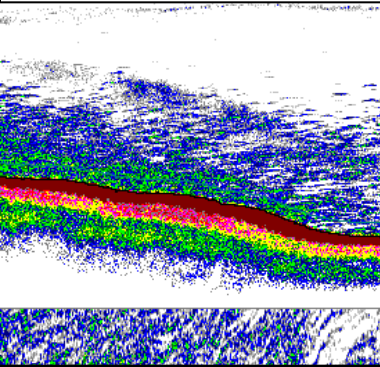




# Applied California Current Ecosystem Studies



**Where the whales are: working together to reduce the risk of whale strikes off San Francisco**

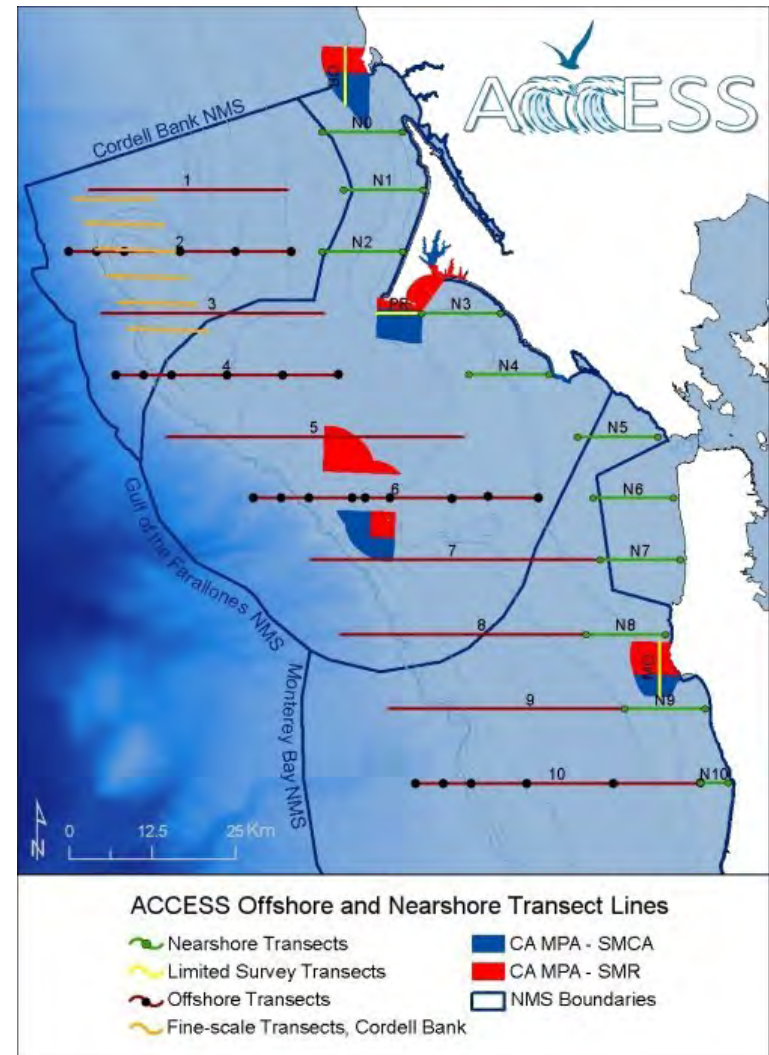
**Jaime Jahncke**, Kaitlin Graiff, Jan Roletto,  
Andrea Dransfield, Ellen Hines and many others

# Applied California Current Ecosystem Studies

Partnership that uses ocean research to inform resource managers, policy makers and conservation partners.



ACTIVE MEMBER OF



# A small vessel doing big science

At sea research initiated in 2004 and ongoing  
Survey cruises 3-5 times per year depending on funding

