

Open OceanMap: Open Source Tool for Capturing Spatially Explicit Socioeconomic Knowledge to Inform Marine Ecosystem Based Management

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Outline

- Open OceanMap Overview
- Applied to California's Marine Life Protection Act
- Results
- Future Development

Open OceanMap

- “OceanMap” was originally developed for ArcView 3.x by Environmental Defense in 2003.
- In 2007 we redeveloped it using open source software to allow for:
 - Easier transferability to different regions of interest
 - Greater flexibility in survey design
 - Give potential users non-proprietary software options
- The intended outcome was to create an improved stand-alone tool for effectively collecting local expert knowledge about fishing grounds, use patterns and other data in support of marine conservation planning processes

Open OceanMap Desktop

- Open Source Components
 - QT - cross-platform application framework
 - Quantum GIS - QT-based desktop GIS software
 - Python – cross-platform programming language. Both QT and QGIS have well-developed Python extensions
- Easy all-in-one distribution using Py2Exe and InnoSetup.
 - Python, QT and Quantum GIS are packaged in the installer

Open OceanMap Web-Based

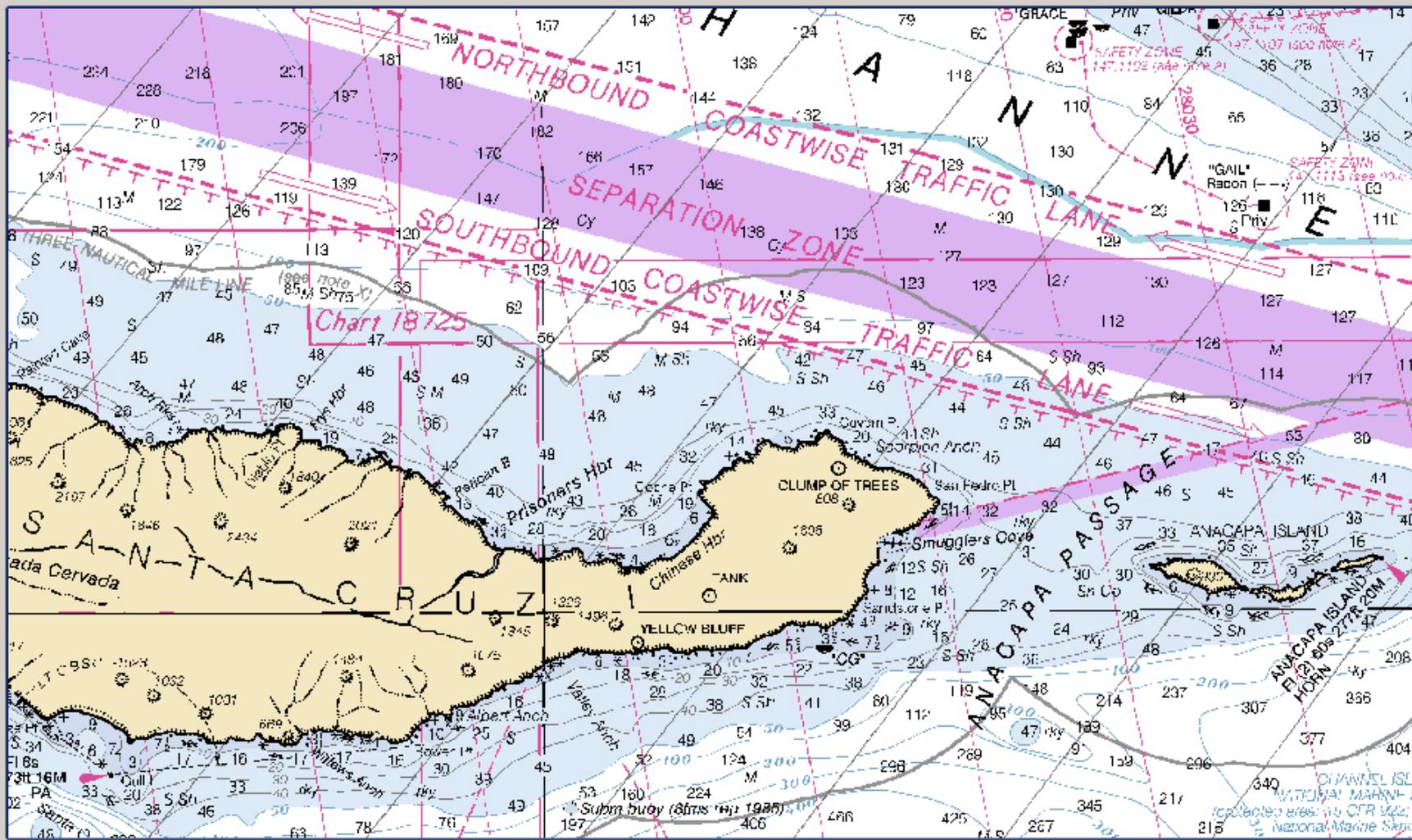
- Best of breed open source tools were selected
- Support for open data standards (GeoJSON) and interface standards (WMS, REST) makes integration very straightforward.
- Their decoupled nature (common to open source) minimizes dependencies, giving us flexibility in what tools we use and making it easier to change as better solutions emerge
- Server
 - GeoDjango - geographic web framework. (Python)
 - PostGIS - spatial database management system
- Client
 - Ext JS - cross-browser rich internet application framework (Javascript)
 - OpenLayers - dynamic web-based mapping (Javascript)

Marine Life Protection Act

- Contracted by the MLPA to collect socioeconomic data on commercial and recreational fishing (use and values), which is used by the stakeholder group(s) to inform their MPA design process
- Legal framework to design and manage a network of MPAs
- Regional process
 - South Central Coast (2005-06), North Central Coast (2007-08), and currently working in the South Coast study region
- Over 1,000 commercial and recreational fishermen interviewed

Data Collection

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



OpenOceanMap

Map Interview Utilities

OpenOceanMap - Interview

Interviewee

First Name:

Last Name:

Age:

Gender:

City of residence:

Interviewer

Interview Date (mm/dd/yyyy):

First Name:

Last Name:

Interviewer Mood:

Commercial Fishing Information

Years experience:

% income from fishing:

Fisherman License ID:

Federal Vessel ID:

State vessel ID:

Vessel length:

Vessel motor (HP):

Haul Capacity (Kg):

Home Port:

Landing Port 1:

Landing Port 2:

Landing Port 3:

Landing Port 4:

Starting Interview Dialog...

