



ecotrust

# Spatial and Socioeconomic Fishing Profiles: Central California National Marine Sanctuaries

28 July 2005

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# Outline

- Background – who & why
- Spatial interpretation of fisheries data
- Using local knowledge provided by fisherman to create socioeconomic fishery profiles for the study area



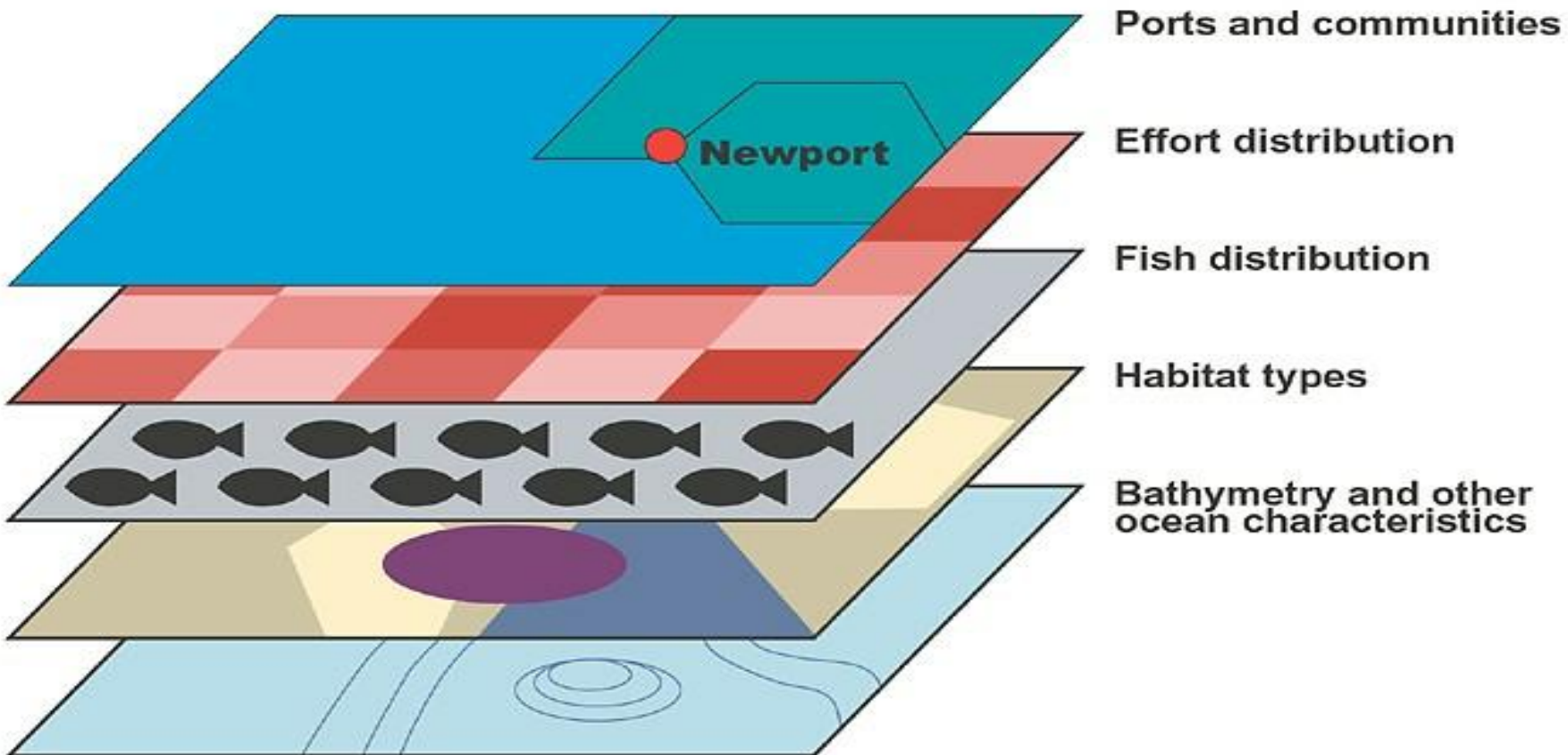
# Who we are

- Ecotrust is a non-profit think tank and community development organization
- Working to build Salmon Nation—where economy, ecology, and equity are in balance
- Collaborate with federal and state agencies, universities, industry, tribes & NGOs



# OCEANI

Ocean Communities **Equity Ecology Analysis Economy**



# Why

- Ecotrust was retained by:
  - Cordell Bank National Marine Sanctuary (CBNMS)
  - Gulf of the Farallones National Marine Sanctuary (GFNMS)
  - Monterey Bay National Marine Sanctuary (MBNMS)
- In support of the Joint Management Plan Review (JMPR):
  - To collect, compile and analyze socioeconomic information pertaining to commercial and recreational fisheries in and around sanctuary waters.



