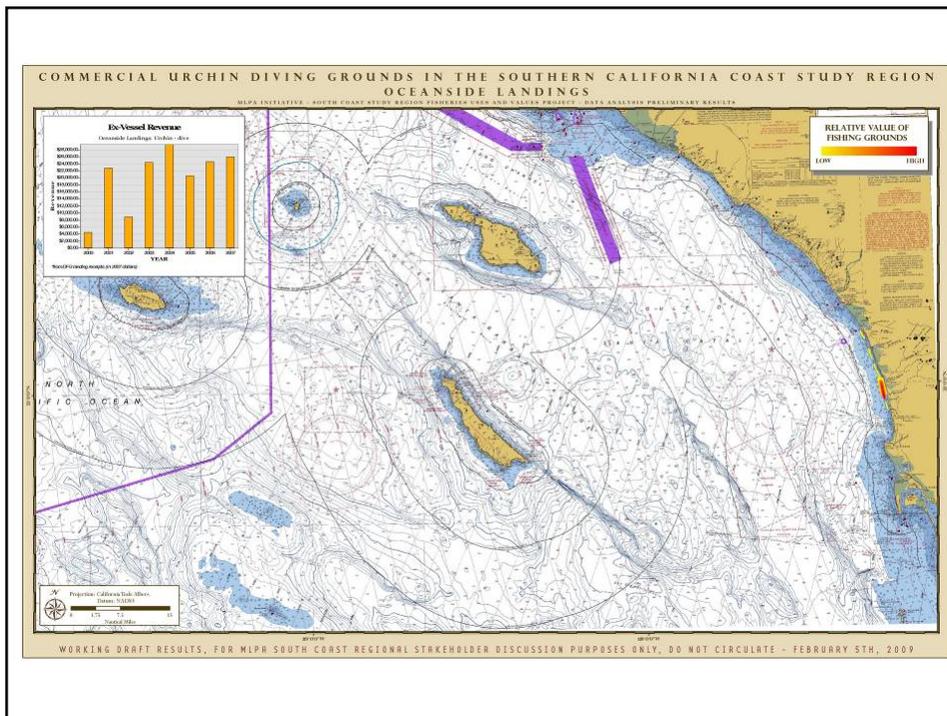
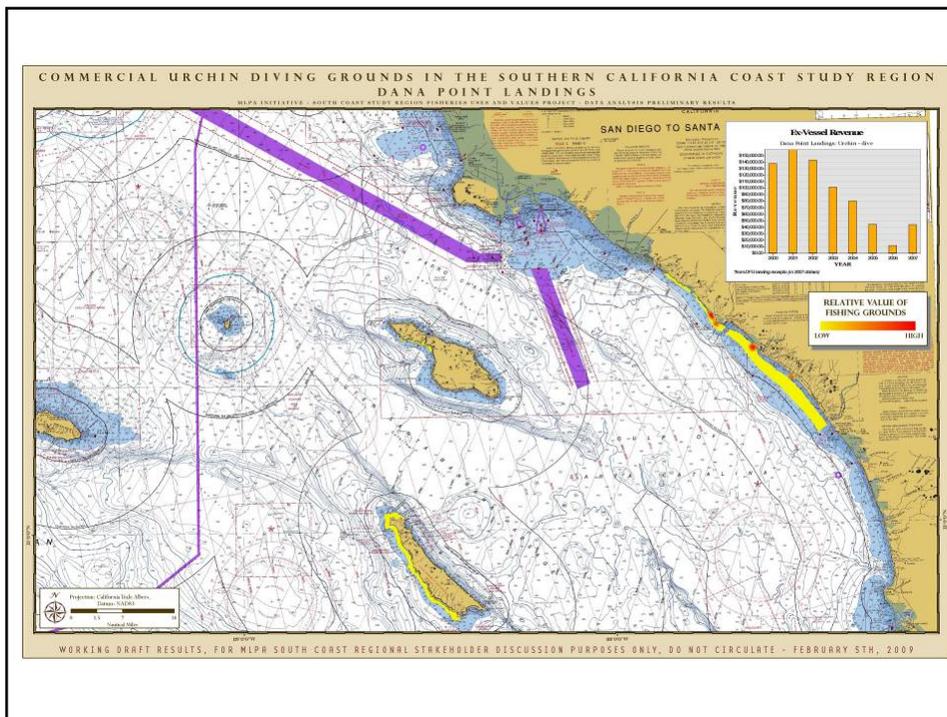
- urchin (dive)
- lobster (trap)
- coastal pelagics (seine)
- squid (seine)
- spot prawn (trap)
- nearshore fishery (trap)
- nearshore fishery (hook & line)
- rock crab (trap)
- sea cucumber (dive)
- sea cucumber (trawl)
- Ca. halibut (hook-line)
- Ca. halibut (trawl)
- live bait

