

## Ocean Uses Data Gap

- Span wide range of use activities
- Use patterns are difficult to quantify
- Uses can be variable in time and/or place
- No established data gathering standards exist
- Use knowledge held by a few key individuals



## Participatory (GIS) Mapping Workshops

- ❖ Regional (4 3-day workshops in CA)
- ❖ 30-50 participants per day
- ❖ Unique blend of participants
- ❖ Each day targets specific sector
- ❖ 3-4 breakout groups per day
- ❖ All groups map all uses



- Lifeguards
- Park Managers
- Harbor Masters
- Local Fishermen
- Fish & Game Wardens
- Federal Agency Officials
- Charter Operators
- Law Enforcement Agents
- Marine Business Operators
- Local NGO Representatives
- Tribal Council Representatives
- Scientists & Researchers
- Military Representatives
- Naturalists and Docents

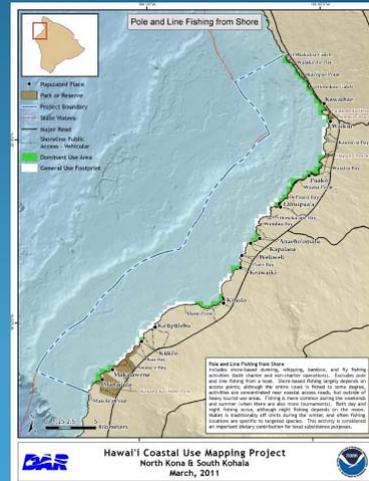
## Types of Ocean Uses Data

**General Use Footprint:** Areas in which the use is known to occur with some regularity (over the past 3-5 years), regardless of its frequency or intensity.

**Dominant Use Areas:** Areas routinely used by most users most of the time (within the seasonal patterns for that use).

**Future Uses Areas:** Areas where use patterns may either expand or grow in intensity in the foreseeable future .

**Supplemental Qualitative Data:** Additional spatial or non-spatial information on use patterns that is important to understand use variability. (e.g seasonality, pulse events, etc)



## Atlas History

### **Virginia's Atlantic Coast Recreational Use Mapping Project (2012)**

- NOAA ROP grant to MARCO, Virginia CZM
- MARCO Regional Ocean Planning Portal & VA Coastal Zone Program

### **The STEER Coastal Use Mapping Project (2012)**

- NOAA-CRCP, USVI DPNR
- St Thomas East End Reserve Management Plan Review

### **Hawaii Coastal Use Mapping Project (2010-11) : Hawaii & Maui**

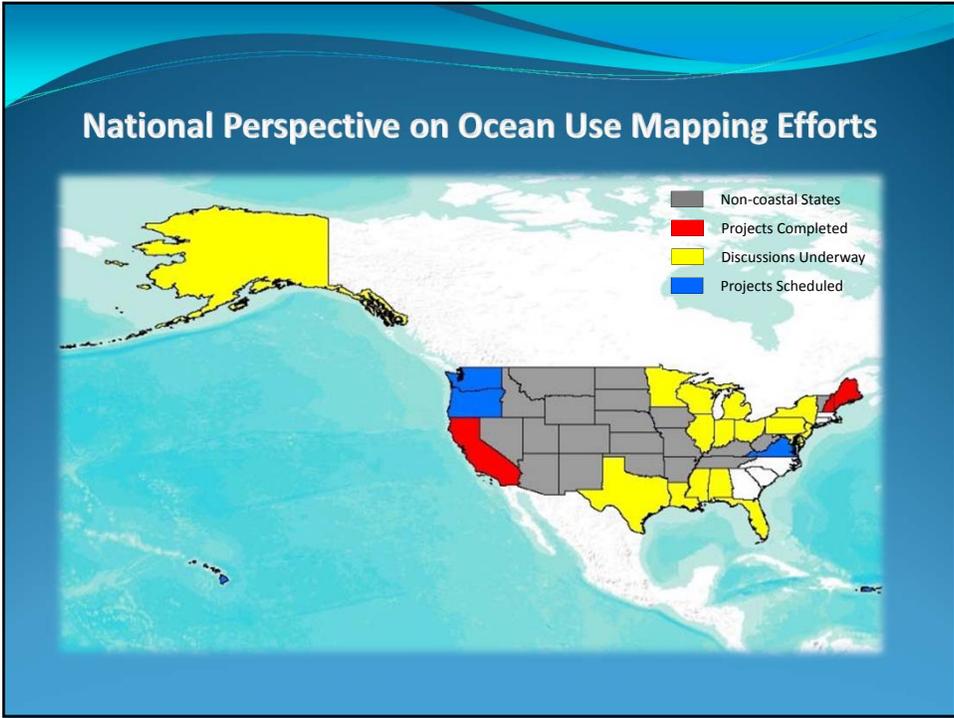
- Hawaii DAR, TNC, NOAA-CRCP, PSC, PIRO, PIFSC
- Conservation Action Planning & Priority Site Assessment

