MPA Baseline Program

Annual Progress Report

Principal Investigators - please use this form to submit your MPA Baseline Program project annual report, including an update on activities completed over the past year and those planned for the upcoming year. This information will be used by the MPA Baseline Program Management Team to track the progress of individual projects, and will be provided to all MPA Baseline Program PIs and co-PIs prior to the Annual PIs workshop to facilitate discussion of project integration. Please submit this form to California Sea Grant when complete (sgreport@ucsd.edu, Subject [Award Number, project number, PI, "Annual Report"].)

Project Information

Project Year	March 2010-February 2013	**Study Region**	North Central Coast
Project Title & Number	R/MPA-16 09-015: *Baseline Monitoring of Ecosystem and Socioeconomic Indicators for MPAs along the North Central Coast of California – Consumptive and Non-Consumptive Human Uses*		

PI name	Kristen Sheeran (formerly A. Scholz)	**Co-PI name**	Charles Steinback

PI Contact Info **Co- PI Contact Info**

(please list additional PIs and contact info in the "Project Personnel" section if necessary)

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Project Goals & Objectives

Through this three-year project (March 2010-February 2013), Ecotrust is working to capture spatially explicit data on coastal use patterns and associated information on operation costs, trip expenditures, and demographic characteristics of California's North Central Coast (NCC) consumptive and non-consumptive user communities. The goal of the project is to understand the interactions between human uses of the coastal ecosystem and the North Central Coast marine protected area (MPA) network. The research is guided by the following objectives:

1. Provide baseline estimates of the quantity, spatial distribution, and economic impacts associated with human uses in the study region;
2. integrate those with ecological indicators of MPA performance;
3. describe the initial response of these user communities to the MPAs following their implementation; and
4. inform the planning and implementation of long-term monitoring, and the development of a modeling framework for understanding the casual links between ecosystem features, socioeconomic changes, and the implementation of MPAs.

Summary of Project Activities Completed to Date

Overview of Project Year _2_ Activities, including progress towards meeting goals & objectives

We continue to follow and update our project work plan to track implementation and attainment of all four project objectives. This work plan is integral in achieving **project objectives 2 and 4** as it documents survey methods, metrics, methods for integrating our data with ecological indicators, analyses, and lessons learned and will form the basis of our recommendations for planning and implementing future long-term monitoring efforts and modeling frameworks. In addition we have engaged in several ongoing conversations with PIs collecting information on ecological indicators to ensure our data are collected in methods which are most useful/comparable to ecological data and to continue discussing methods in which to best integrate our spatially-explicit socioeconomic datasets. To address **project objectives 1 and 3**, Ecotrust completed three surveys, detailed below.

Coastal Recreational Use Survey: Coastal visitation and non-consumptive recreational users in the NCC were surveyed online using a web platform that incorporated OpenOcean Map, an Ecotrust tool designed to elicit and collect spatial data on coastal visitation and recreational activities both on land and in the marine environment using an internet-based, interactive display. The synthesis of these tools allowed us to acquire private recreation data about coastal visitation, recreational activity participation, and trip expenditure data.Ecotrust's project team launched the coastal recreational use survey in February of 2011 after extensive testing to ensure the mapping component of the survey tool was capturing spatial data at the appropriate spatial scale and in a user-friendly manner. The survey tool was deployed in four waves across approximately a year—inquiring about last trip activities in the past 3 months to capture the seasonal variation in coastal use patterns. We completed data collection in December 2011 and subsequently began to analyze and synthesize the survey data according to our spatial and non-spatial data analysis plans. To date, we have developed spatial datasets for a select number of coastal recreation activities. These are draft datasets as we continue to work on determining the appropriate statistical confidence interval in which to determine if spatial datasets are robust enough to display. In the coastal recreational use survey, respondents were asked to drop a marker to indicate the location in which they conducted a particular recreational activity. This point data was then analyzed to develop a kernel density layer that displays the distribution and intensity of use patterns for a particular coastal recreation activity during our one-year snapshot. Please see Appendix A for an example of a draft spatial dataset.