43347.7143956, -425982.661236

OpenOceanMap

Map Interview Utilities

OpenOceanMap - Select Fishery

Select Fishery :

Percent income from this fishery:

Select Permits for this fishery:

Anchovy Take
 Deeper Nearshore Species Permit (NT)
 Drift Gill Net
 Drift Gill Net Sharks - Swordfish Permit
 Federal (HMS) Permit - Thresher Shark
 Federal Coastal Pelagic Species Permit
 Federal Limited Entry Fixed Gear Permit
 Federal Limited Entry Trap Permit
 Free Swordfish
 General Gill Net
 Gill/Trammel Net Permit
 Golden, Spot and Ridgeback Prawn
 Herring Gill Net (Nonresident)
 Herring Gill Net (Resident)
 Lobster Crewmember
 Lobster Operator (NT)
 Lobster Operator (T)

Market Squid Light Boat Permit (NT)
 Market Squid Vessel (NT)
 Market Squid Vessel (T)
 Nearshore Fishery Bycatch (NT)
 Nearshore Fishery Bycatch Permit
 North Central Coast Fishery Trap Endorsement
 North Central Coast Nearshore Fishery (NT)
 North Central Coast Nearshore Fishery (T)
 North Coast Nearshore Fishery (T)
 Northern Rock Crab
 Ocean Enhancement
 Salmon Stamp
 Salmon Vessel Permit

Sea Cucumber Diving
 Sea Cucumber Trawl
 Sea Urchin Crewmember
 Sea Urchin Permit
 South Central Coast Nearshore Fishery (NT)
 South Central Coast Nearshore Fishery (T)
 South Central Coast Trap Endorsement (NT)
 South Central Coast Trap Endorsement (T)
 South Coast Nearshore Fishery (NT)
 South Coast Nearshore Fishery (T)
 South Coast Trap Endorsement (NT)
 South Coast Trap Endorsement (T)
 Southern Rock Crab
 Swordfish
 Tidal Invertebrate
 Trap Permit

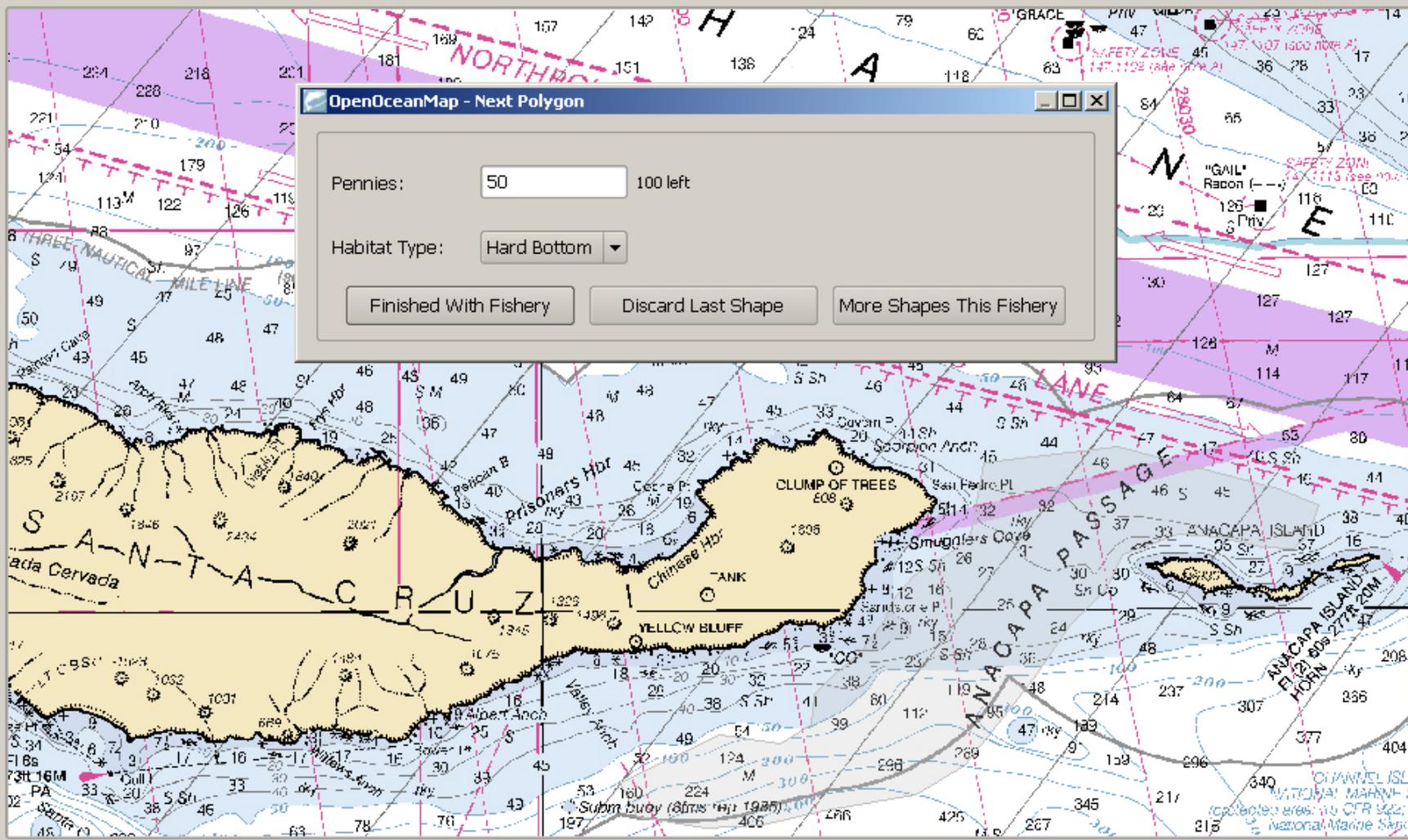
Permit (NT)
 Permit (T)
 Boat Owner

California Halibut (Hook & Line)
 California Halibut (Set Gill Net)
 Coastal Pelagics (Seine)
 Deep Nearshore Rockfish (Hook & Line)
Lobster (Trap)
 Nearshore Rockfish (Hook & Line)
 Nearshore Rockfish (Trap)
 Pacific Bonito (Seine)
 Rock Crab (Trap)
 Sablefish (Hook & Line)

Finished With Interview Start Drawing Shapes

Starting Interview Dialog...