### **New Hampshire & So. Maine Ocean Uses Project (2010)**

- UNH & NOAA's Office of Response & Restoration
- Spill of National Significance Drill in Portland, ME

### **The California Ocean Uses Atlas Project (2008-09)**

- MCBI, Resources Legacy Fund, Moore Foundation
- California MLPAI MPA Designation Process



### Target List of Uses

Industrial/Military	<ul style="list-style-type: none"> <li>Renewable Energy</li> <li>Military Operations &amp; Ordnance Disposal</li> <li>Mining and Mineral Extraction</li> <li>Underwater Telecommunication &amp; Power Cables</li> <li>Commercial Shipping (Including Towing &amp; Barging)</li> <li>Mariculture</li> <li>Designated Dumping and Outfall Sites</li> <li>Underwater Pipelines</li> </ul>		
Fishing	<ul style="list-style-type: none"> <li>Commercial Fishing with Benthic Fixed Gear</li> <li>Commercial Fishing with Benthic Mobile Gear</li> <li>Commercial Pelagic Fishing</li> <li>Commercial Dive Fishing</li> <li>Commercial Seaweed Harvest</li> <li>Commercial Shore-Based Harvest</li> <li>Recreational Dive Fishing</li> <li>Recreational Fishing from Boats</li> <li>Recreational Shore-Based Harvest</li> <li>Kayak Fishing</li> <li>Subsistence Fishing</li> </ul>		
Non-Consumptive	<ul style="list-style-type: none"> <li>Motorized Boating</li> <li>Sailing</li> <li>Paddling</li> <li>Surface Board Sports</li> <li>SCUBA/Snorkeling</li> <li>Swimming</li> <li>Wildlife Viewing at Sea</li> <li>Tide Pooling</li> <li>Shore Use</li> <li>Cultural Use Areas</li> <li>Tourism Cruise Ships</li> </ul>		