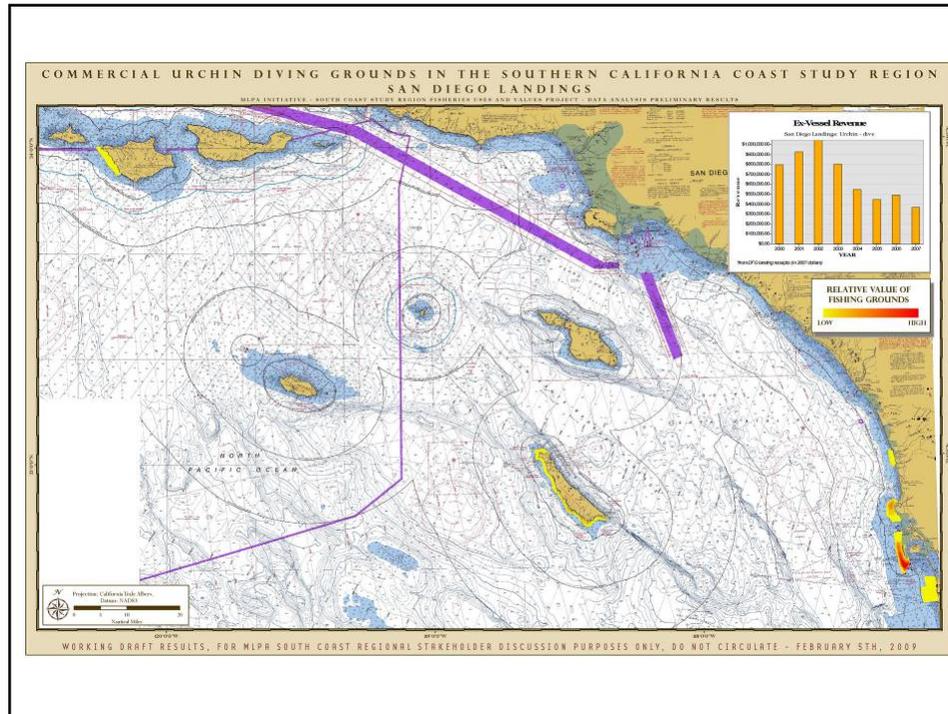
### Still Finalizing

- deep nearshore fishery (hook & line)
- sablefish (longline)
- thornyhead (longline)
- bonito (seine)
- coastal pelagics (brail)
- squid (brail)
- swordfish (harpoon)
- white seabass (gillnet)
- shark (gillnet)
- salmon (troll)
- hagfish (trap)