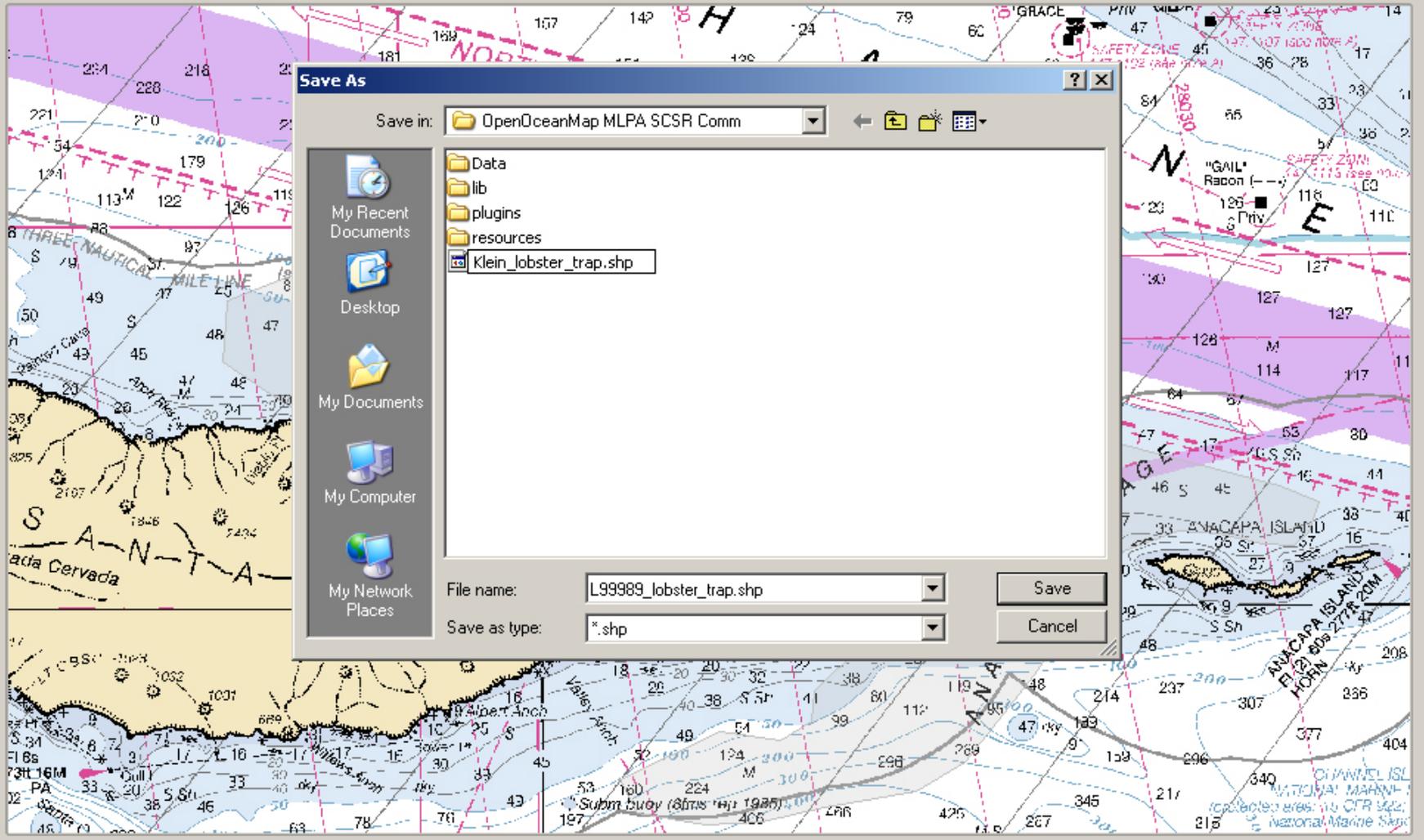
52117.8952119 , -452644.010917



OpenOceanMap - Next Polygon

Pennies: 100 left

Habitat Type:



Save As

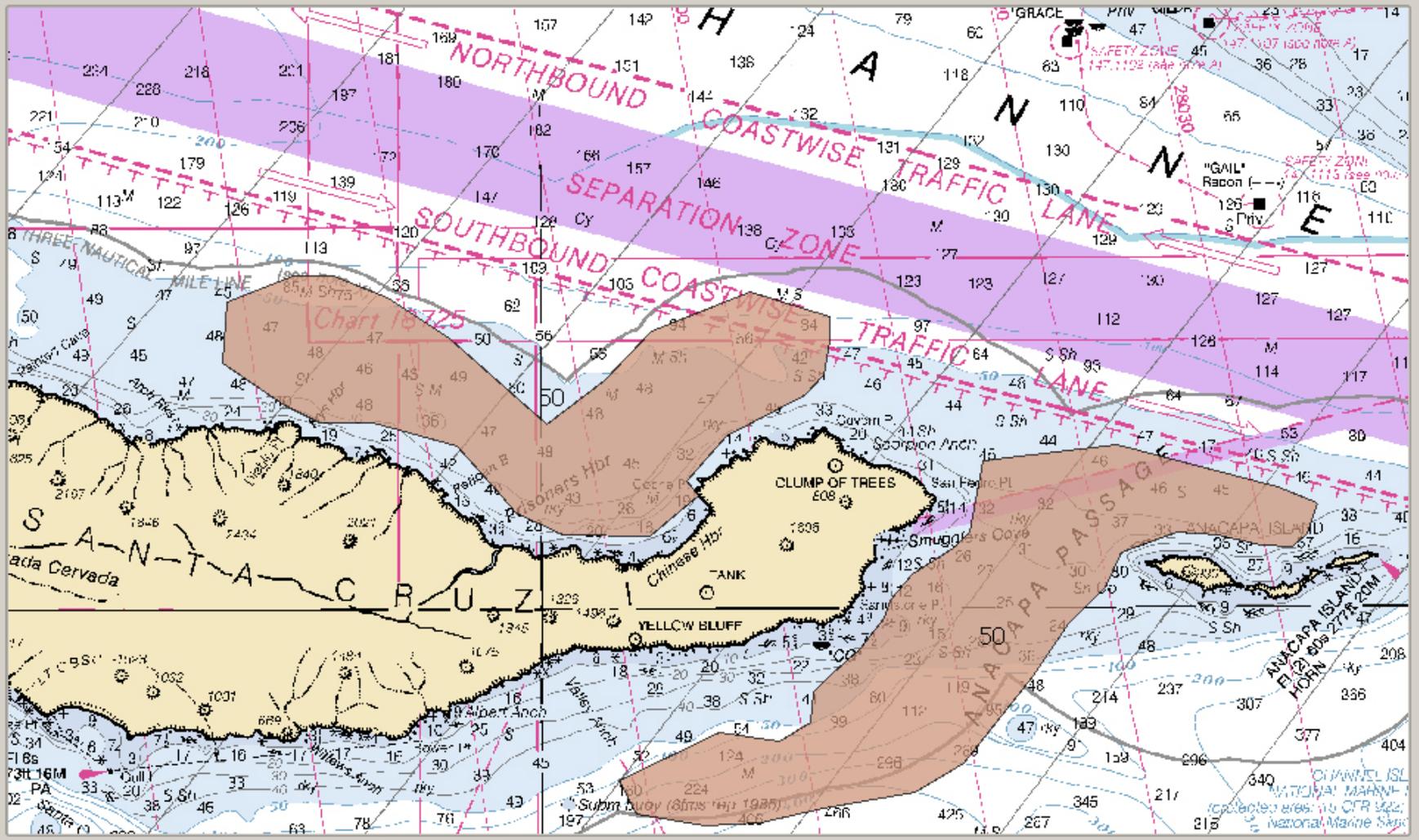
Save in: OpenOceanMap MLPA SCSR Comm

- Data
- lib
- plugins
- resources
- Klein_lobster_trap.shp

File name: L99989_lobster_trap.shp

Save as type: *.shp

Save Cancel



South Coast MLPA Interview Tool

Email Address:

Password:

[Forgot your password?](#)

* We know this tool is not perfect, easy enough for everyone to use or one-size-fits-all. We apologize for that. Your feedback and ideas are welcome. If you are having technical problems or are finding the online interview too difficult to complete, please review our [Frequently Asked Questions](#), email us at fish@ecotrust.org or call us using the number provided in your registration email. We want to make sure you're able to provide input into this process.

Web browser requirements:

- Internet Explorer 6+
- FireFox 1.5+ (PC, Mac)
- Safari 3+
- Opera 9+ (PC, Mac)

* Remember that information collected in the interview is anonymous and confidential on the individual level and all analyses and results will be presented in aggregate form.

Getting Started

- [Frequently Asked Questions](#)

Quickstart Instructions

Welcome! This is your Status Page. Here you will access the remaining interview sections, one at a time, and track your progress.

Below, you'll see that you have already completed the first section. The rest of the interview is made up of questions about the user groups you identified when you registered to be a participant. Feel free to take your time, just remember that you have 5 days to complete this interview after activating your account.

If you still have questions about Ecotrust's involvement in the MLPA process, our analysis, why you should participate fully and what your incentive is to reveal your fishing grounds to us, we have information for you [Here](#)

We know this tool is not perfect, simple enough for everyone to use or one-size-fits-all. We are listening to your feedback. If you have technical problems or are finding the online interview too difficult to complete, please review our [Frequently Asked Questions](#), email us at fish@ecotrust.org or call us using the number provided in your registration email. We want to make sure you're able to provide input into this process.

Your next step is to provide information for your primary user group, which is required. All other user groups (if any) are optional, although we highly recommend you complete them all.

To continue, click on the 'Start' button below to begin a short questionnaire for your primary user group. Once that is completed you'll be asked to draw shapes on a map for this user group. You will then move on to repeat those steps for the rest of your user groups. Your last step will be to finalize your interview.

* Note, if you are on a dial-up connection, please be patient. The shape drawing phases in particular will take time to load and use.

Thank you for participating.

Interview Status

	Status	Estimated Time	Action
Activate Account	Completed	0 Min.	
Fisherman Profile	Completed	5 Min.	
User Group Questions	Completed	5 Min.	
Private Group			
Questionnaire	Completed	5 Min.	
Draw Fishing Grounds	Started	30-45 min.	<input type="button" value="Continue"/>
Dive Group			
Questionnaire		5 Min.	
Draw Fishing Grounds		30-45 min.	
Finalize Interview			

Map Layer Switcher

- Base Map
- Detailed Nautical Chart
- Fishery Shapes

Instructions

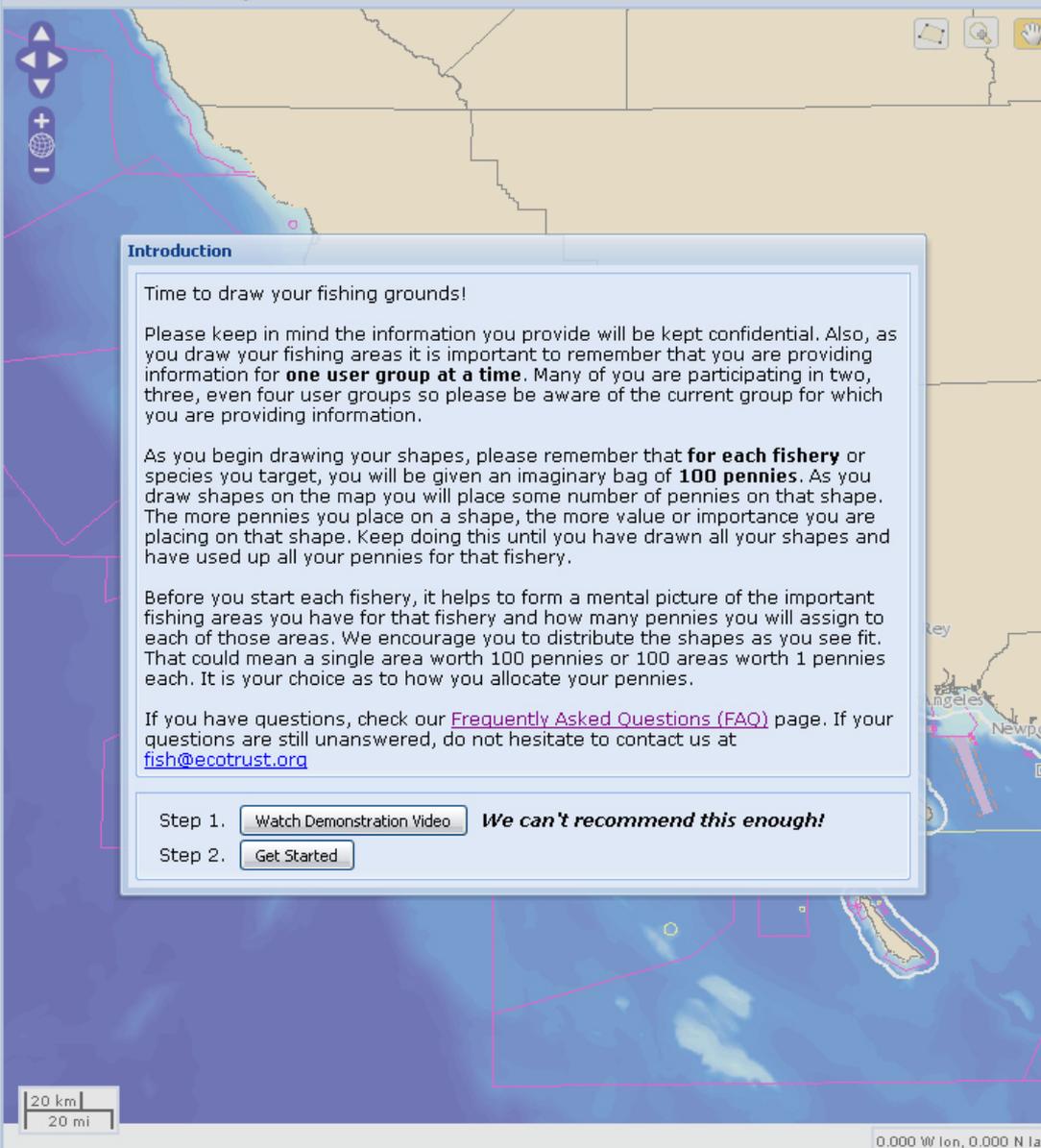
Looking for a detailed nautical chart? It's in the Layer Switcher on the top left, just check it to on. *Note the map will run slower when it is turned on.