Consumptive Recreational Dive and Shore-Picking Survey: Based on guidance provided by the teams leading the ecological monitoring efforts (Carr and Raimondi), a specific survey was designed to collect data from recreational abalone harvesters as abalone is known for its ecological, recreational, and socioeconomic significance in the North Central Coast study region. In coordination with the ecological monitoring work, we hope to utilize this survey data to explore and gain a better understanding of the interactions between recreational abalone harvesters and the possible ecological changes in the northern reaches of the study region in and outside of MPAs. We have worked closely with the California Department of Fish and Game's (CDFG) abalone program to access randomly selected contact information and build upon their existing datasets/methods to support integration and future long-term monitoring. Furthermore, the survey was designed for integration with existing abalone punch card monitoring data, which includes ecological indicators—addressing project objective 3.In March 2011, project staff began conducting phone interviews by randomly selecting individuals from the contact information provided by the CDFG's 2009 and 2010 abalone punch card data. A total of 96 consumptive recreational divers were interviewed, 15 of whom participated in both diving and shore picking activities. Data collection was completed in October 2011. Once data collection was complete all respondents were mailed maps of their harvest areas to verify their accuracy and any revisions were communicated to project staff and incorporated into the respondents spatial data. Spatial datasets were then developed for each abalone punch card site by weighting each respondent's spatial data by the number of days they visited the particular area in 2010. This created a 'heat map' displaying the distribution and intensity of use within a punch card site. To create a region-wide abalone harvest 'heat map' each punch card spatial dataset was weighted by CDFG's estimated number of abalone harvested in each punch card site in 2010 and combined together. Please see Appendix B for an example of draft spatial datasets developed for a punch card site and then at a region-wide level. These datasets will be reviewed in the upcoming months with key members of the recreational abalone harvest community to verify their accuracy.

Commercial Fishing and Commercial Passenger Fishing Vessel (CPFV) Surveys: After extensive testing and working with the NCC fishing community to design survey questions to best capture the information necessary to monitor the socioeconomic status of the commercial fishing and CPFV fleet, project staff completed a draft of the survey tool in early May 2011. At the end of May 2011, projects staff traveled to the NCC region to meet with key members of the commercial fishing and CPFV community to test the survey tool and prepare for field staff to begin interviews in the fishing community. During this time, field staff were hired and trained, landings data were compiled to guide our sample design, outreach materials were developed, and interviews began at the end of June 2011 and continued to the end of October 2011. In total we interviewed 102 commercial fishermen, targeting fishermen who participated in the following fisheries: nearshore finfish (including deeper nearshore and nearshore permits), Dungeness crab-trap, California halibut-hook and line, and urchin-dive. Many respondents participated in multiple fisheries. To date, draft spatial datasets have been developed for each port-fishery combination and for each fishery at the region level for both the commercial and charter fishing sector. Commercial fishing datasets were developed by weighting the spatial data of individual respondents by their commercial landings revenue for a particular fishery in 2010. CPFV datasets were developed by weighting the spatial data of individual respondents by their gross economic revenue associated with a particular fishery in 2010. In the upcoming months project staff will travel back to the NCC region to review these spatial datasets with key members of the commercial and charter fishing community to verify their accuracy and incorporate any requested modifications.

Highlights from project progress so far, such as successes achieved or interesting stories from the past year

Overall project work is successfully proceeding on schedule.

Project Coordination and Design is on schedule and is a continual process. We have scheduled meetings/check-ins with project partners on a monthly basis.

Outreach efforts in 2011 to key individuals began on schedule and will continue in spring 2012.

Survey Design and Tool Development began and was completed on schedule in 2011.

Data Collection/Management/Integration: Data collection continued throughout 2011 for our three survey efforts – coastal recreation, consumptive dive, and commercial and charter fishing. These have proceeded and ended on schedule in 2011.

Economic Analysis has commenced on schedule in 2011 and will be complete ahead of schedule for the work planned for the beginning of 2012, as data analysis of survey data will be finalized by the end of March 2012. Once the second round of data collection is complete a more extensive economic analysis will be conducted for the final report which will occur at the end of 2012 and at the beginning of 2013.

Collaborative Analysis timeline is on schedule.

Description of any unforeseen events and substantial challenges, and resulting effect on data collection

Spatial Analysis work commenced on schedule in 2011 and will extend to March 2012 as the coastal recreation survey results were not obtained until December 2011 and review map meetings with commercial fishermen were delayed as many were busy fishing for Dungeness crab and unable to meet in January. However, this work was scheduled in May/June 2012 and so we are ahead of schedule for finalizing the spatial analysis for data collected in 2011.