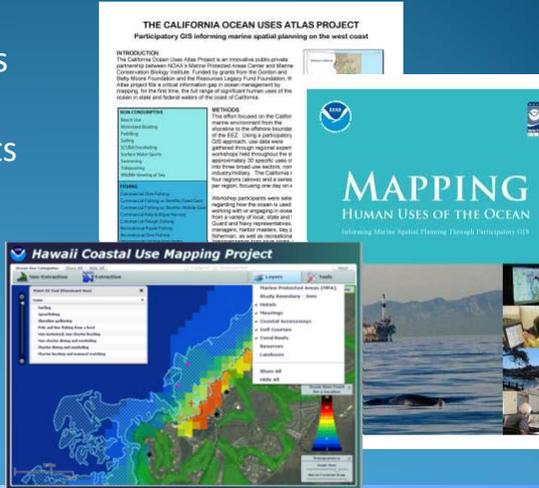
# Products & Tools

GIS Data and Services

Cartographic Products

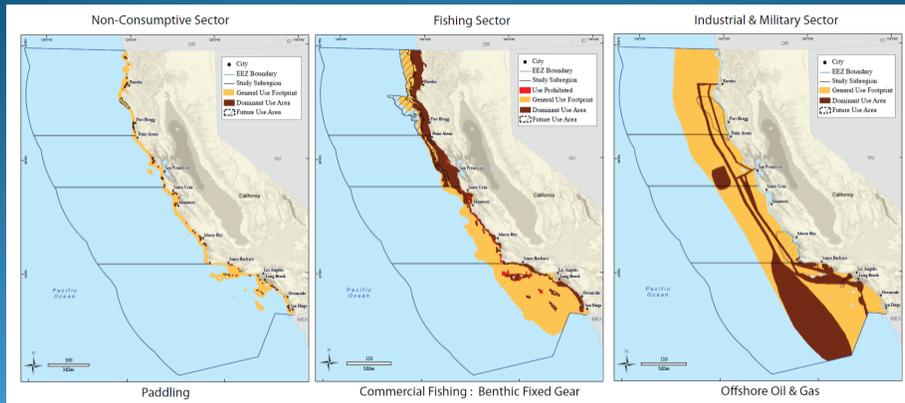
Online Data Viewers

Best Practices Guide



All products will be available online via various sources

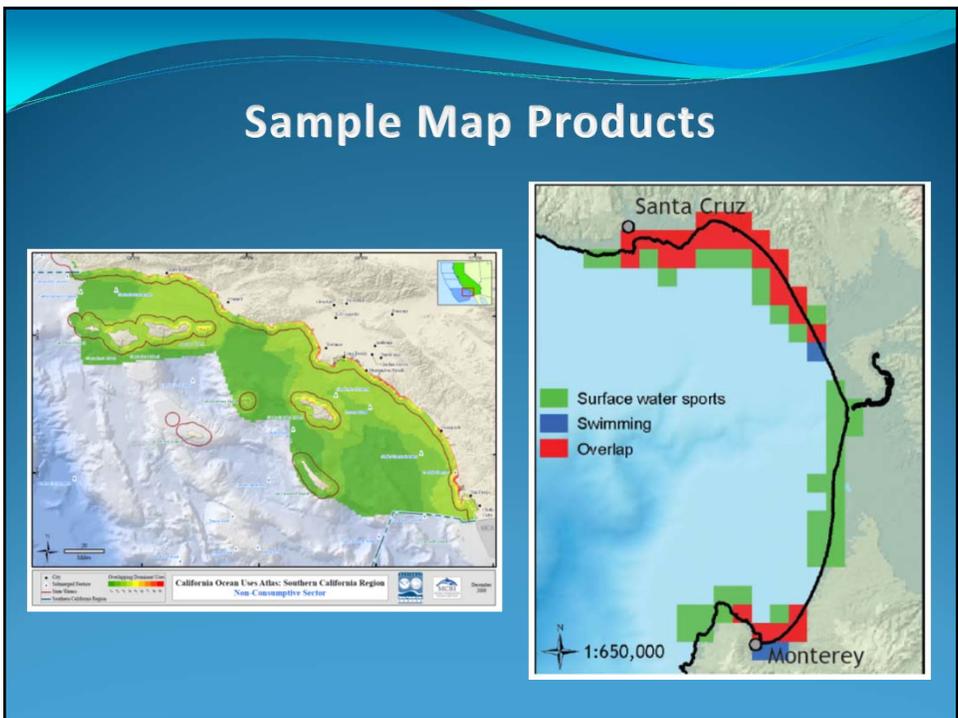
# Sample Map Products



# Sample Map Products



# Sample Map Products



# Sample Analyses

## California Ocean Uses Atlas Statewide Pattern Summary

**Introduction**  
The California Ocean Uses Atlas has compiled human use data on nearly 30 different uses of the coastal and marine environment off the state of California from the shoreline to the 200 nautical mile offshore boundary of the US Exclusive Economic Zone (EEZ). The data were gathered through a series of expert based, participatory GIS workshops held in four geographic regions (left) of the state in 2008 and 2009. The resulting data and maps lend valuable insight to how and where the ocean is used for various sorts of activities including non-consumptive, fishing, industrial and military uses. This document provides a statewide pattern summary for all the uses mapped in the atlas project and is designed to complement the spatial GIS data, metadata and results.

**Fishing**  
Commercial *albacore* fishing occurs in small, isolated areas throughout the California coastal and marine environment. This use is most commonly pursued in the north and north-central coast regions near Point Arena and Fort Stagg, and in the south coast region in cove waters and around the windward side of the larger Channel Islands. This use is not known to occur in the central coast region, as a result of the potential use areas are enclosed in marine reserves (and avoid when fish is prohibited). A number of future use areas are indicated to denote areas where this use may increase in the foreseeable future, most likely due to increased or improved coastal access. Commercial *albacore* fishing includes commercial DORM and free fishing for inter-recreation and excludes all other forms of commercial fishing.