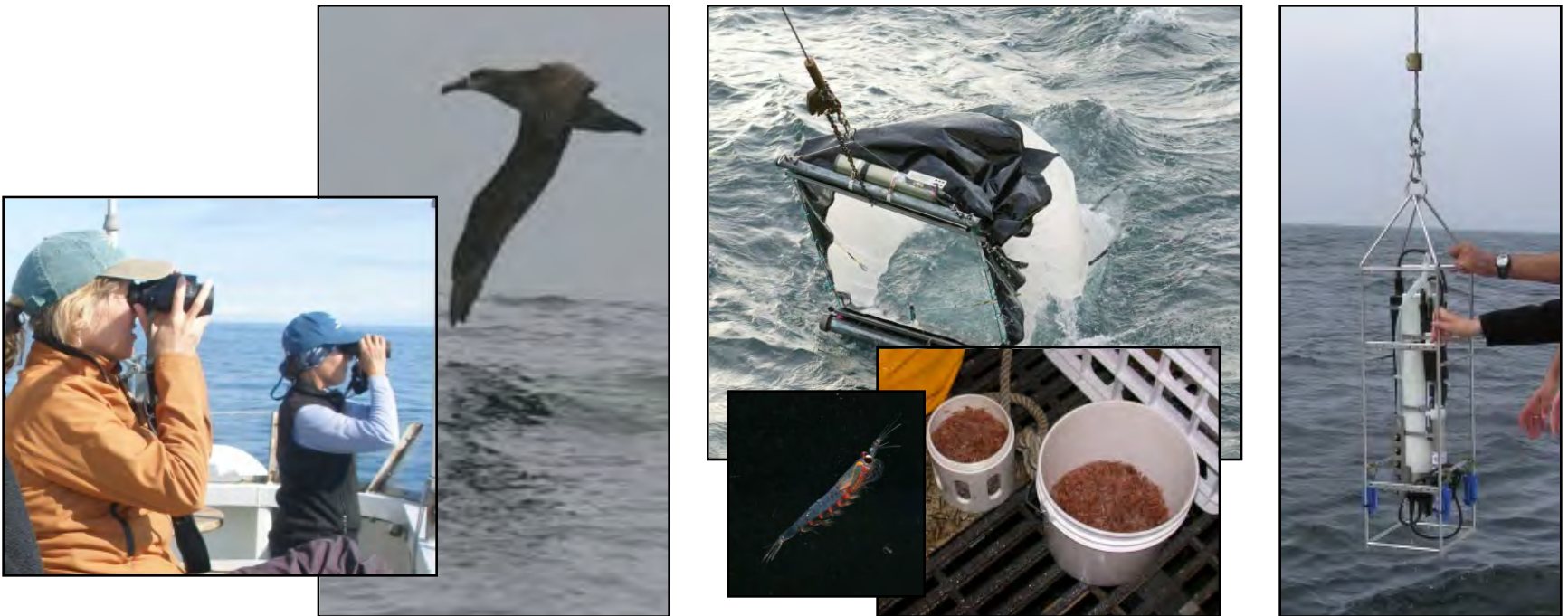


RV Fulmar

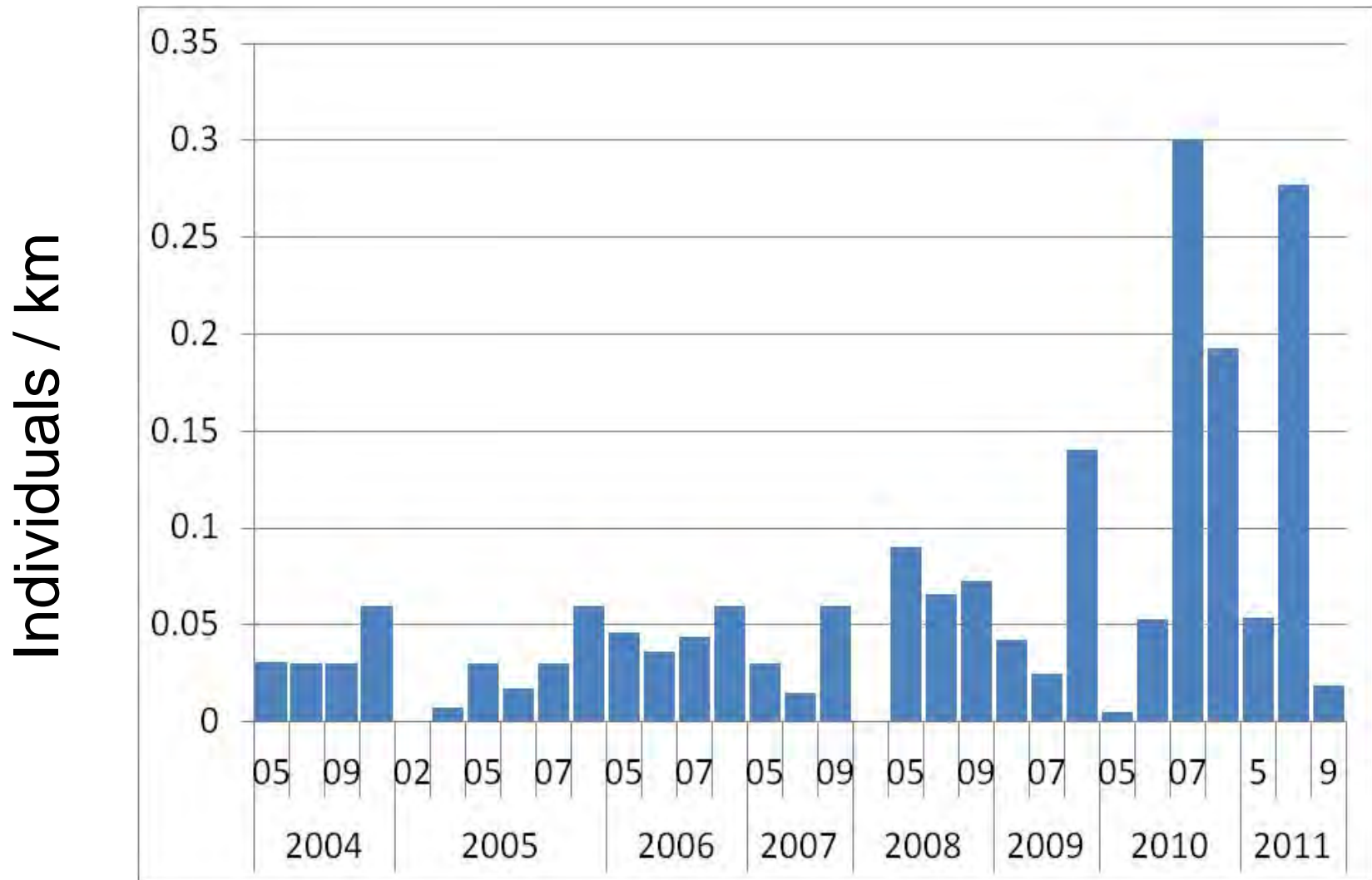


# Research takes an ecosystem approach

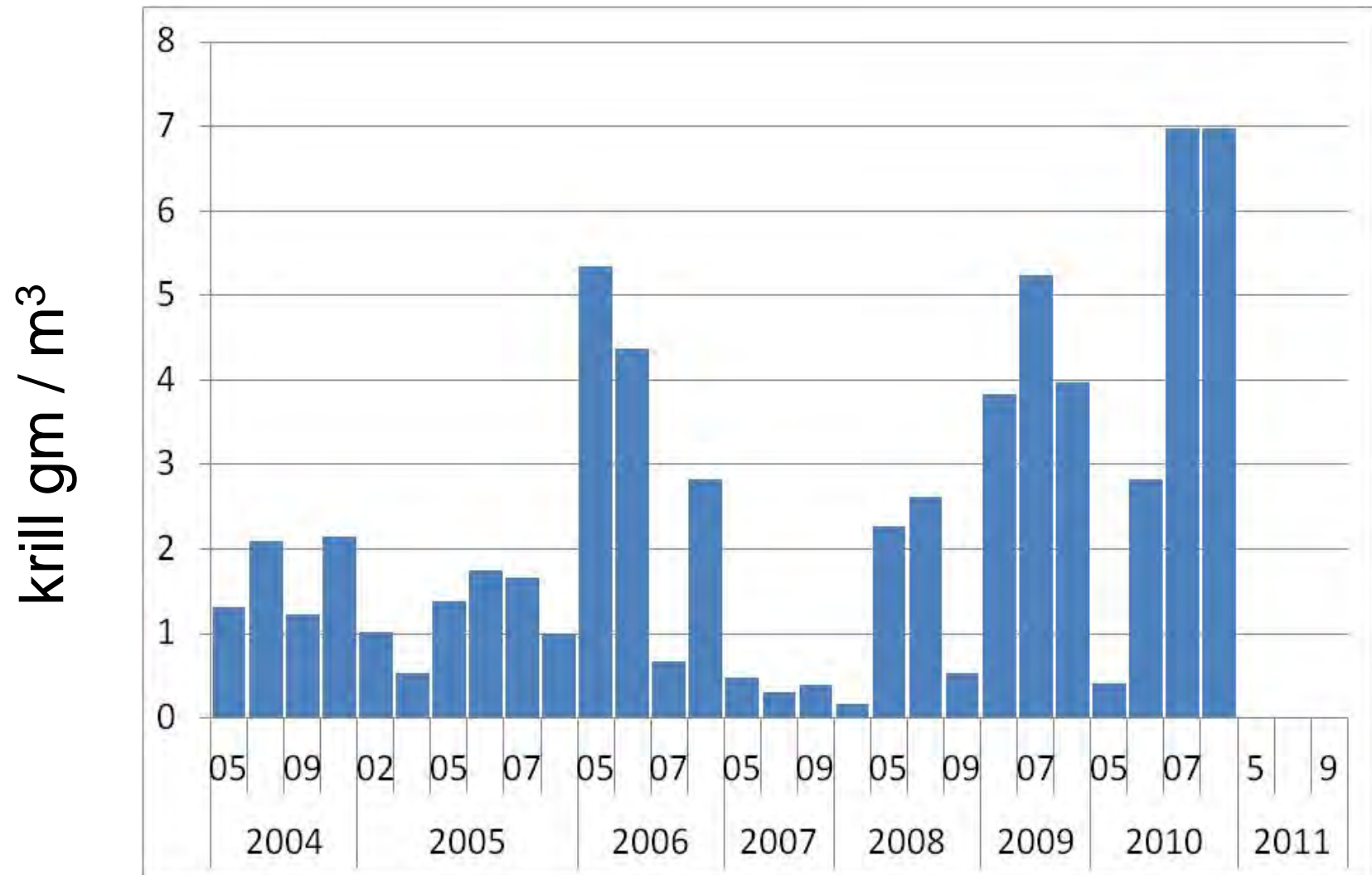
- Oceanography (CTD casts and continuous CT and fluorometry)
- Zooplankton/fish (hydroacoustics and nets)
- Birds/mammals (standardized strip and line transects)



# Humpback whale sightings have increased



# Acoustic 'Krill' biomass has also increased



## The issue: increasing whales in busy shipping area



Twenty whales struck in the vicinity of Cordell Bank and Gulf of Farallones in 1988-2011.