# Central California National Marine Sanctuaries



# Outline

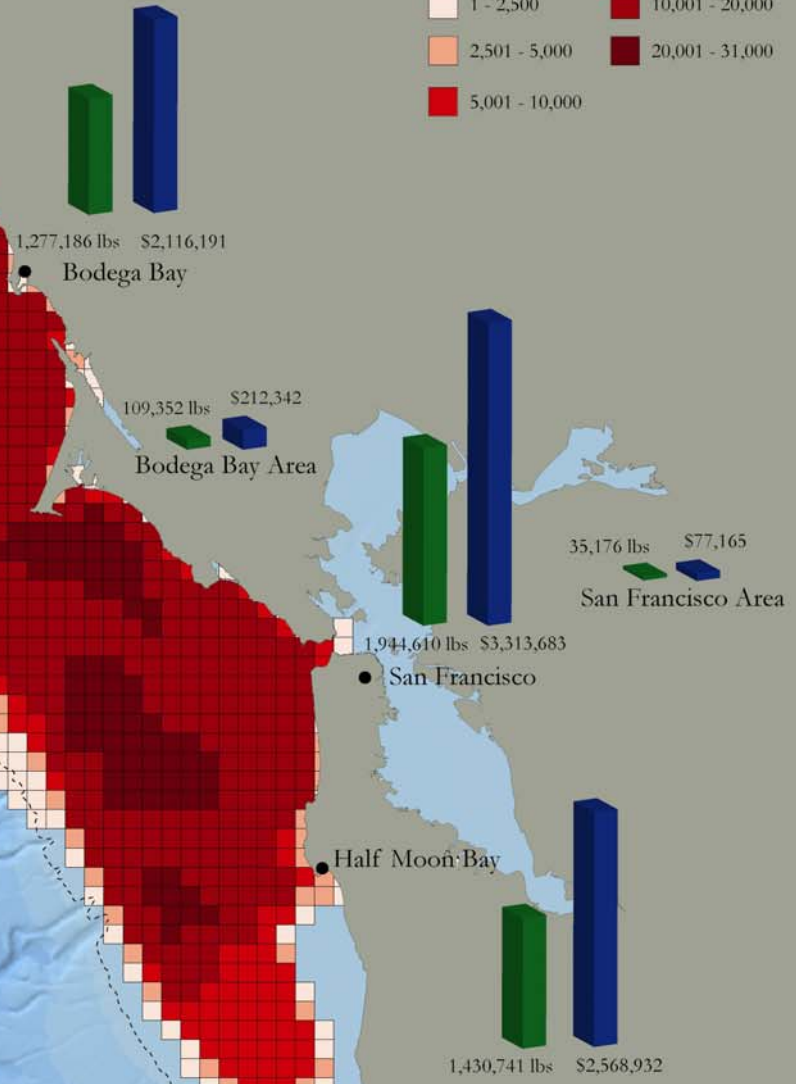
- Why
- Spatial interpretation of fisheries data
- Using local knowledge provided by fisherman to create socioeconomic fishery profiles for the study area



# Crab Fishing Grounds Based on Fishermen Local Knowledge

Ex -vessel revenues and pounds derived from California landing receipts, 2003.

Ex-Vessel Revenue per 3 Km Block



# Overview of Fisheries Data

- Source: CDFG fisheries data
- Objective: understand the data and what it can tell us
- Goals:
  - Characterize the CDFG data
  - generate a baseline for subsequent analysis
  - Illustrate the kinds of questions that can be investigated with the data



# Fisheries Data – Types

There are three distinct data categories:

- Data recorded by fish buyers (landing receipts)
- Data reported by fishermen (logbooks)
- Fishery independent data, e.g. observers and surveys

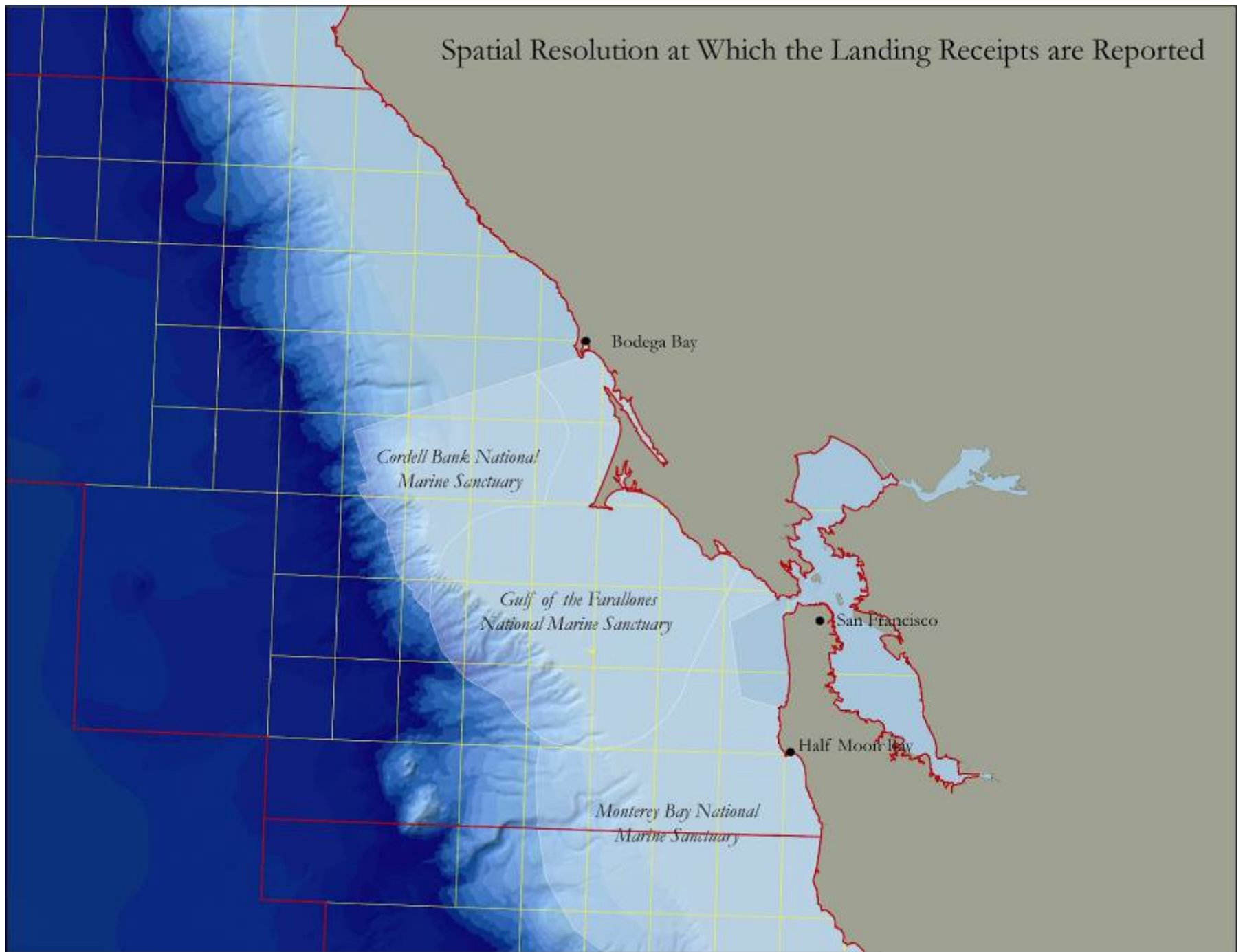


# CDFG Landing Receipts

- Thematic Variables
  - Species caught
  - Gear type used
  - Pounds landed and price received
- Spatial Variables
  - Port landed
  - 10 min x 10 min block where catch occurred
- Temporal Variables
  - Per fishing trip, from 1981–2004