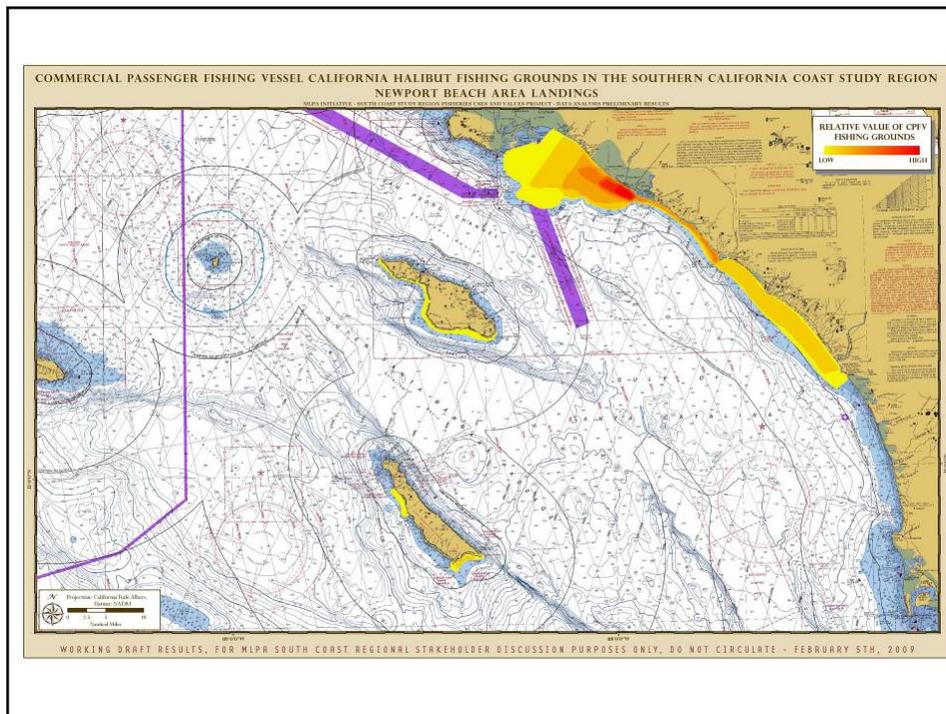
## Summary Statistics - CPFV

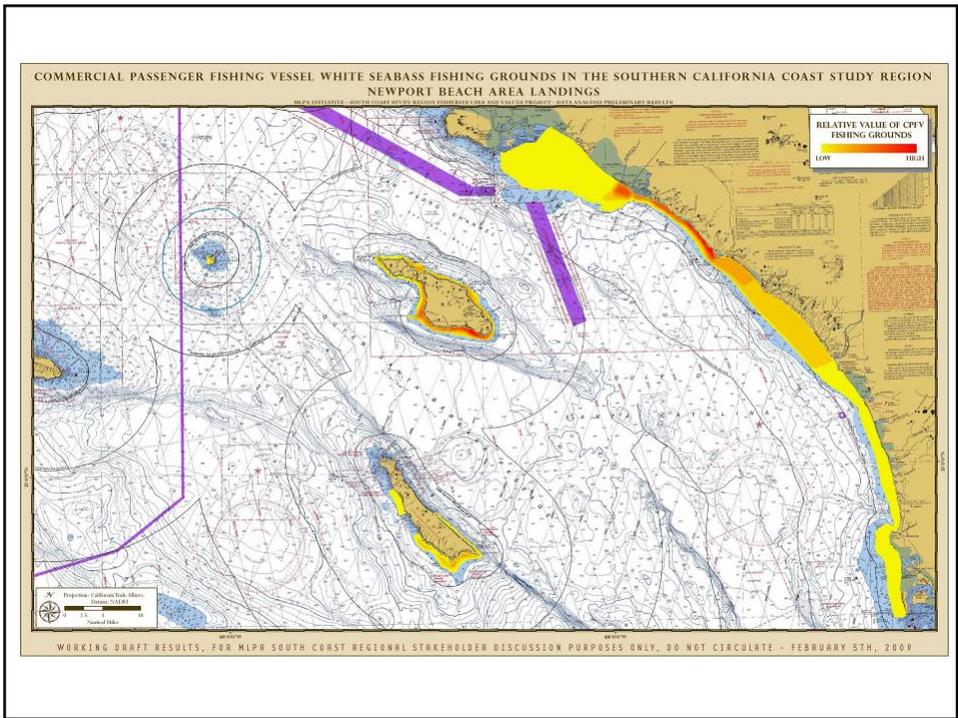
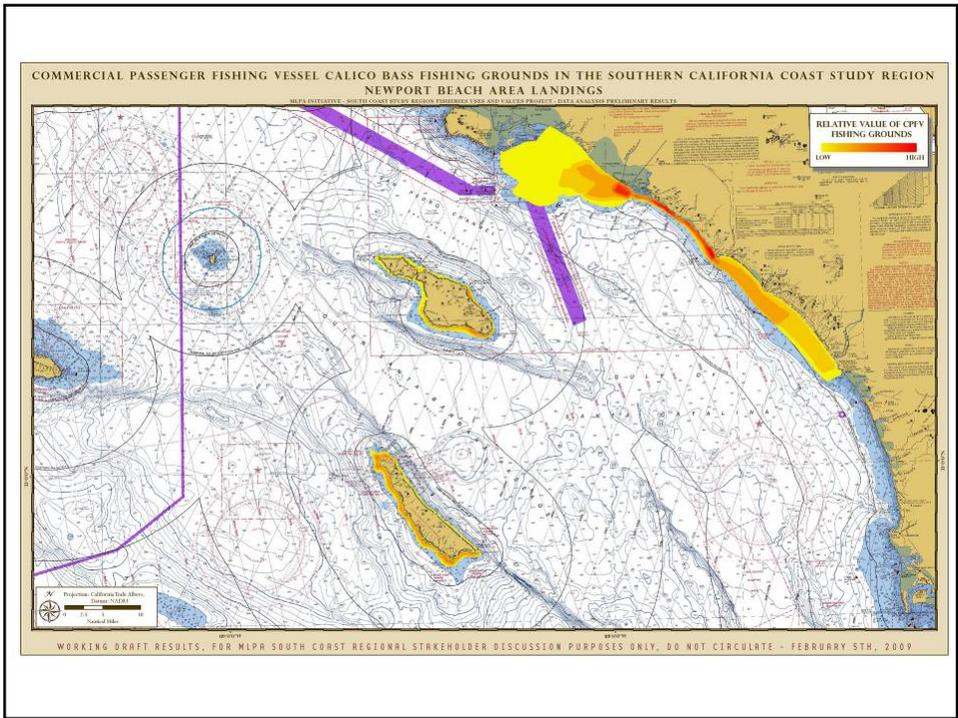
- Commercial passenger fishing vessel (CPFV):
  - 119 CPFV captains interviewed
  - Approximately 1,500 individual fishing grounds
  - Datasets available since the January 29 MLPA South Coast Regional Stakeholder Group (SCRSG) work session