# Objectives

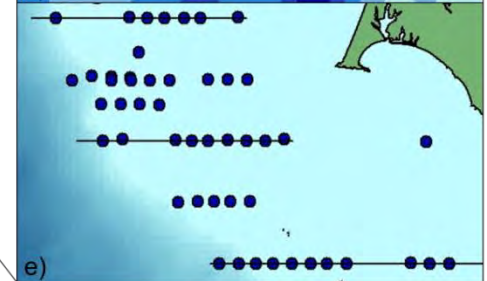
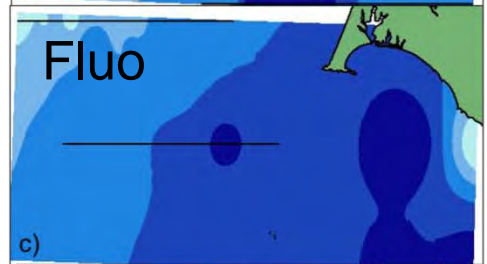
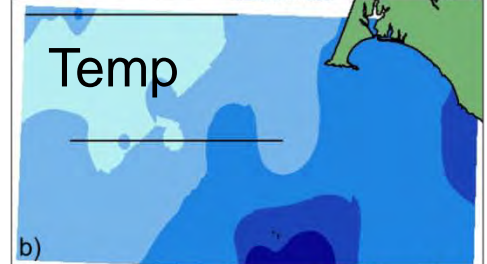
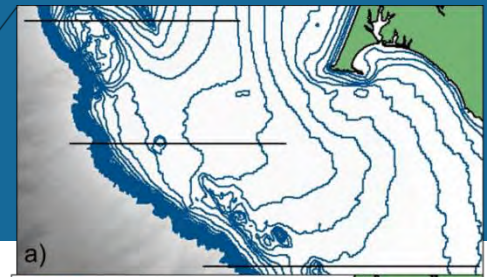
1. Identify habitat used by humpback whales within Cordell Bank and Gulf of the Farallones NMS.
2. Assess potential impact of proposed shipping lanes on humpback whale habitat within Cordell Bank and Gulf of the Farallones NMS.





# Methods

- Used statistics to assess habitat associations between whales and habitat.
- Bathymetric, oceanographic, regional ocean climate, and other variables.