# Spatial Resolution at Which the Landing Receipts are Reported



Ex-Vessel Crab Revenue

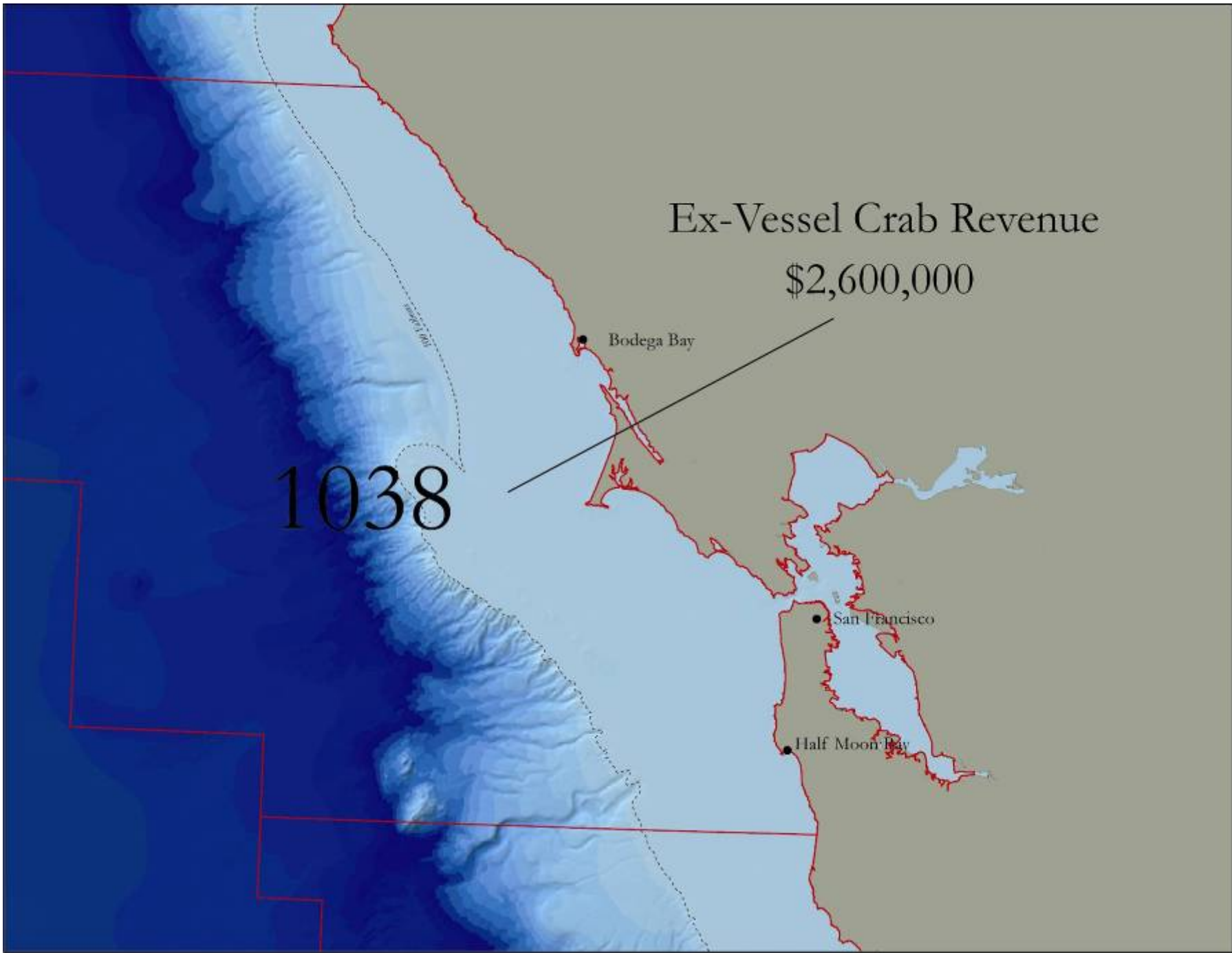
\$2,600,000

• Bodega Bay

• San Francisco

• Half Moon Bay

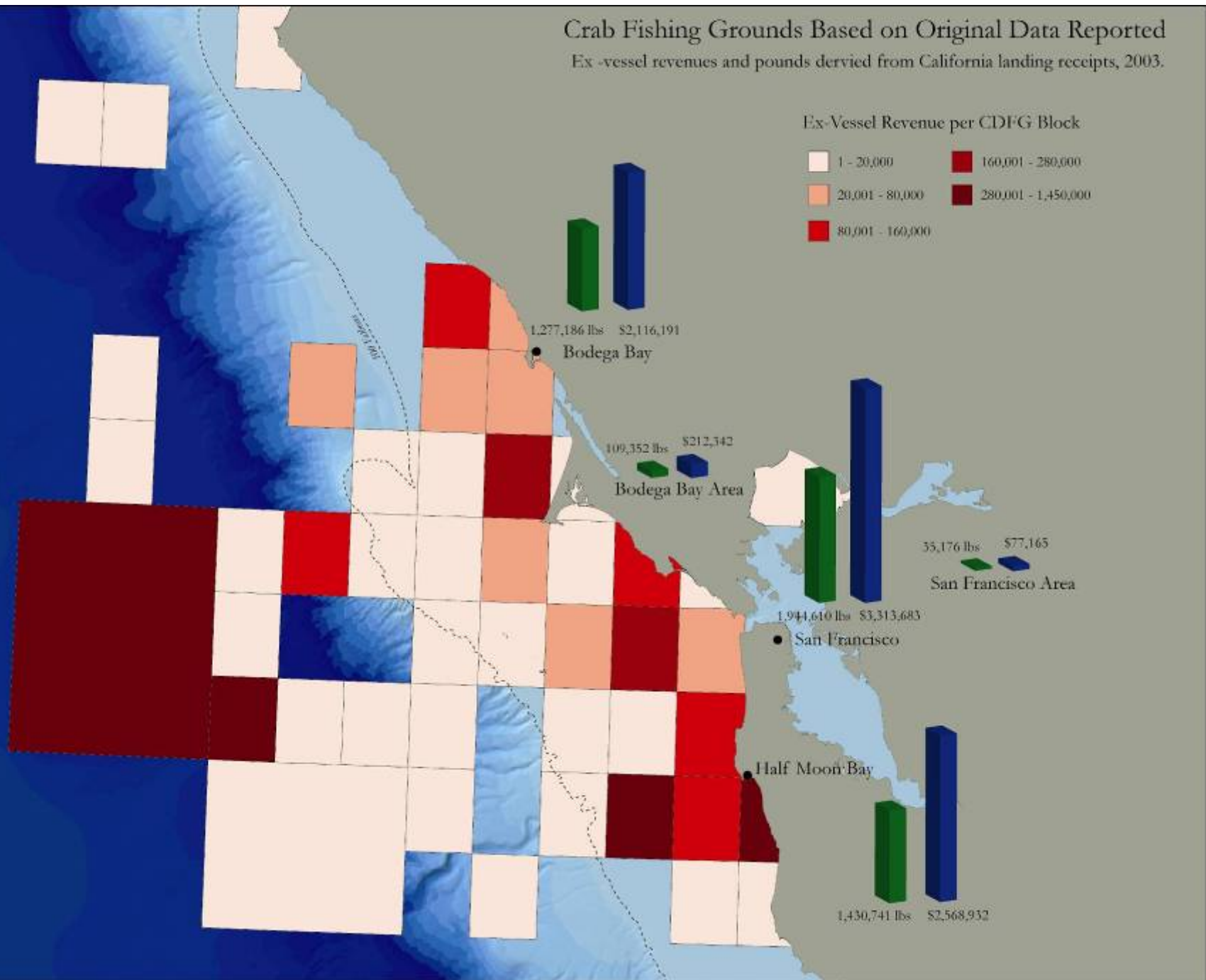
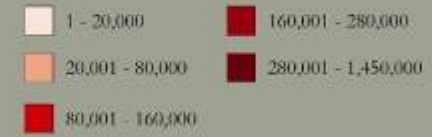
1038



# Crab Fishing Grounds Based on Original Data Reported

Ex-vessel revenues and pounds derived from California landing receipts, 2003.

## Ex-Vessel Revenue per CDFG Block



# Outline

- Who and why
- Spatial interpretation of fisheries data
- Using local knowledge provided by fisherman to create socioeconomic fishery profiles for the study area





- salmon3
- rockfish3
- rockfish
- sablefish
- Study Area Ports
- Cabezon.shp
- Olive\_rf.shp
- Lingcod.shp
- Rockfish.shp
- Salmon.shp
- Halibut.shp
- Flounder.shp
- Blue\_rf.shp
- Watersheds
- DFG MPA Drafts: 2001
- Coastal Access
- Coastline
- 100 Fathom Line
- Crab6
- Crab5
- Mbnms.shp
- Crab3
- Gfnms.shp
- Cbnms.shp

### Critical Economic Areas

Name: Fisherman B

Age: 50

Years of Experience: 30

Percent of Income From Fishing: 100

Percent of Income from Specific Species: 50

Home Harbor: Mendocino County

- Bodega Bay
- Bolinas

Species: SALEMA

- SALMON
- SALMON CHUM

Gear Types: HARPOON (PLANK)

- HOOK AND LINE
- HOOP NET CRAB-RINGS

Season: January

- February
- March

Interviewer Moor: [Slider]

Habitat Type: Hard Bottom

- Hard Outcrop/Pavement
- Mixed
- Soft Sediments

Fishery Health (Pa): [Slider 0-10] When? [Text]

Fishery Health (Pres): [Slider 0-10]