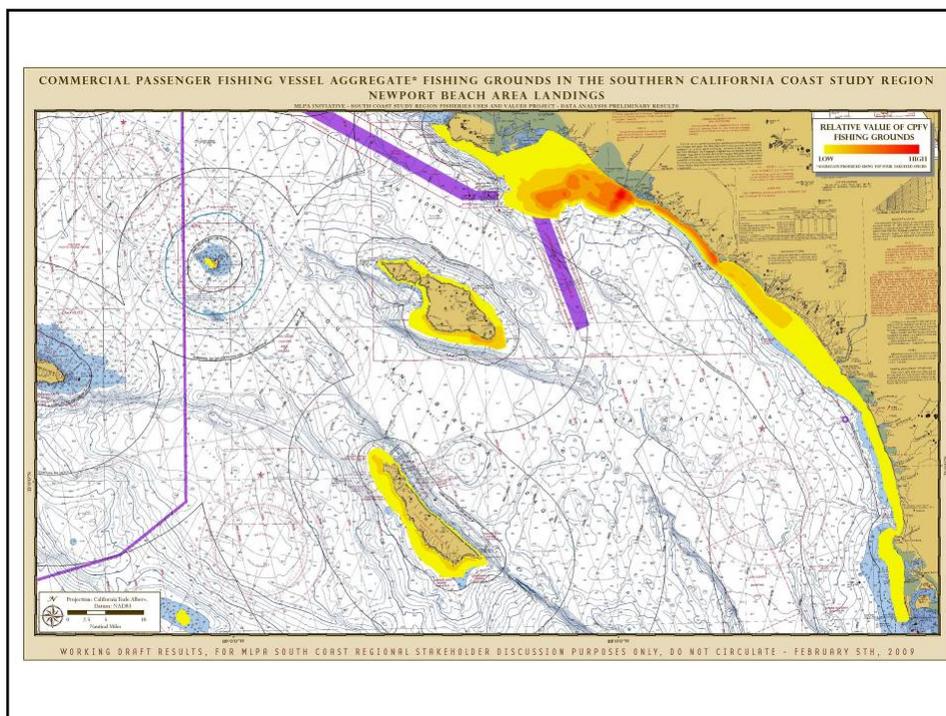


## Current Status of Datasets - CPFV

- Sets of maps for each port/landing: Santa Barbara, Port Hueneme/Channel Islands Harbor, Santa Monica, San Pedro/Long Beach, Newport Beach, Dana Point, Oceanside, and San Diego
- For each of the ports listed above there is a set of maps for the following species: barracuda, Ca. halibut, calico bass, lingcod, rockfish, Ca. scorpionfish, Ca. sheephead, sand bass, whitefish, and white seabass
- Also, an aggregate of all species for each port/landing