Data status (i.e., paper/raw format or digitized; if digitized, what format?)

The **Coastal Recreational Use Survey** data was entered directly into an online survey by participants; this data has also been transferred to an Excel database or Geodatabase. All interview data from the first year of data collection is digitized into an Excel database. Spatial data is digitized in Ecotrust's Geodatabase.

Activities Planned for following Project Year __ (if applicable) – *Please describe remaining work and approximate timelines for completing that work, including any anticipated budget variances necessary to complete the project.*

Project Coordination and Design will continue with scheduled meetings/check-ins with project partners on a monthly basis.

Outreach: We are on schedule for an additional outreach effort in Feb/March 2012 when we will re-connect with key members of the fishing community to review spatial datasets and begin discussions for the second round of data collection to occur in 2012.

Survey Design and Tool Development began and was completed on schedule. Some minimal tool development will occur in March and April 2012 to update the survey tool to 2011 dates.

Data Collection/Management/Integration: In 2012 data collection may be extended one or two months to accommodate data collection efforts in the South Coast region.

Spatial Analysis: as noted above, Year 2 spatial analysis will extend to March 2012. Further spatial analysis is scheduled in May/June 2012.

Economic Analysis: Once the second round of data collection is complete, an extensive economic analysis will be conducted at the end of 2012 and at the beginning of 2013, which will be submitted with the project final report.

Collaborative Analysis: will be a significant project component in Year 3. Once all data is collected, compiled and analyzed, we will collaborate with project partners to integrate our data with ecological indicators.

Project Personnel – *Please indicate additional project personnel involved in your MPA baseline project, including students and volunteers, or additional PI contact information if necessary.*

	Students Supported	*Student Volunteers*
K-12	*N/A*	*N/A*
Undergraduate	*N/A*	*N/A*
Masters	*N/A*	*N/A*
PhD	*N/A*	*N/A*

Number of other Volunteers not counted above:

N/A

Additional PI contact info not listed on first page:

N/A

Cooperating Organizations and Individuals - *Please list organizations or individuals (e.g., federal or state agencies, fishermen, etc.) that provided financial, technical or other assistance to your project since its inception, including a description of the nature of their assistance.*

Name of Organization or Individual	***Sector (City, County, Fed, private, etc.)***	***Nature of cooperation (If financial, provide dollar amount.)***
Natural Equity	Private	Survey administration, support, and data transfer; coordination of meetings and workshop; panel recruitment. (Included in project budget for this grant)
California Department of Fish & Game	Government	Technical assistance on analysis of landings data
San Francisco Crab boaters association	Nonprofit	Review of the survey design
Individual recreational users (participant names confidential)	Private	Participation in surveys and interviews *(names protected as stipulated in research plan)*
Individual commercial fishers/charter fishers (participant names confidential)	Private	Participation in surveys and interviews *(names protected as stipulated in research plan)*

Additional Information – *Please provide any other project-relevant information, such as descriptions of attached materials, media coverage your project has received, etc.*

As noted above, Appendix A is an example of a draft spatial dataset from the **Coastal Recreational Use Survey**. Appendix B is an example of draft spatial datasets developed for a punch card site and then at a region-wide level, related to the **Consumptive Recreational Dive and Shore-Picking Survey**.

A supplemental PDF attachment to this report is available upon request. This attachment provides some key preliminary statistics summarizing the results of the three data collection efforts conducted during this reporting period (**Coastal Recreational Use Survey**, **Consumptive Recreational Dive and Shore-Picking Survey**, and **Commercial Fishing and Commercial Passenger Fishing Vessel (CPFV) Surveys**).

Summary of preliminary statistics:

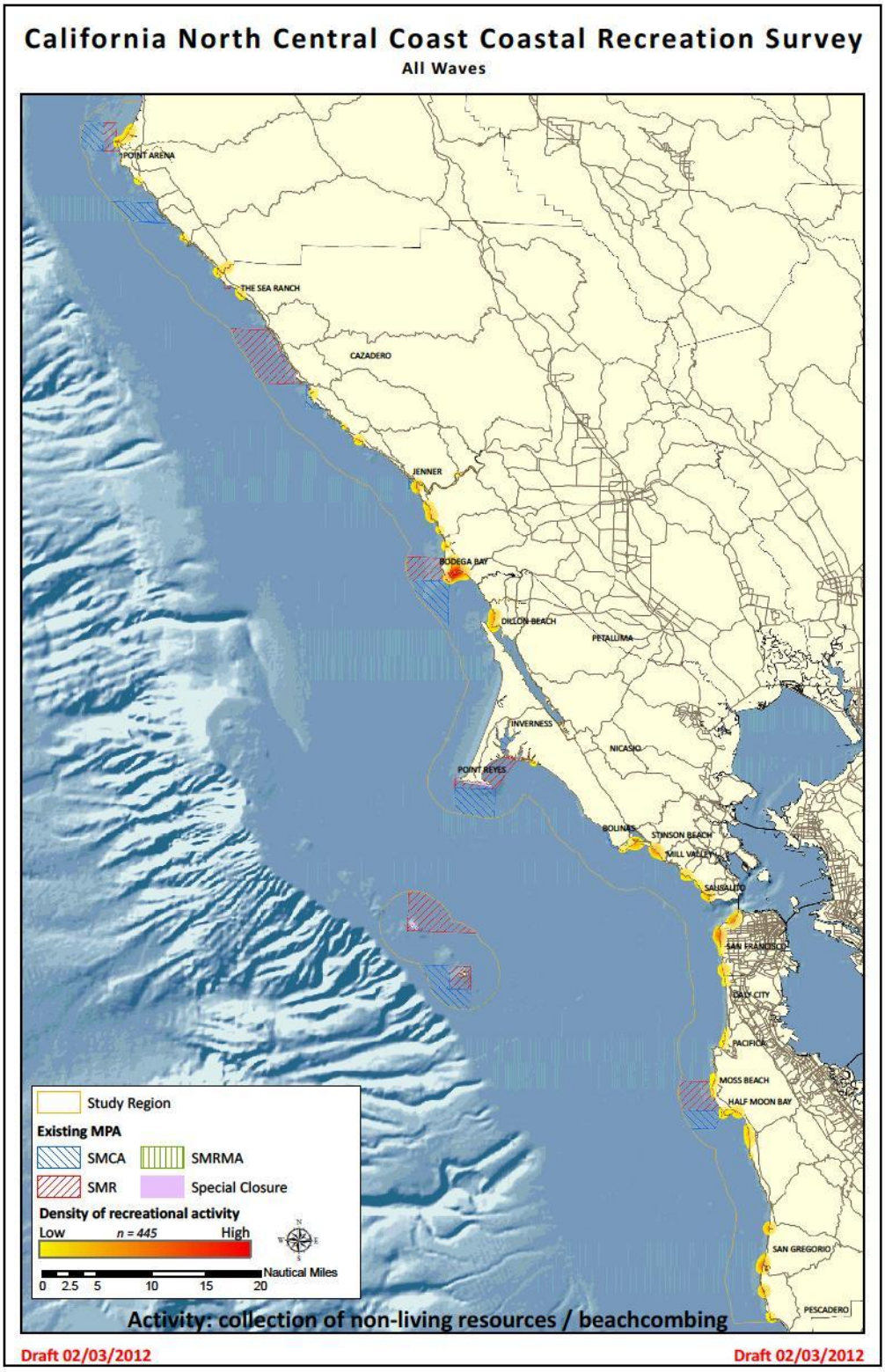
The Coastal Recreational Use Survey collected 5,079 survey responses. Initial analysis of these results estimate that an average individual in the NCC study population takes 3.2 trips to the North Central Coast each year and spends $33.68 per trip. These estimates suggest that the 7 million residents in the NCC study population take about 22 million trips annually and collectively spend about $750 million in trip expenditures. Approximately 60% of respondents indicated that they either strongly or somewhat agreed that the mapping component of the survey tool was easy to use and understand—providing support that the survey tool captured accurate and quality spatial information.

The Consumptive Recreational Dive and Shore-Picking survey comprised 96 interviews, with 89% of respondents indicating they are aware of the recently implemented MPAs in the region and 34% of respondents indicating they harvested in the Fort Ross area in 2010.