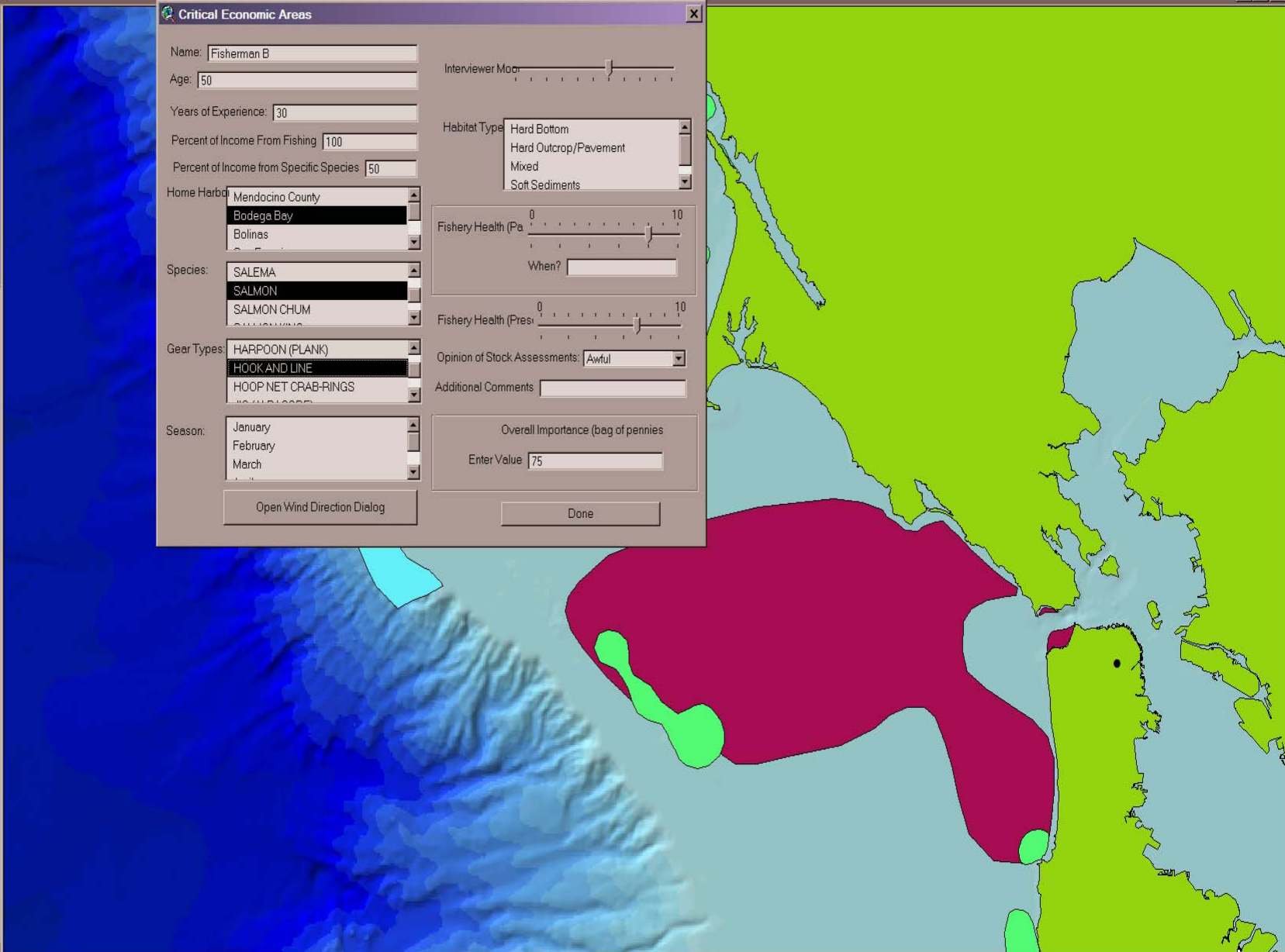
Opinion of Stock Assessments: Awful

Additional Comments: [Text]

Overall Importance (bag of pennies)