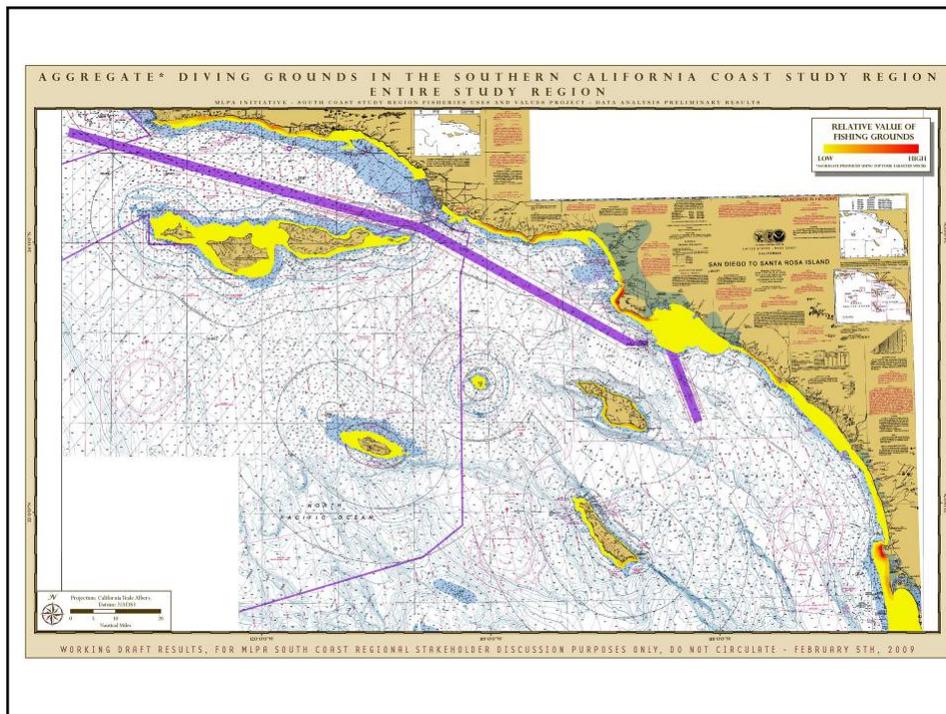
## Summary Statistics - Recreational

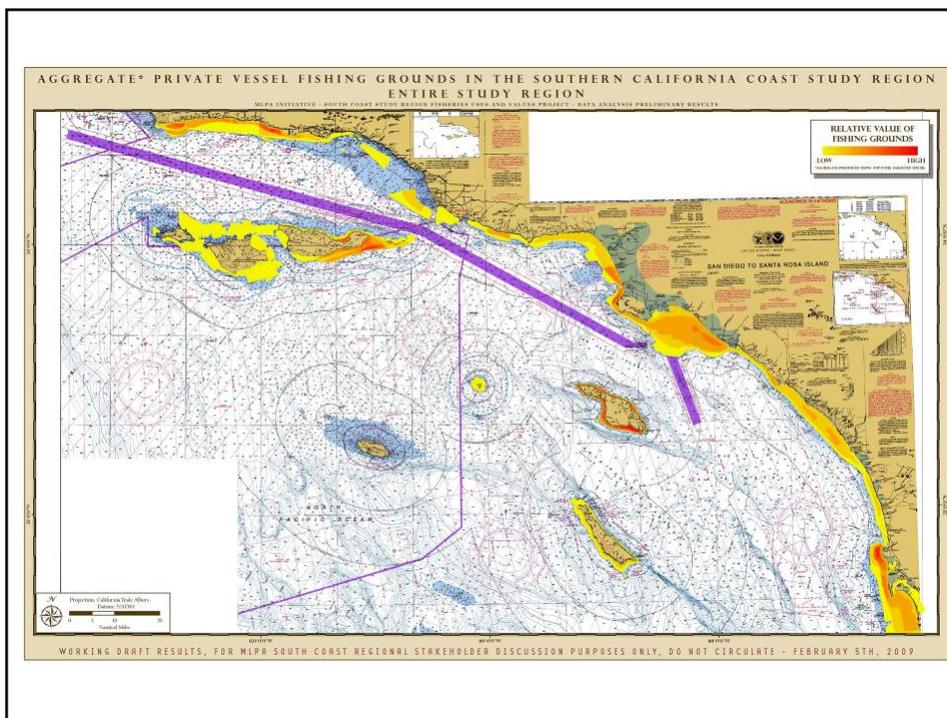
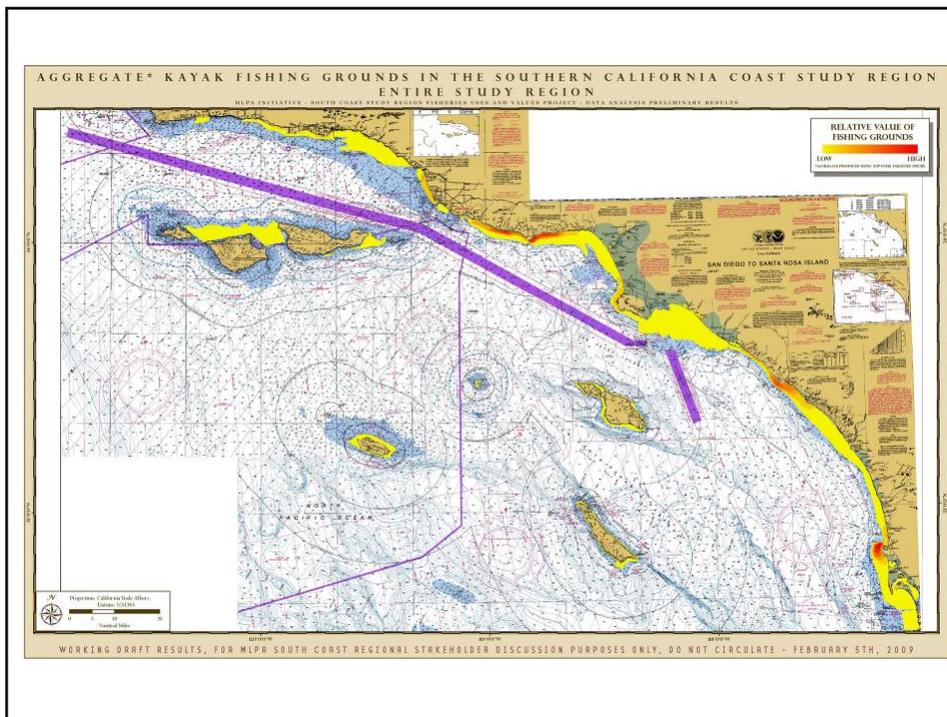
- Recreational fisheries:
  - 504 fishermen completed on-line survey
  - 3,902 individual fishing grounds (IFG)
- Fishermen could provide information for more than one user group
  - Dive – 170 (732 IFG)
  - Kayak – 168 (785 IFG)
  - Pier/shore – 174 (483 IFG)
  - Private – 294 (1,902 IFG)