For the Commercial Fishing and CPFV Surveys, 102 interviews were completed with commercial fishermen and 31 interviews were completed with CPFV operators to map the extent and relative value of fishing areas in 2010 and collect other non-spatial survey data. Within the commercial fishing community in the NCC, Point Arena fishermen indicated they were collectively amongst the most impacted by the recently implemented MPA with 90% of fishermen averaged across all fisheries indicating they are directly impacted by MPAs. Amongst the CPFV fleet in the NCC the average gross economic revenue (GER) is $105,423 in which on average across all ports 35% of their GER is from rockfish and 29% is from California halibut.

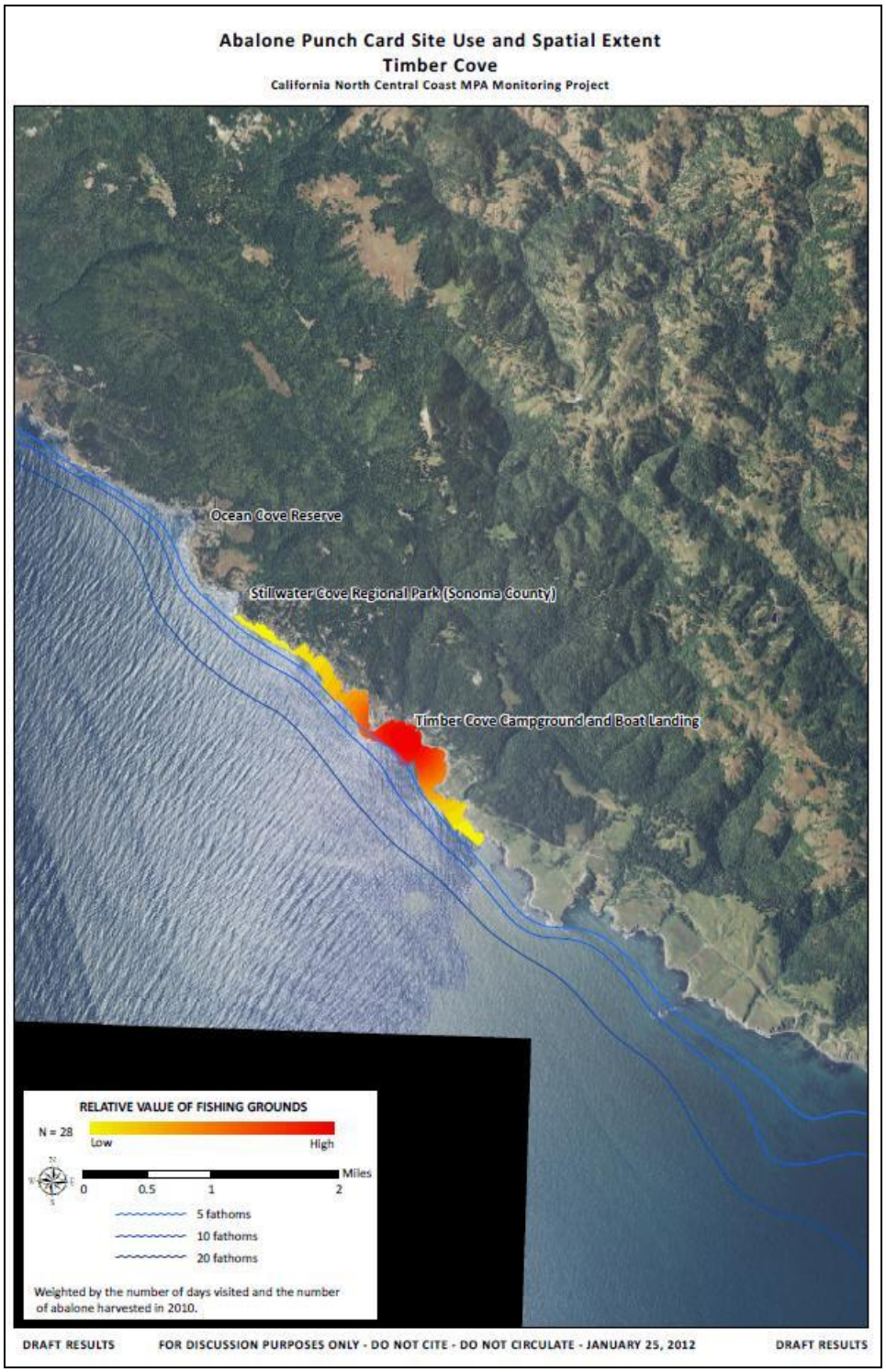
APPENDIX A

Coastal Recreational Use Survey Select Draft Map Product
Activity: Collection of non-living marine resources/beachcombing