Enter Value: 75

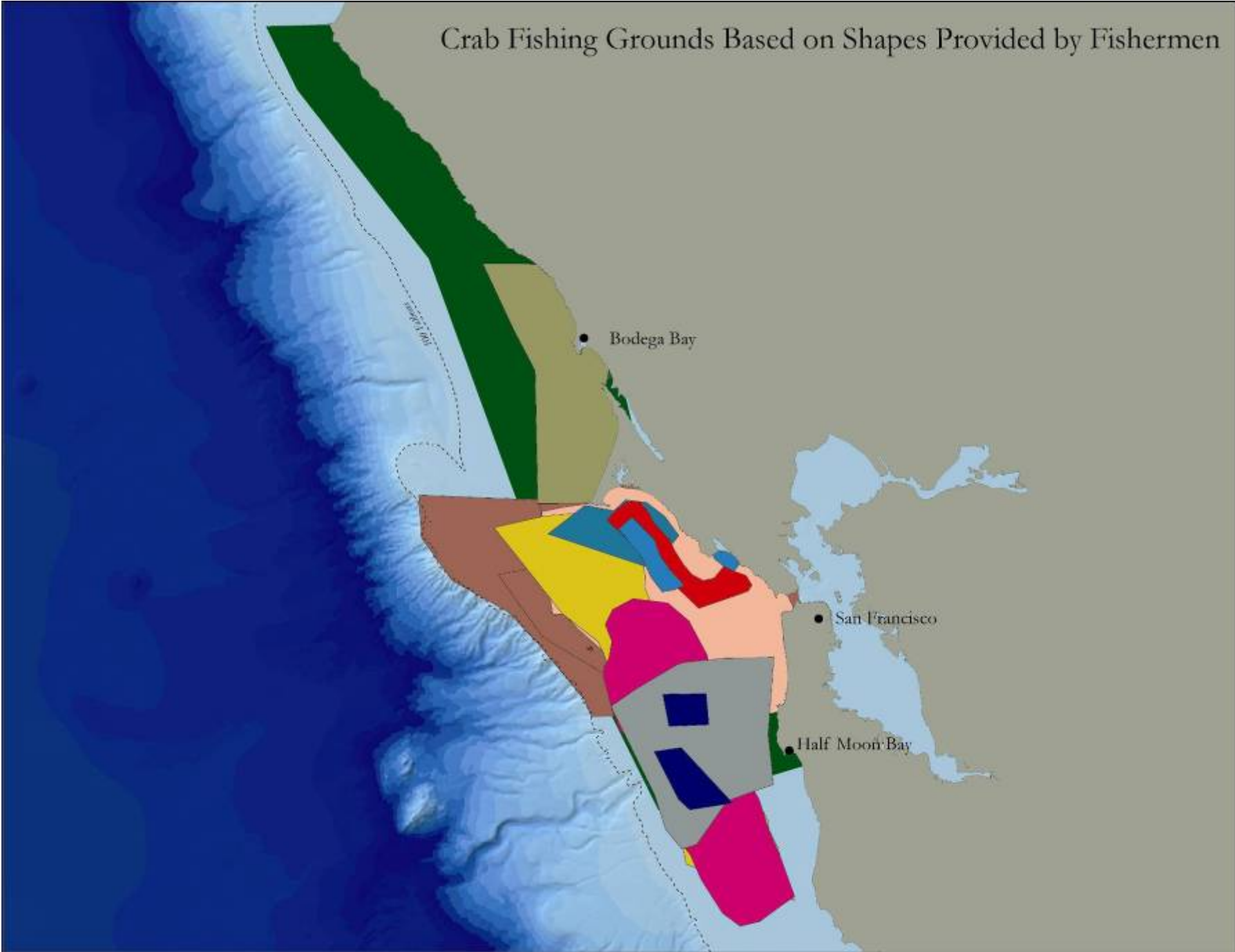
Open Wind Direction Dialog Done



# Interviews with fishermen

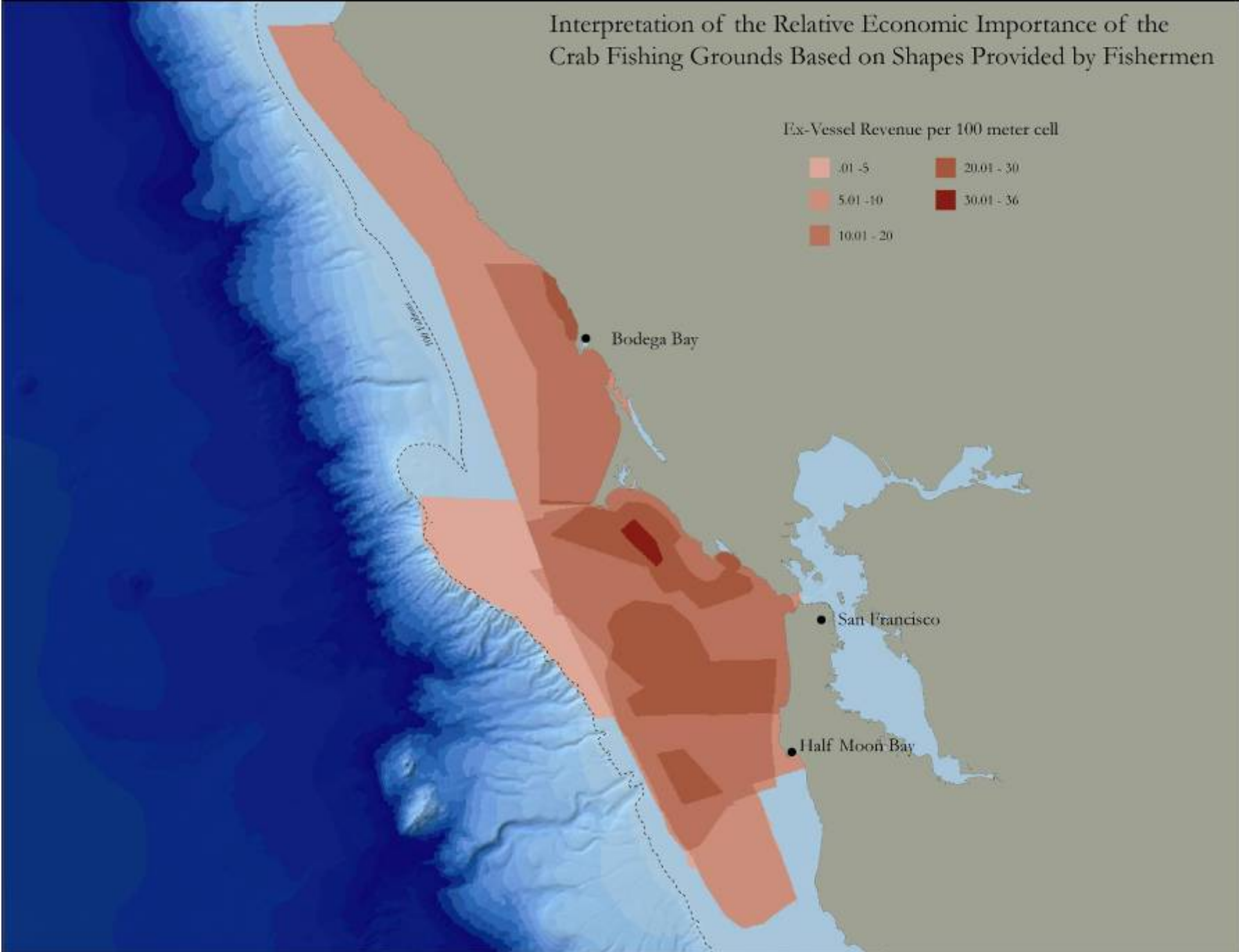
- 25 interviews were conducted, from Bodega Bay to Half Moon Bay
- Each interviewee was asked to
  - identify, within their maximum forage area for a specific fishery, which areas are of critical economic importance,
  - and to rank these areas using a weighted percentage; this was done through an imaginary “bag of 100 pennies” that they distributed over the fishing grounds