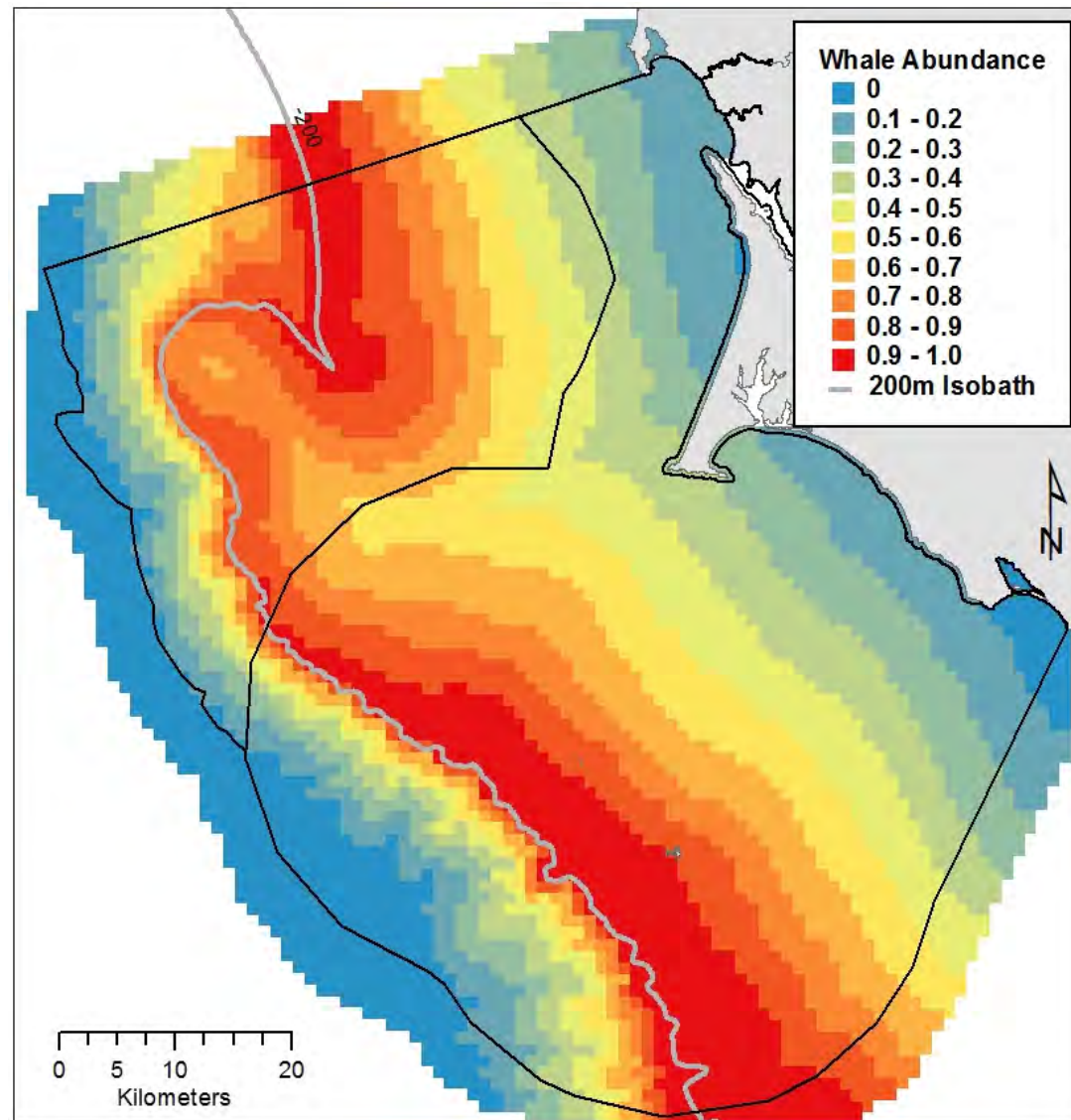




# Results

High number of whales  
in high salinity upwelled  
waters.

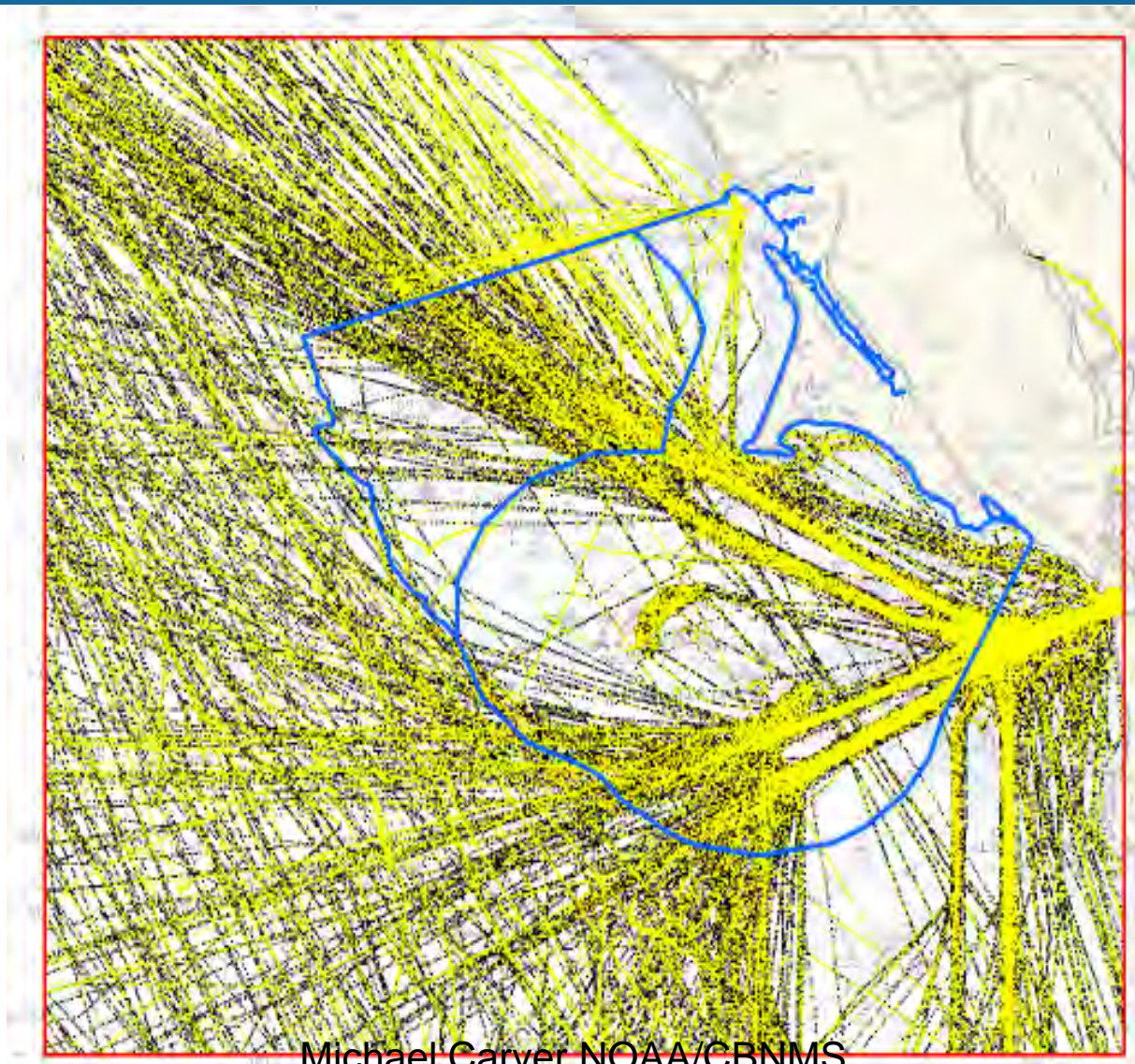
High number of whales  
near the edge of the  
shelf and shelf break.