**Commercial fishing with beach/dredge gear** occurs to some degree throughout California (lake waters and beyond) with a distance of 20-50 miles from shore. The general use footprint extends further offshore in the south coast region, but the dominant use areas are more prevalent in the north central and north coast regions. Nearly all of state waters north of the San Francisco Bay are mapped as a dominant use area. A fairly large future area was mapped in the north and north central of the San Francisco Bay area, indicating that this use may increase in the foreseeable future in this area. Commercial fishing with beach/dredge gear includes fishing with trap, gill, bottom trawls, bottom gillnets, and vertical hook and line, and excludes all other forms of commercial fishing.

more robust pattern analysis customized analysis of select

**Beach use** occurs consistently in many of the offshore islands. In all regions but show most cover and north coast regions. In the regions, dominant use areas are around major bays and harbors and Morro Bay). Dominant use major coastal parks and reserve access points. Use patterns are morphology, as dominant use of sandy beach, with the exception (Vandenberg) and some private beach use includes walking, car collecting, wildlife viewing, dirt picknicking, and dog walking on dunes; scenic/educational viewing from boats or from shore and swimming.

**LOOKING AT USES WITHIN THE MBNMS**

Percent of total MBNMS that is a dominant use area for individual uses. Additional studies can be refined or reworked to more closely reflect the spatial distribution of uses (green-based open water, etc.).

**Hotspots and Overlay**  
Use analysis in the Sanctuary can reveal hotspots that exist at a local to study level. Areas of dominant use might be of increased concern for outreach, monitoring, and management.

**Utility for MBNMS**  
• Where are the most hotspots areas of the Sanctuary? Do any areas have more than one hotspots and management to monitor?  
• What are the best of use or near prohibited resources (spawning, nursery, or other) that are being impacted by other uses?

**General Ocean Use Patterns in the MBNMS**  
The heat map on the previous page and the graph on the left illustrate that 24 ocean uses have dominant use areas located within the MBNMS. Dominant use areas are those where most of the use occurs, most of the time. Use is generally higher in coastal areas and near population centers, but shipping, fishing, and military activities create distinct offshore patterns. Ocean uses are generally influenced by ocean, oceanography and regulations, among other factors.

**Utility for MBNMS EBN initiative:**  
• For any ocean activity, what is the general use footprint and where are the dominant use areas relative to the use?

**OCEAN USES IN THE MONTEREY BAY NATIONAL MARINE SANCTUARY**

Ocean Uses Atlas heat map of overlapping dominant uses within the MBNMS

**Number of Overlapping Dominant Uses**

- 1-2
- 3-5
- 6-8
- 9-14

# Available Online

**NATIONAL MARINE PROTECTED AREAS CENTER**  
www.mpa.gov

**Data & Analysis**  
Mapping Ocean Uses  
Data & Analysis

**Mapping Human Uses of the Ocean**

In the MPA Center's participatory GIS process, spatial data on ocean uses are gathered through a series of participatory GIS workshops that engage local and regional ocean experts to map ocean uses in a live, interactive mapping environment. Prior to the workshops, regional research is conducted to profile the types and categories of uses that occur in the study area and to explicitly define the targeted uses or activities to be mapped. Meetings with resource managers, local regulatory agencies and stakeholders are also conducted to refine the scope of the mapping effort, conduct an appropriate mapping exercise and provide the users that are most relevant to the region and current marine management interests. The workshops are typically held over three days and produce expert generated and peer-reviewed data. Outputs from these workshops are then cleaned and refined based on workshop input, and become available to the public through digital map images, GIS data, and interactive web viewers.

This is an abbreviated summary of the participatory process that the MPA Center designed to gather ocean use data. It is intended to be a flexible and usable approach that can be refined and adapted for any region or domain and to address multi-scaled management decisions. A more detailed description of the MPA Center's participatory mapping approach best practices can be found [here](#).

Background information, GIS data, maps, and project related documents of individual mapping projects are listed below:

- California Ocean Uses Atlas Project**  
The California Ocean Uses Atlas Project was an innovative public-private partnership between the MPA Center and the Marine Conservation Biology Institute. The project filled a critical information gap in ocean management by mapping, for the first time, the full range of important human uses of the ocean in state and federal waters off the coast of California.
- New Hampshire and Southern Maine Ocean Uses Atlas Project**  
The MPA Center partnered with the University of New Hampshire's Coastal Resources Research Center to assess the State of New Hampshire and Southern Maine (in Casco Bay), and adapted the approach used in California for the offshore uses and cultural practices found in the Northeast.
- Coastal Use Mapping Project - Northwestern Hawaii**  
The MPA Center partnered with several other NOAA offices and the State of Hawaii to map coastal ocean uses in the Kona-Haalekai region of the Big Island of Hawaii. This project was a more community-oriented effort, as a participatory

