

California Ocean Observing

California Department Fish & Game

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Ocean Monitoring Introduction

- PaCOOS is an expanded CalCOFI program integrating physical and biological observ. of the California Current
- Combine ocean observing in US, MX and CAN.
- Provide federal backbone for IOOS's
- Data Management and Synthesis
- Must incorporate fishery removals from the California Current system and how they relate to physical and biological observations
- For example, squid landings and El Niños, length weight relationships for ocean salmon, rockfish recruitment

DFG Fisheries Monitoring



Dependent

- Commercial landings receipts
- Recreational fisheries surveys
- Coastal Pelagic Species
- Groundfish port sampling
- 16 Commercial Logbooks

Independent

- Coast-wide kelp surveys
- Partner in nearshore finfish SCUBA surveys
- ROV sampling of deep-subtidal MPA and control sites

CFIS Commercial Landings Database

- Over 70,000 receipts collected containing
- Over 140,000 catch entries per year
- Oracle forms and reports
- 219 Oracle tables with 30 million records
- 500 Oracle Developer/SQL software modules.
- From 1969 to 2007 - present
- (1932 to 1969 on microfiche)
- Data Reconstruction Project

Sample Squid Logbook

LOG# 0666 1

MARKET SQUID LIGHT/ BRAIL BOAT LOG

Vessel Name: _____

Captain Name: _____

Vessel F&G Number: _____

Captain ID Number: _____

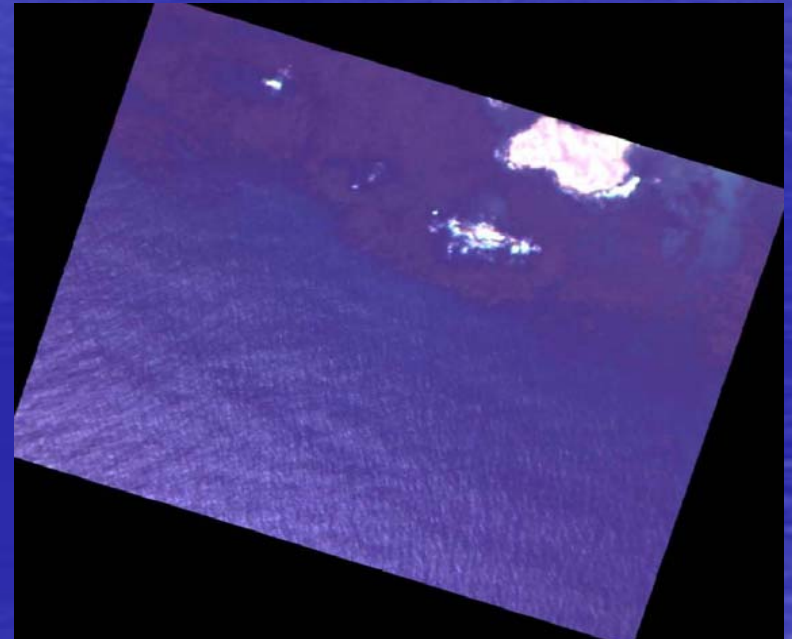
Date	General Location, to nearest geographic landmark. If location unknown use GPS coordinates.	Hours spent:		Name of Seiner that set squid	Total tons of squid caught by seiner	Estimated tonnage remaining after fishing is completed	Your Vessel's estimated catch			Were birds present? Y/N	Were marine mammals present? Y/N
		Searching (includes day sets)	Lighting				Amount for Live Ball (pounds)	Brail Permitees Amount Sold to Market (tons)	Brail Permitees Landing receipt #		

Comments: List by date any anecdotal information such as equipment problems, interference from other boats, weather-related problems, day set activity, etc.

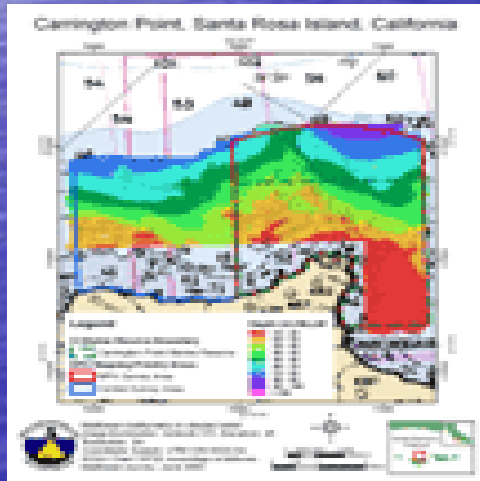
Annual California Kelp Surveys



- Annually fall 2002-2007, 1986, 1971
- Entire CA coast, including Channel Islands
- Multi-spectral digital photos
- Canopy coverage
- Geo-referenced GIS layers
- Readily available data (DFG FTP site)



Benthic Habitat Mapping



- Many MPAs mapped
- More nearshore habitats slated for mapping
- Goal is to map all of the nearshore rocky habitats
- Partner with CSUMB
Kvitek lab
CICORE
- Santa Rosa Is. Example
- Multibeam bathymetry

Marine Protected Area Monitoring

- Northern Channel Islands MPAs – Adopted 2002
- Central Coast MPAs – Adopted 2007
- Process working on north central Coast – in progress
- Next Region So Cal.



Gillnet Survey Sites



2007-8 FG Resources for California's Ocean Monitoring

- 44 new positions marine region CDFG
- Restoration of operating funds
- Partnership with OPC
- Directed funding of \$10 million
- For example, Ichthyoplankton sampling, CFIS and logbook upgrades, MPA sampling, fish tagging movement etc.

OPC A-6 Funded Ichthyoplankton Surveys with CalCOFI

- Focus on nearshore sampling
- Focus on state managed species such as lobster
- \$500,000 for two years to SIO start 2008
- Working with PI Tony Koslow SIO

Funds 2008 To Upgrade R/V Mako

- R/V Mako 30m Fish & Game research vessel
- \$120,000 yard work Aug. 1, 2008
- Upgrade engines, replace battery banks, Upgrade safety equipment, ventilation and heating, fire suppression
- Formal Process for Work Requests

Ocean Protection Council 2007

- Fund work to develop tools and methods to study climate change in the ocean
- Fund research on climate change and sea level rise impacts
- Work on Scenario analyses for CA's ocean with Ca Climate Change Action Team
- RFP for ocean acidification proposals

F & G Climate Change Initiative

- <http://dfg.ca.gov/climatechange>
- New Climate change coordinator DFG
Amber Pairis
- Implementing the CA Wildlife Action Plan
and Climate Change Task Force
- Convene Climate Change and Ecol. Res.
workshop in Sacramento June 6