[Drawing Shapes Video Tutorial](#)
[Frequently Asked Questions](#)

How to draw a shape:

1. Move/zoom to the location you want
2. Click the shape icon in top right corner of the map
3. Click your left mouse button once to start the shape.
4. Keep moving your mouse and click the left mouse button to add more points to your shape
5. Double click your left mouse button to complete the shape. You will know it's completed if you're asked if your satisfied with the shape
5. If you're not satisfied with your shape, click 'No' to remove it and draw it again

California South Coast Map



Introduction

Time to draw your fishing grounds!

Please keep in mind the information you provide will be kept confidential. Also, as you draw your fishing areas it is important to remember that you are providing information for **one user group at a time**. Many of you are participating in two, three, even four user groups so please be aware of the current group for which you are providing information.

As you begin drawing your shapes, please remember that **for each fishery** or species you target, you will be given an imaginary bag of **100 pennies**. As you draw shapes on the map you will place some number of pennies on that shape. The more pennies you place on a shape, the more value or importance you are placing on that shape. Keep doing this until you have drawn all your shapes and have used up all your pennies for that fishery.

Before you start each fishery, it helps to form a mental picture of the important fishing areas you have for that fishery and how many pennies you will assign to each of those areas. We encourage you to distribute the shapes as you see fit. That could mean a single area worth 100 pennies or 100 areas worth 1 pennies each. It is your choice as to how you allocate your pennies.

If you have questions, check our [Frequently Asked Questions \(FAQ\)](#) page. If your questions are still unanswered, do not hesitate to contact us at fish@ecotrust.org

Step 1.

We can't recommend this enough!

Step 2.

Your Status

Current user group:

Private

Current fishery:

Not yet selected

Pennies left for this fishery:

Not yet available

Your Fishing Grounds

Fishery	Pennies

Map Layer Switcher

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Instructions

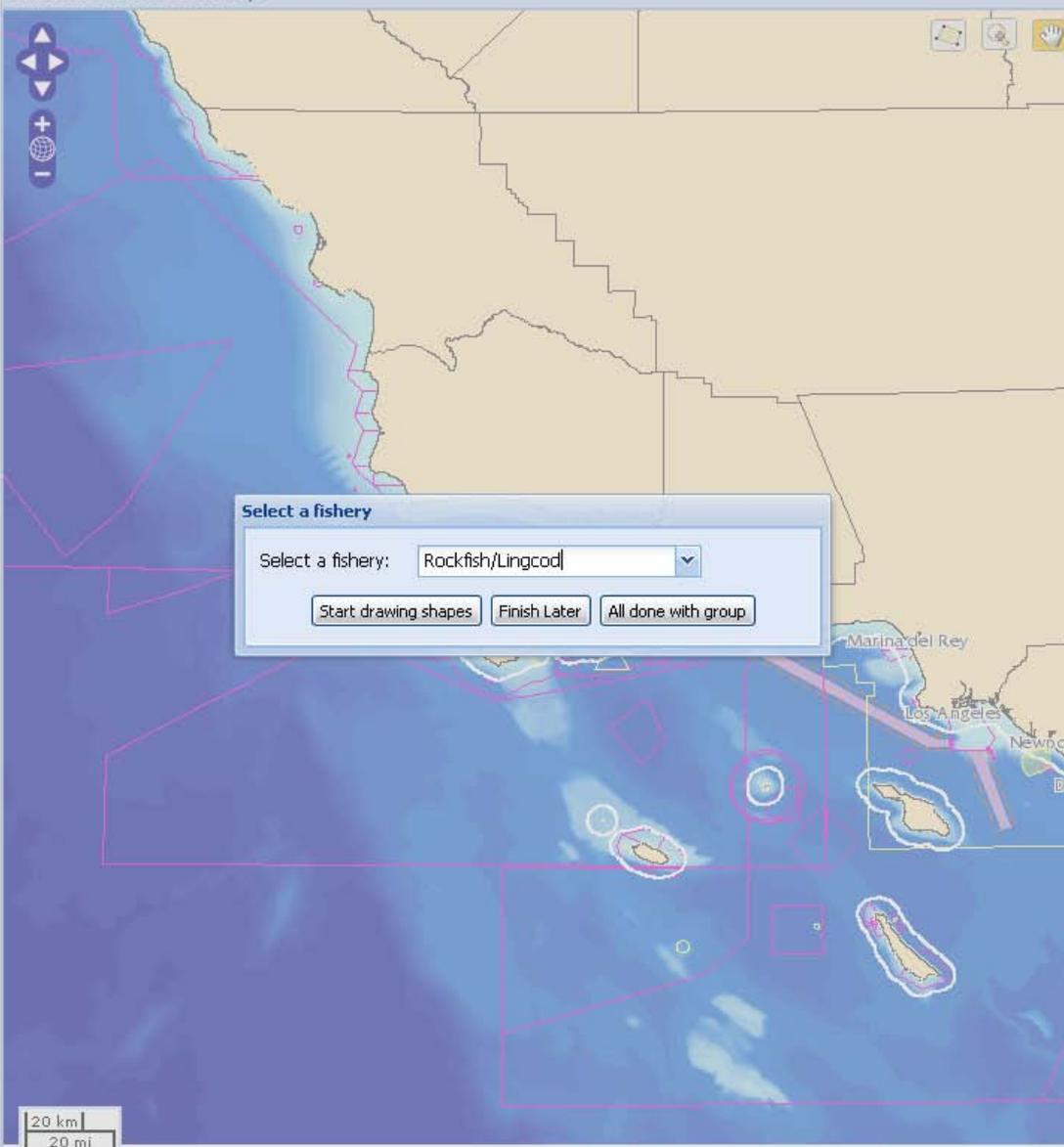
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California South Coast Map