[http://www.mpa.gov/dataanalysis/ocean\\_uses/](http://www.mpa.gov/dataanalysis/ocean_uses/)

# PROUA Project Phases

- ❖ Project Scoping & Planning
- ❖ Mapping Workshops & Data Collection
- ❖ Data Processing, Analysis & Synthesis
- ❖ Data Validation, Integration & Reporting

# PHASE I Project Scoping & Planning

- ✓ Conduct outreach and present process
- ✓ Meet with industry, and community stakeholders
- ✓ Identify key stakeholders & potential participants
- ✓ Mine and catalog existing spatial data
- ✓ Confirm participation of key user communities
- ✓ Plan workshop timing and logistics

**BOEM** The Pacific Regional Ocean Uses Atlas

Collecting expert community knowledge on ocean uses through participatory mapping

The nation's oceans are getting crowded, and human uses of the ocean and coasts are expanding at a rate that challenges our ability to plan and manage them. To avoid potential use conflicts and to help identify suitable operating areas for new and emerging uses, including various forms of offshore renewable energy, it is critical to understand the patterns and implications of ongoing and future human use of the ocean.

The Pacific Regional Ocean Uses Atlas Project is an inter-agency collaboration between BOEM and the Bureau of Ocean Energy Management (BOEM) designed to document where coastal communities use the ocean across a full range of coastal human activities and interests. Using participatory mapping techniques, the project offers a robust, flexible, and scalable approach that empowers coastal communities to provide an accurate picture of human use on a scale appropriate for local, state, or regional level ocean planning.

**PROJECT DETAILS**

• **What is the primary purpose of the project?** To enhance ocean planning for offshore renewable energy development and inform other ocean planning strategies that require insight to how and where ocean resources are used for recreational, commercial, and industrial types of activities.

• **What are the goals of the project?** To collect spatial data on the full range of human uses of the ocean through consultations with use groups, community stakeholders, and virtual use practitioners to create data and analysis tools to assist in understanding use patterns, hotspots, conflicts and dependencies.

• **What is the geographic focus of the project?** The Ocean Conservation Plan area off the states of Washington, Oregon, and Hawaii, with some additional mapping to state waters in select areas.

• **Who will lead the effort?** BOEM's Ocean Uses team (NOAA Coastal Services Center & WPA Center for Watershed Support) from BOEM.

*Preparing for the mapping workshops*

## PHASE II

### Mapping Workshops & Data Collection

- ✓ Conduct workshops throughout the region
- ✓ Map ocean uses across the OCS \*
- ✓ Fill use data gaps and verify existing use data
- ✓ Collect supplemental data on use history
- ✓ Survey participants about use knowledge

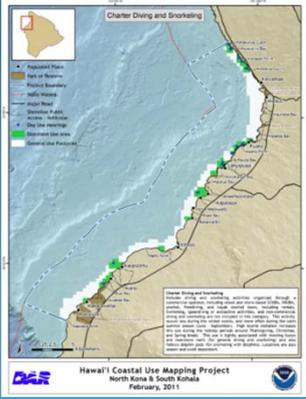


*Conducting the mapping workshops*

## PHASE III

### Data Processing, Analysis & Synthesis

- ✓ Clean, process and compile workshop data
- ✓ Apply tools to analyze conflicts & compatibilities
- ✓ Create cartographic, GIS products & services
- ✓ Build customized analytical products
- ✓ Synthesize results



*Compiling and analyzing the workshop data*



## Analyzing Conflicts + Compatibilities among Ocean Uses

Analytical tools being developed concurrently in a separate project by NOAA's MPA Center

- ❖ Profiles of Common Ocean Uses
  - ❖ Spatial and Operational Requirements of Uses
- ❖ Potential Generic Conflicts and Compatibilities among Uses
- ❖ PROUA project will use tools to:
  - ❖ Identify ocean areas where renewable energy may conflict or be compatible with existing ocean uses
  - ❖ Inform strategies to avoid, minimize or mitigate those conflicts

## Leveraging Existing Efforts

- Incorporate existing data where available
- Fill gaps for certain categories of data
- Apply hindsight & lessons learned
- Engage audience outside the user community
- Create integrated data products

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## For more information



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