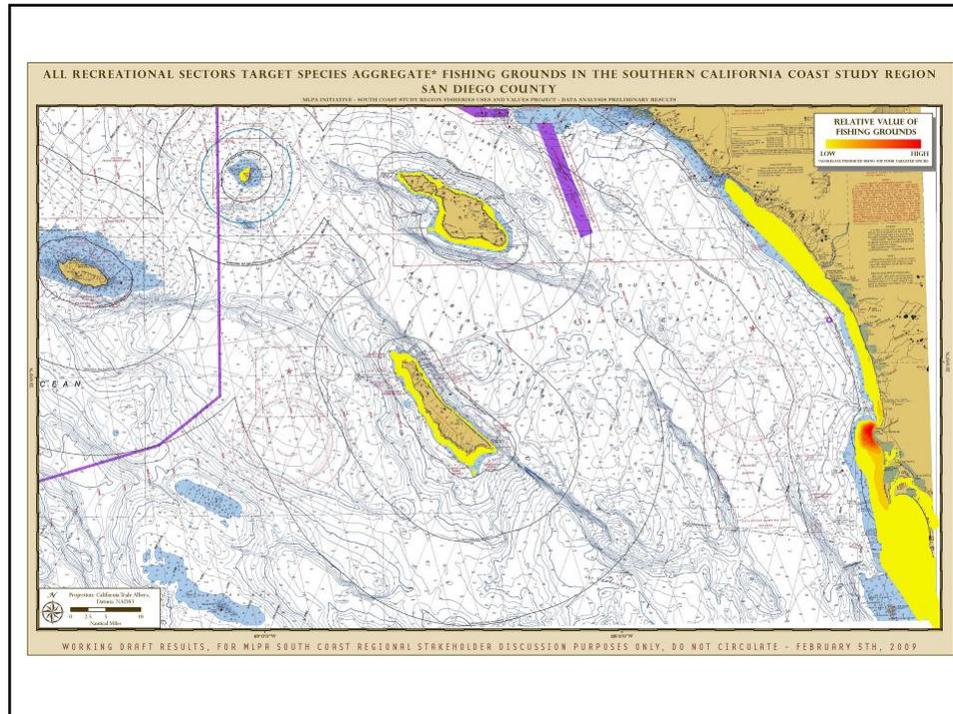


## Current Status of Datasets - Recreational

- Datasets available since the February 10 SCRSG work session:
  - Sets of maps for each user group/species per county
  - User groups: private boaters, kayak anglers, and divers
  - Pier/shore maps are still being reviewed (not available)
  - Aggregate maps for each user group and across user groups for the entire study region and county
  - Results show that our sample response is geographically strongest in San Diego, Orange, and Los Angeles counties