Your Status

Current user group:
Private
 Current fishery:
Not yet selected
 Pennies left for this fishery:
Not yet available

Your Fishing Grounds

Fishery	Pennies
Rockfish/Lingcod	100
Lobster	25
Lobster	75
Bonita	100
Clams	100

Map Layer Switcher

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- Fishery Shapes

Instructions

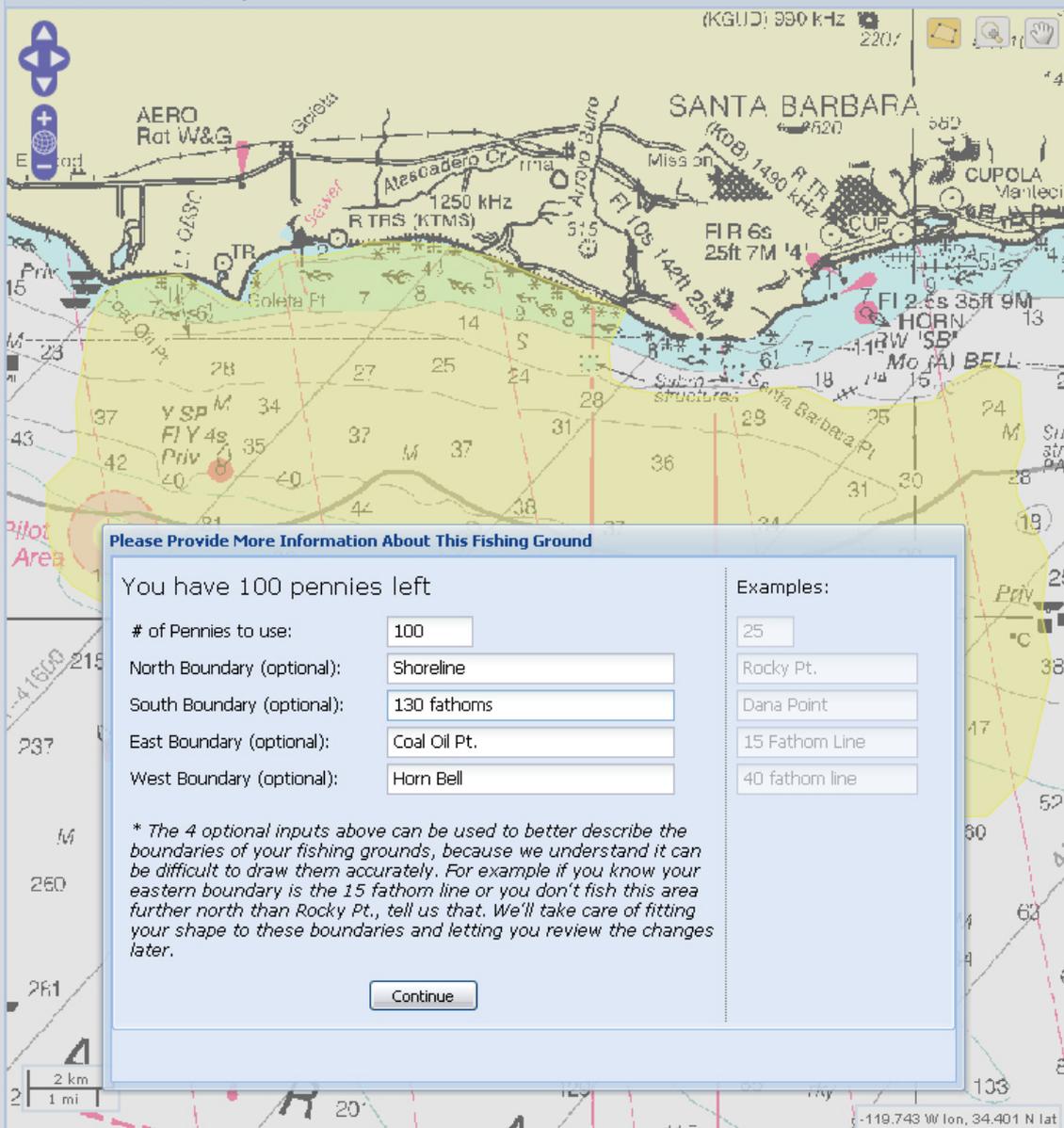
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California South Coast Map



Your Status

Current user group:
Private
 Current fishery:
Salmon
 Pennies left for this fishery:
100

Your Fishing Grounds

Fishery	Pennies
Rockfish/Lingcod	100
Lobster	25
Lobster	75
Bonita	100
Clams	100

Please Provide More Information About This Fishing Ground

You have 100 pennies left

of Pennies to use:

North Boundary (optional):

South Boundary (optional):

East Boundary (optional):

West Boundary (optional):

Examples:

-
-
-
-
-

** The 4 optional inputs above can be used to better describe the boundaries of your fishing grounds, because we understand it can be difficult to draw them accurately. For example if you know your eastern boundary is the 15 fathom line or you don't fish this area further north than Rocky Pt., tell us that. We'll take care of fitting your shape to these boundaries and letting you review the changes later.*