# Vessel Traffic Patterns 2009

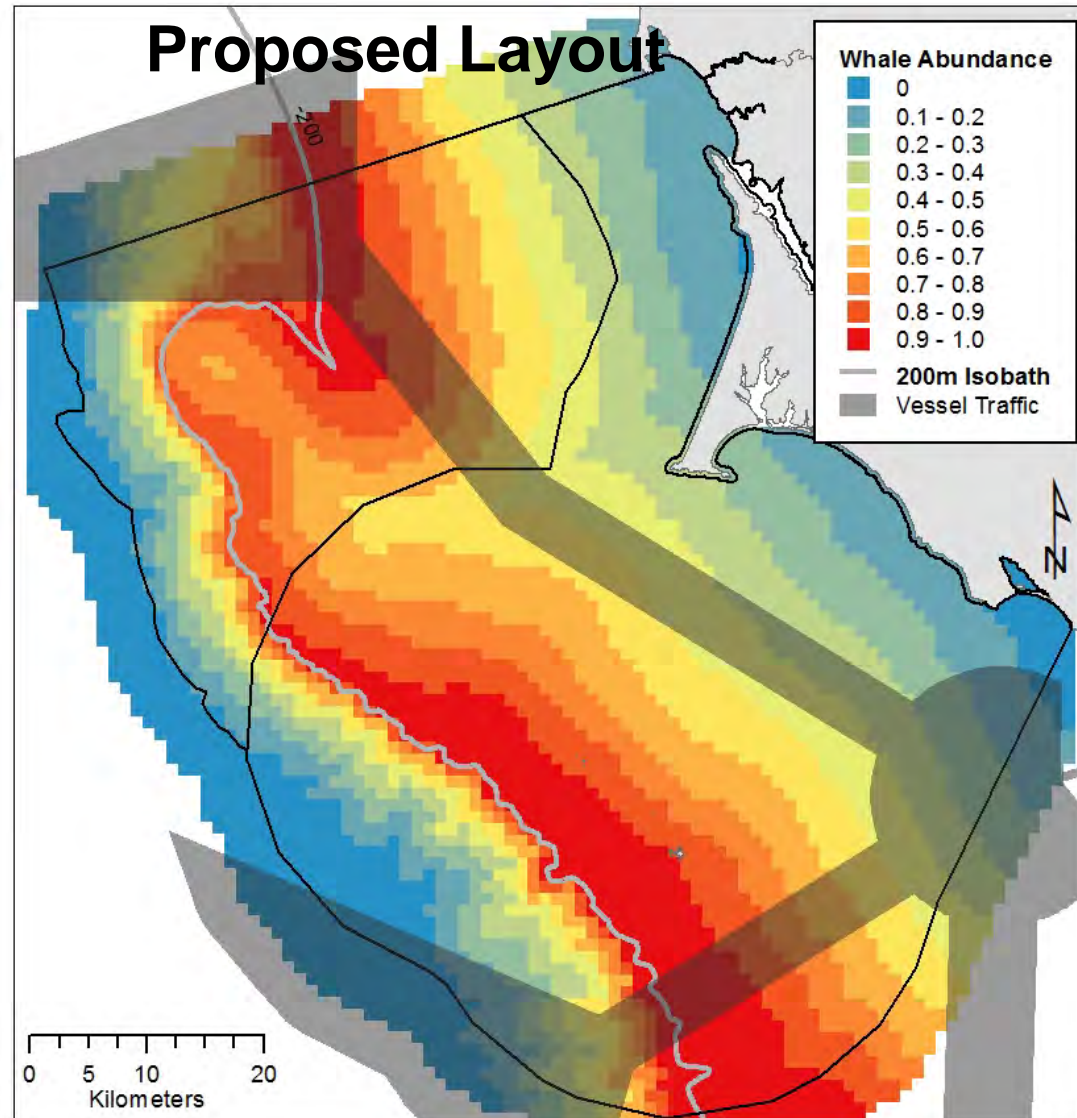




# Whale Distributions and Vessel Traffic

Proposed lanes will:

1. Decrease vessel traffic area within the National Marine Sanctuaries
2. Reduce potential conflict between vessels and preferred whale habitat