## Gaps in Recreational Survey

- It's difficult to determine the recreational fishing population across space, time, and demographics, especially by mode
  - This survey isn't intended to be representative of the Southern California recreational fishing population based on the above criteria
  - Our intention was to interview as many recreational fishermen possible given the time and budget constraints
  - The results were intended to reflect the areas of relative importance to each sector for targeted species and vetted further by experts and/or current SCRSG members for it's accuracy and best use in the MLPA process



## Gaps in Recreational Survey

- We acknowledge and look to improve upon:
  - The technical difficulties in participating in an on-line survey and potential biases
  - Certain target species were not captured adequately
  - Certain geographies (northern counties) and demographics (subsistence or non-English speaking) may not be represented adequately



## MPA Impact Analyses

- **Commercial Fisheries**
  - Maximum potential impacts on fishing grounds (Area and Value)
  - Consideration of existing closures
  - Maximum potential impacts on individual fishermen
  - Maximum potential socioeconomic impacts
- **Recreational Fisheries**
  - Maximum potential impacts on fishing grounds (Area and Value)



## MPA Impact Analyses

- **Based on the fishing grounds and cost estimates derived from the data collection effort:**
  - Distinguish between total fishing grounds and fishing grounds inside state waters
  - Determine percent area and value impacted
  - Consider or identify “outliers” – i.e. fishermen or fisheries likely to experience disproportional impacts
  - Effect of existing fishery management area closures and other constraints on fishing grounds (rockfish conservation areas and Channel Islands MPAs)



## MPA Impact Analyses – Gross Impacts

- MPA proposals vary; both between and across fisheries
- Percentage of total fishing grounds area affected
- Percentage of study area fishing grounds area affected
- Percentage of total fishing grounds value affected
- Percentage of study area fishing grounds value affected

MPA Science Advisory Team  
January 22, 2008  
Summary of potential impacts on commercial and recreational fisheries in North Central Coast Study Region

Table 9: Percentage value of total commercial fishing grounds affected by landing port

Fisheries	1	2	3	4	A
California Halibut	—	—	—	—	—
Coastal Petingio	—	—	—	—	—
Market Squid	—	—	—	—	—
Deep-sea Nearshore Rockfish	30.0%	40.8%	35.9%	26.7%	7.0%
Nearshore Rockfish	11.9%	35.2%	28.5%	32.4%	18.7%
Lincoln	12.2%	18.8%	8.2%	11.0%	11.7%
Dungeness Crab	15.8%	8.1%	14.6%	16.1%	11.2%
Balton	9.2%	13.8%	14.4%	14.2%	13.8%
California Halibut	12.2%	8.0%	15.7%	13.7%	7.8%
Coastal Petingio	—	—	—	—	—
Market Squid	—	—	—	—	—
Deep-sea Nearshore Rockfish	21.8%	17.9%	20.7%	20.8%	18.8%
Nearshore Rockfish	23.6%	22.4%	42.4%	22.2%	21.7%
Lincoln	38.9%	27.2%	38.4%	38.5%	7.1%
Dungeness Crab	9.8%	2.9%	8.9%	9.3%	2.1%
Balton	4.1%	1.6%	5.0%	4.9%	2.1%
California Halibut	17.1%	12.4%	28.2%	17.4%	13.8%
Coastal Petingio	—	—	—	—	—
Market Squid	—	—	—	—	—
Deep-sea Nearshore Rockfish	31.6%	6.0%	24.1%	35.9%	8.7%
Nearshore Rockfish	—	—	—	—	—
Lincoln	—	—	—	—	—
Dungeness Crab	2.2%	0.9%	2.9%	2.2%	0.6%
Balton	0.1%	0.2%	0.4%	0.2%	0.9%
California Halibut	3.0%	0.4%	0.7%	0.9%	0.3%
Coastal Petingio	—	—	—	—	—
Market Squid	—	—	—	—	—
Deep-sea Nearshore Rockfish	21.2%	12.7%	18.8%	28.2%	13.7%
Nearshore Rockfish	14.1%	11.2%	14.3%	15.6%	8.4%
Lincoln	29.0%	20.4%	22.6%	28.6%	7.6%
Dungeness Crab	2.2%	0.8%	2.4%	2.6%	1.1%
Balton	2.2%	0.9%	2.1%	2.8%	0.8%
California Halibut	3.7%	0.2%	0.6%	2.7%	0.2%
Coastal Petingio	0.7%	0.0%	0.9%	0.0%	0.0%
Market Squid	0.5%	0.2%	2.2%	2.7%	5.6%
Deep-sea Nearshore Rockfish	13.8%	5.1%	9.2%	18.4%	4.8%
Nearshore Rockfish	1.9%	1.9%	1.9%	1.9%	1.9%
Lincoln	—	—	—	—	—
Dungeness Crab	1.4%	0.5%	1.2%	1.6%	0.5%
Balton	3.0%	0.7%	2.6%	3.0%	0.7%