Continue

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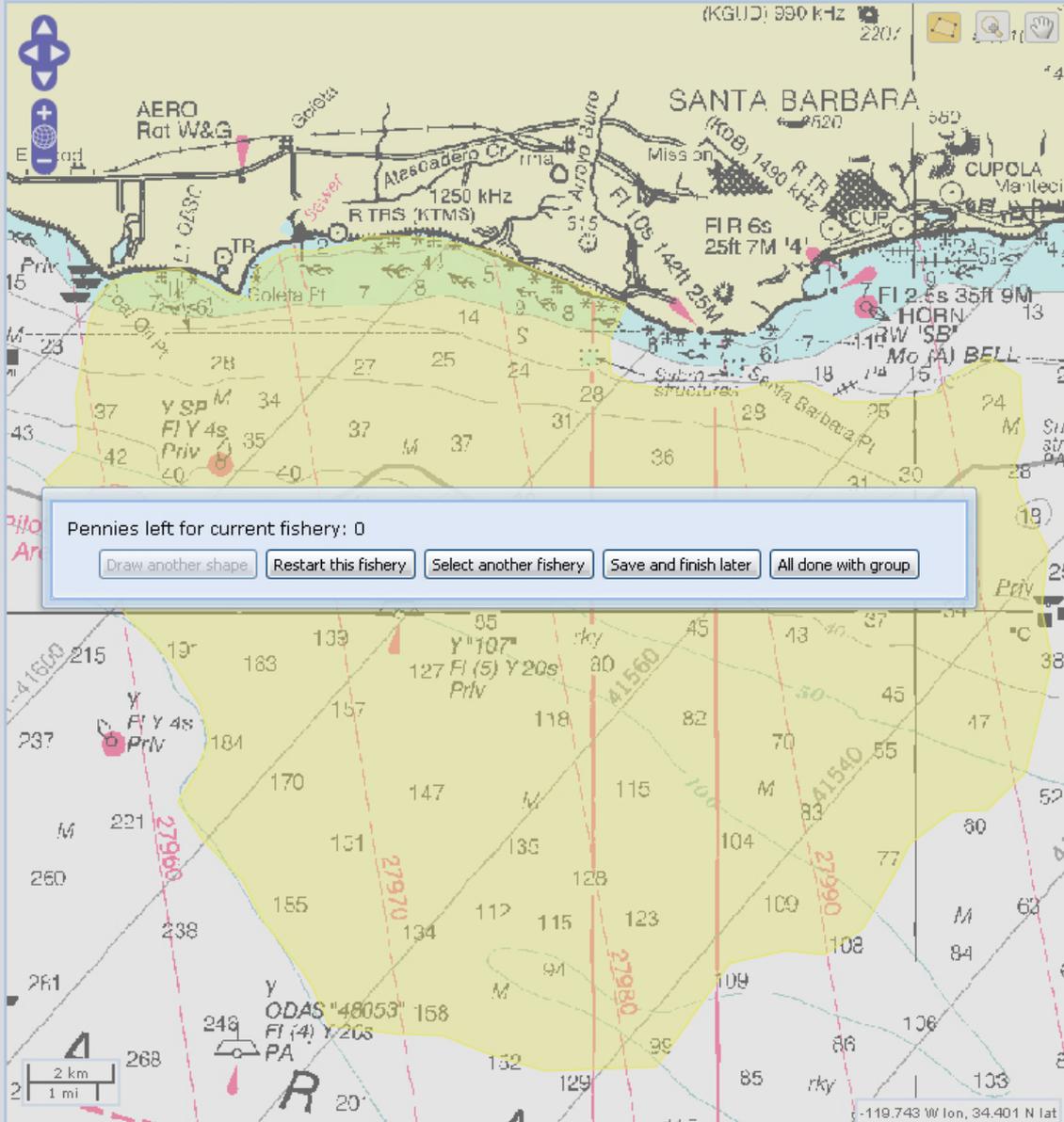
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California South Coast Map



Pennies left for current fishery: 0

Your Status

Current user group:
Private
 Current fishery:
Salmon
 Pennies left for this fishery:
0

Your Fishing Grounds

Fishery	Pennies
Rockfish/Lingcod	100
Lobster	25
Lobster	75
Bonita	100
Clams	100
Salmon	100

Map Layer Switcher

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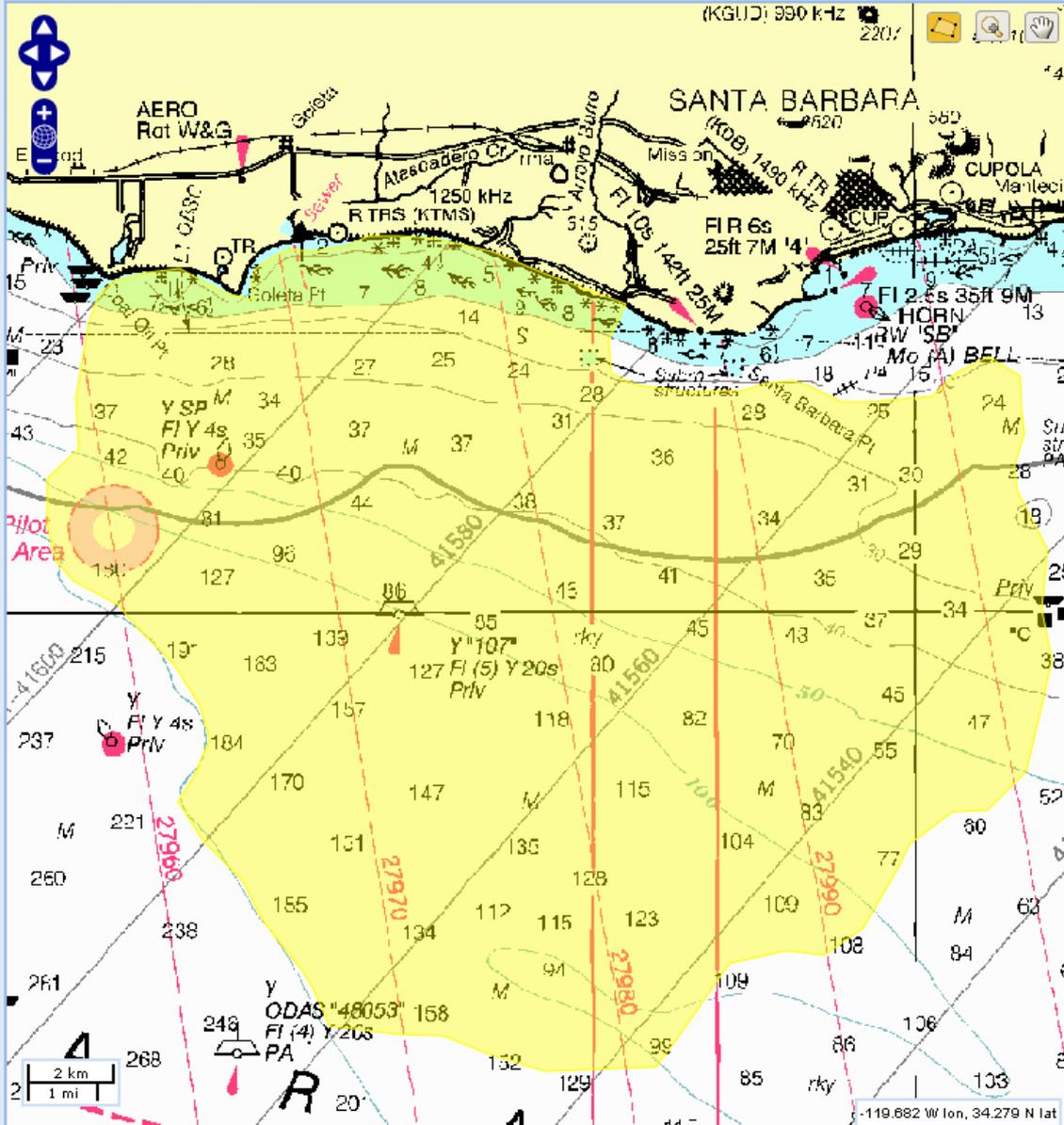
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California South Coast Map