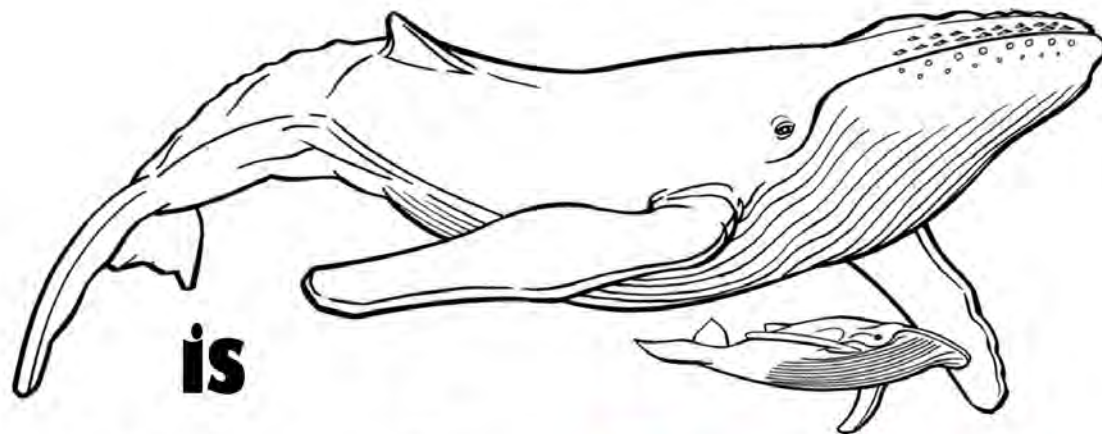
## Conclusion

1. Bathymetric and oceanographic variables are good predictors of humpback whale distribution.
2. The shelf edge and shelf break (N Cordell Bank, and SW Farallon Islands) are habitats consistently used by whales.
3. Proposed changes in shipping lanes will help decrease the potential risk of ship strikes to whales within Cordell Bank and Gulf of the Farallones NMS.



## Next Step

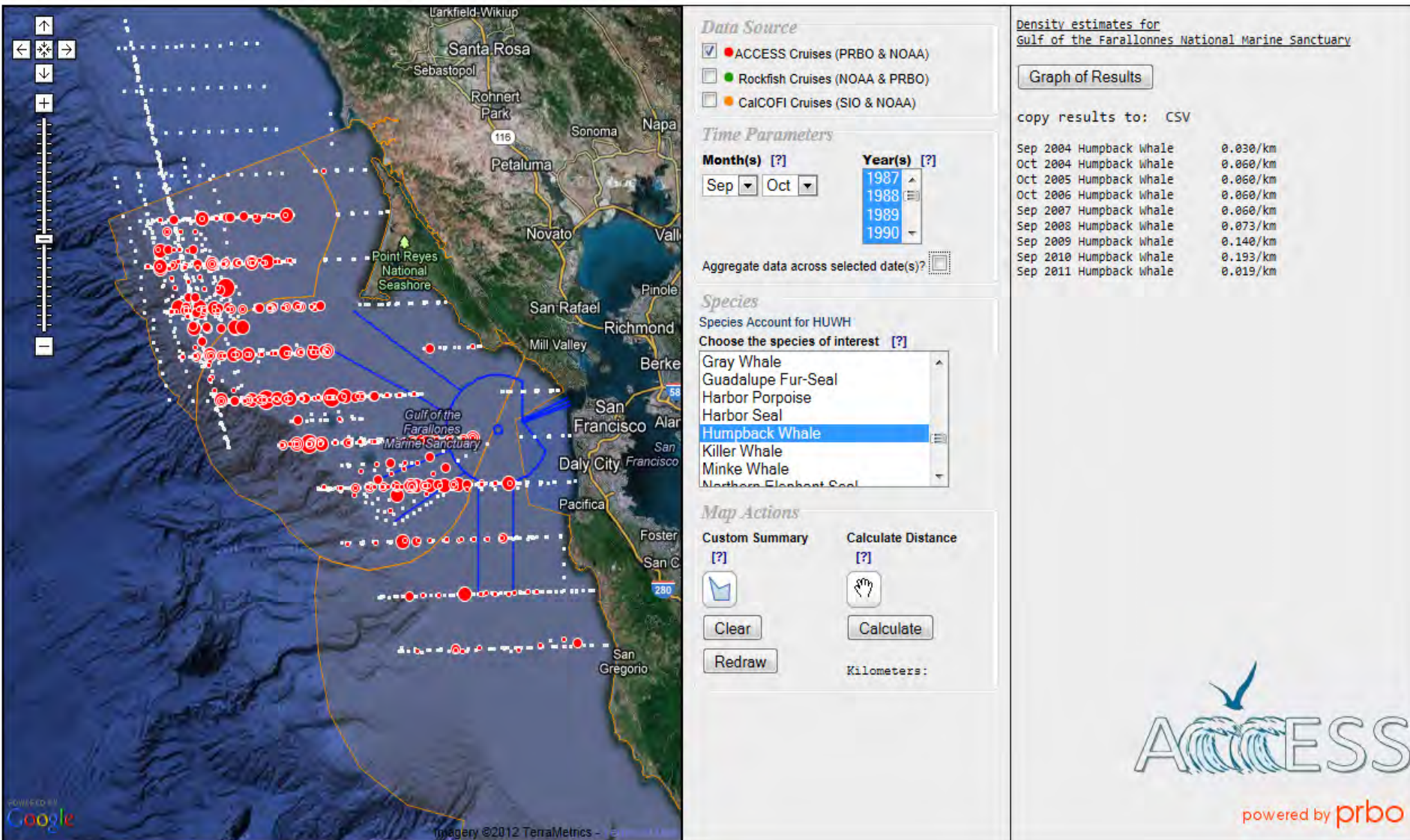
Develop a whale monitoring program that brings together multiple stakeholders including shipping industry, party boats, and scientists to help sanctuaries provide timely notice to mariners about areas with high numbers of whales.