# Crab Fishing Grounds Based on Shapes Provided by Fishermen



# Interpretation of the Relative Economic Importance of the Crab Fishing Grounds Based on Shapes Provided by Fishermen

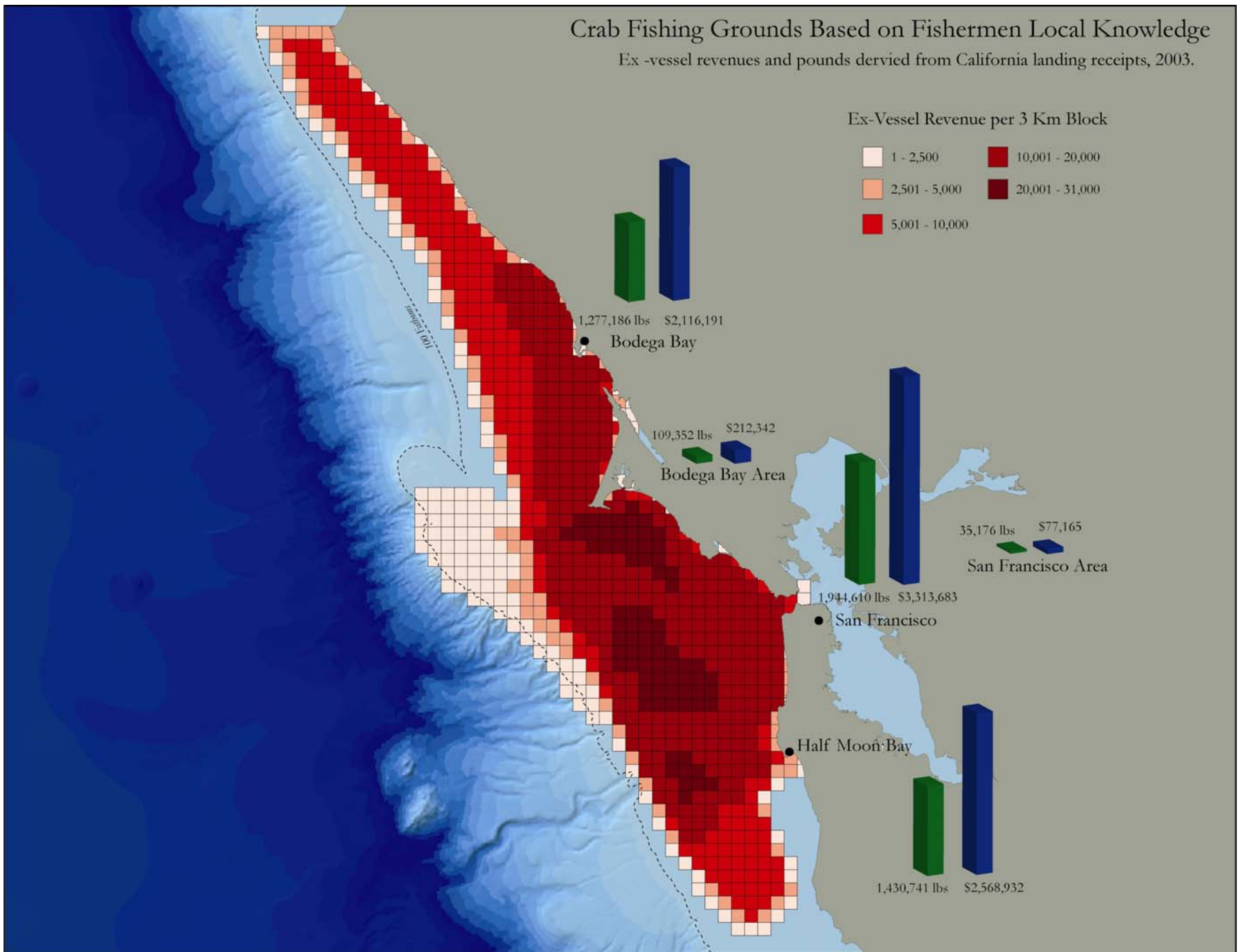
Ex-Vessel Revenue per 100 meter cell



# Crab Fishing Grounds Based on Fishermen Local Knowledge

Ex -vessel revenues and pounds derived from California landing receipts, 2003.

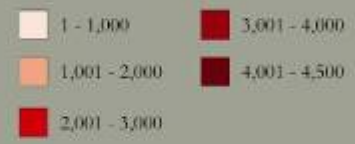
Ex-Vessel Revenue per 3 Km Block



# Salmon Fishing Grounds Based on Fishermen Local Knowledge

Ex-vessel revenues and pounds derived from California landing receipts, 2003.

Ex-Vessel Revenue per 3 Km Block



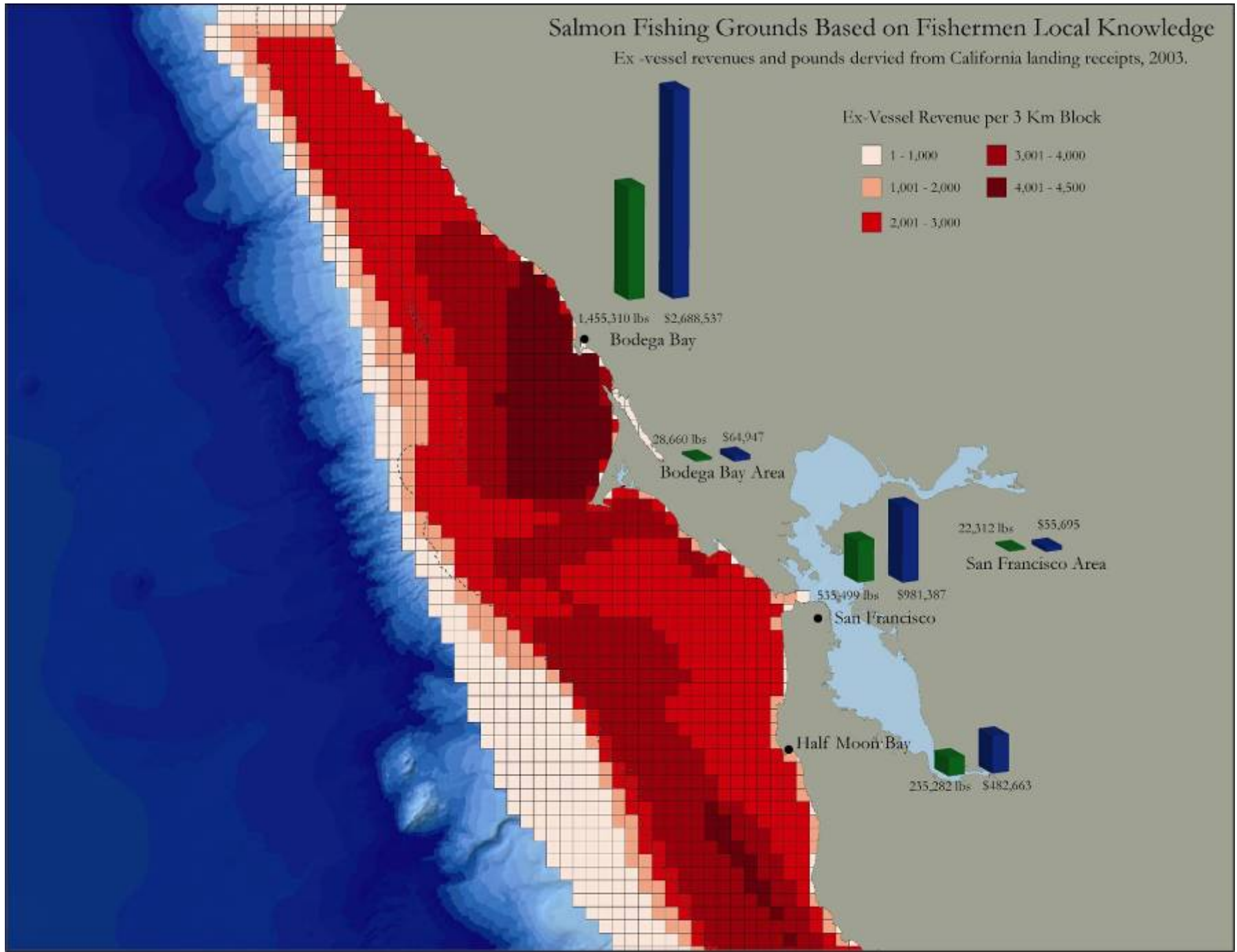
1,455,310 lbs \$2,688,537  
● Bodega Bay