## MPA Impact Analyses – Net Impacts

- By collecting information on costs (labor and fuel), we can then estimate net economic impacts that are specific to fisheries in the region

Name	n=	Mean % of Gross Economic Revenue			
		Crew	Fuel	Fixed	Total
California Halibut	19	5.4%	13.9%	26.6%	45.9%
Coastal Pelagics	1	40.0%	15.0%	5.0%	60.0%
Squid	1	40.0%	15.0%	5.0%	60.0%
Deeper Nearshore and Nearshore Rockfish	18	5.3%	17.3%	28.3%	50.9%
Dungeness Crab	101	14.8%	10.3%	23.3%	48.5%
Urchin	21	7.6%	10.7%	21.4%	39.7%
Salmon	138	9.8%	11.8%	25.0%	46.6%
All Fisheries Combined	174	10.9%	12.1%	24.4%	47.5%

MLPA Science Advisory Team  
January 22, 2008

Summary of potential impacts on commercial and recreational fisheries in North Central Coast Study Region

Table 23: Estimated Annual Net Economic Impact (NEI) for the NCCSR

Fishery	Baseline GER	Baseline NER (Profit)	Estimated Annual Net Economic Impact of Draft Proposal (\$ 2006)				
			1	2	3	4	A
Ca. Halibut	\$279,764	\$151,220	\$6,133	\$4,301	\$7,476	\$13,519	\$4,033
Coastal Pelagics	\$29,816	\$11,926	\$18	\$0	\$68	\$0	\$0
Squid	\$303,466	\$121,386	\$441	\$147	\$20,896	\$25,067	\$5,164
D. N. Rockfish	\$107,902	\$52,967	\$18,346	\$9,604	\$14,792	\$21,821	\$9,256
N. Rockfish	\$152,597	\$74,907	\$28,166	\$28,535	\$33,016	\$28,758	\$13,997
Urchin	\$667,381	\$523,320	\$140,683	\$109,694	\$119,417	\$129,925	\$73,362
Dungeness Crab	\$8,387,032	\$4,323,049	\$281,923	\$66,309	\$196,854	\$270,546	\$76,312
Salmon	\$5,761,401	\$3,077,826	\$141,024	\$53,040	\$155,177	\$165,746	\$59,490
All Fisheries	\$15,869,359	\$8,336,602	\$596,732	\$271,930	\$547,694	\$655,381	\$241,613

Fishery	Estimated Annual Net Economic Impact of Draft Proposal (% reduction in Profit)				
	1	2	3	4	A
Ca. Halibut	4.1%	2.8%	4.9%	8.9%	2.7%
Coastal Pelagics	0.1%	0.0%	0.6%	0.0%	0.0%
Squid	0.4%	0.1%	17.2%	20.7%	4.3%
D. N. Rockfish	34.6%	18.1%	27.9%	41.2%	17.5%
N. Rockfish	37.6%	38.1%	44.1%	38.4%	18.7%
Urchin	26.9%	21.0%	22.8%	24.8%	14.0%
Dungeness Crab	6.1%	1.5%	4.6%	6.3%	1.8%
Salmon	4.6%	1.7%	5.0%	5.4%	1.9%
All Fisheries	7.2%	3.3%	6.6%	7.9%	2.9%

## Data Access and Availability

- Only aggregated maps will be made available and visible via MarineMap and print copies at the SCRSG work sessions, similar to the maps just presented
- Any information that is confidential even in aggregate form will not be visible but still used in the evaluation process (we'll identify which fisheries and alert the MLPA Initiative staff)
- Additional products
  - Data collection methods and summary statistics
  - MPA impact evaluation methods
  - Data is being integrated into the UC Davis and UC Santa Barbara bioeconomic models