**is**

**Whale Aware**

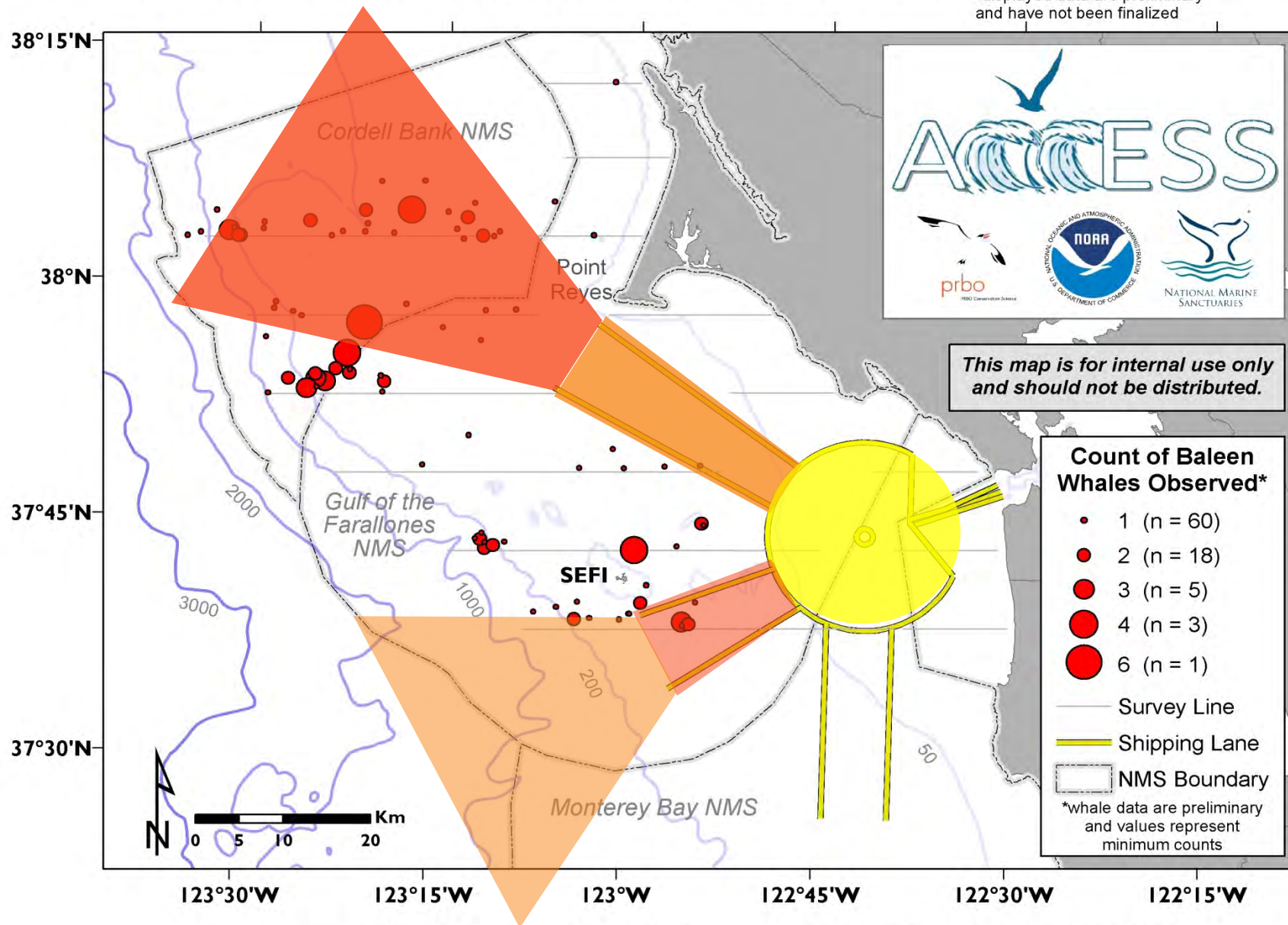
# Mapping, Summarizing, Graphing





# Whale Observations - July 2012 ACCESS Cruise - PRELIMINARY MAP\*

\*displayed data are preliminary  
and have not been finalized





# Acknowledgments

Boring Family Foundation  
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Gulf of the Farallones National Marine Sanctuary (NOAA)

Farallones Marine Sanctuary Association

PRBO Staff, Interns and Volunteers

**Thank you!**



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