28,660 lbs \$64,947  
Bodega Bay Area

22,312 lbs \$55,695  
San Francisco Area

535,499 lbs \$981,387  
● San Francisco

Half Moon Bay  
235,282 lbs \$482,663



# Quantifying the Value of the Sanctuaries

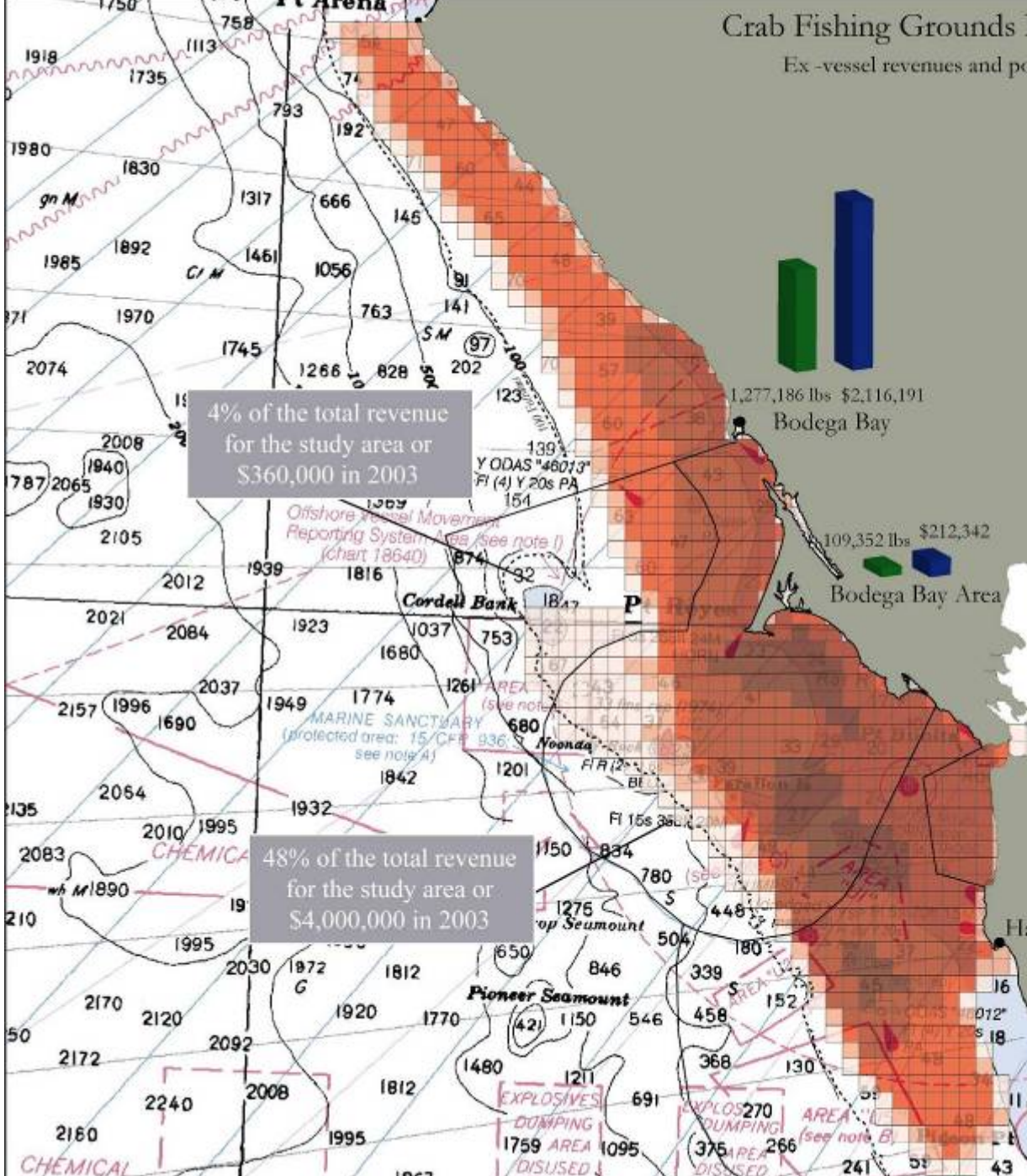
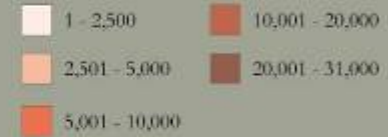
- Now that we can profile the fishing grounds spatially, we can then quantify the relative economic value of the sanctuaries



# Crab Fishing Grounds Based on Fishermen Local Knowledge

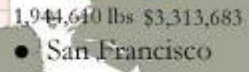
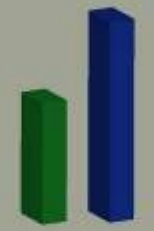
Ex -vessel revenues and pounds derived from California landing receipts, 2003.

Ex-Vessel Revenue per 3 Km Block



4% of the total revenue for the study area or \$360,000 in 2003

48% of the total revenue for the study area or \$4,000,000 in 2003



# Next Steps

- Final report – end of July, 2005
- Collecting additional information through interviews this summer in support of the Marine Life Protection Act for the state of California



# Thank You

- The sanctuary working group and managers, Anne Walton, Dan Howard, and Holly Price
- The research assistants that conducted the interviews — Sarah Klain and Amy Boone
- The fishermen
- The folks at California Department of Fish and Game