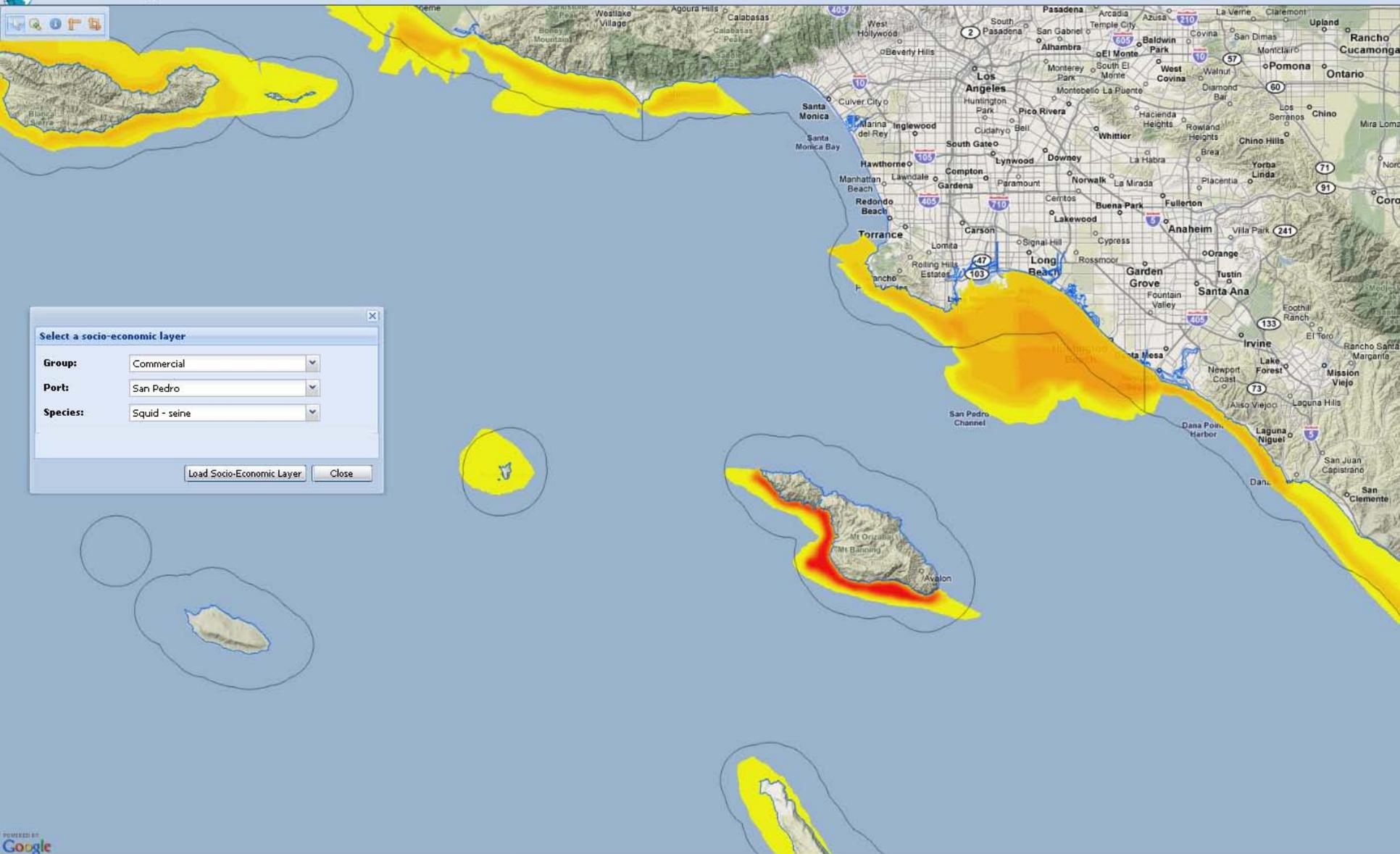


Your Status

Current user group:
Private
 Current fishery:
Barracuda
 Pennies left for this fishery:
100

Your Fishing Grounds

Fishery	Pennies
Rockfish/Lingcod	100
Lobster	25
Lobster	75
Bonita	100
Clams	100
Salmon	100



Select a socio-economic layer

Group: Commercial

Port: San Pedro

Species: Squid - seine

Load Socio-Economic Layer Close

Future Development

- Develop customizable interview templates decreasing need for additional programming.
 - Capture the commonalities of interviews for a given use.
 - Allow interview configuration: base map layers, zoom levels, text blocks, pick lists (species, permits, gear)
 - Develop a common base for each template.
 - Reusable interview widgets.
 - Data storage and retrieval
 - Allow people to design and package their own interviews without programming.

Thank You and Contact Information

- The David and Lucile Packard Foundation
- The Resources Legacy Fund Foundation
- The Marine Life Protection Act Initiative
- The Mellon Foundation
- All the fishermen that have participated and encouraged others over the last 4 years
- Ecotrust Field Staff

- Charles Steinback – charles@ecotrust.org
- Tim Welch - twelch@ecotrust.org