APPENDIX B

Figure 1: Consumptive Recreational Dive and Shore-Picking Survey
Figure 2: Select Draft Map Products – Punch Card Site Map and Region Wide Map



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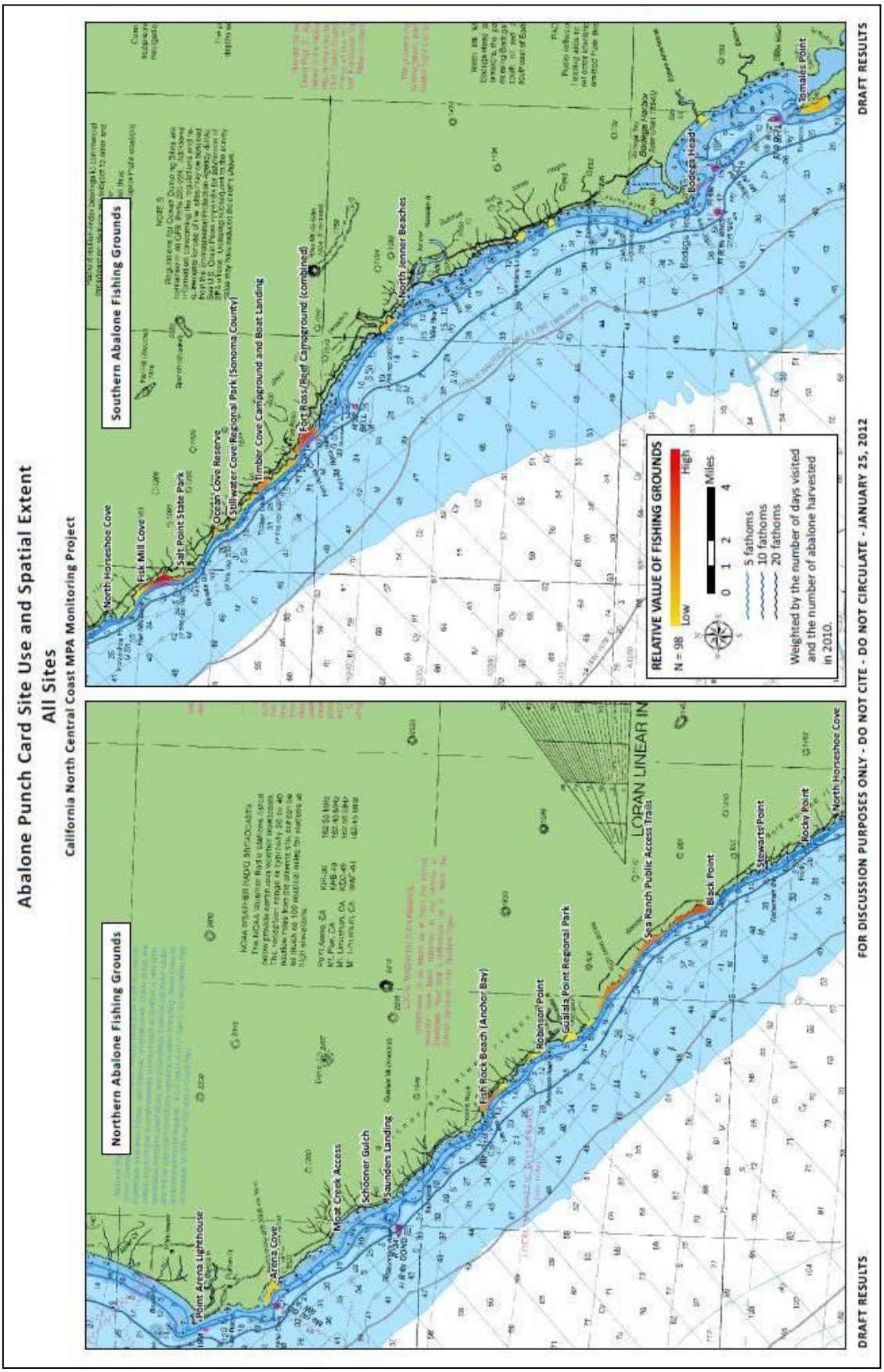

Figure 2: Select Draft Map Products – Punch Card Site Map and Region Wide Map