

Ecosystem Studies Program



Mission,
Goals,
Vision

Central Pacific

- 2002; 2005;
irregular intervals

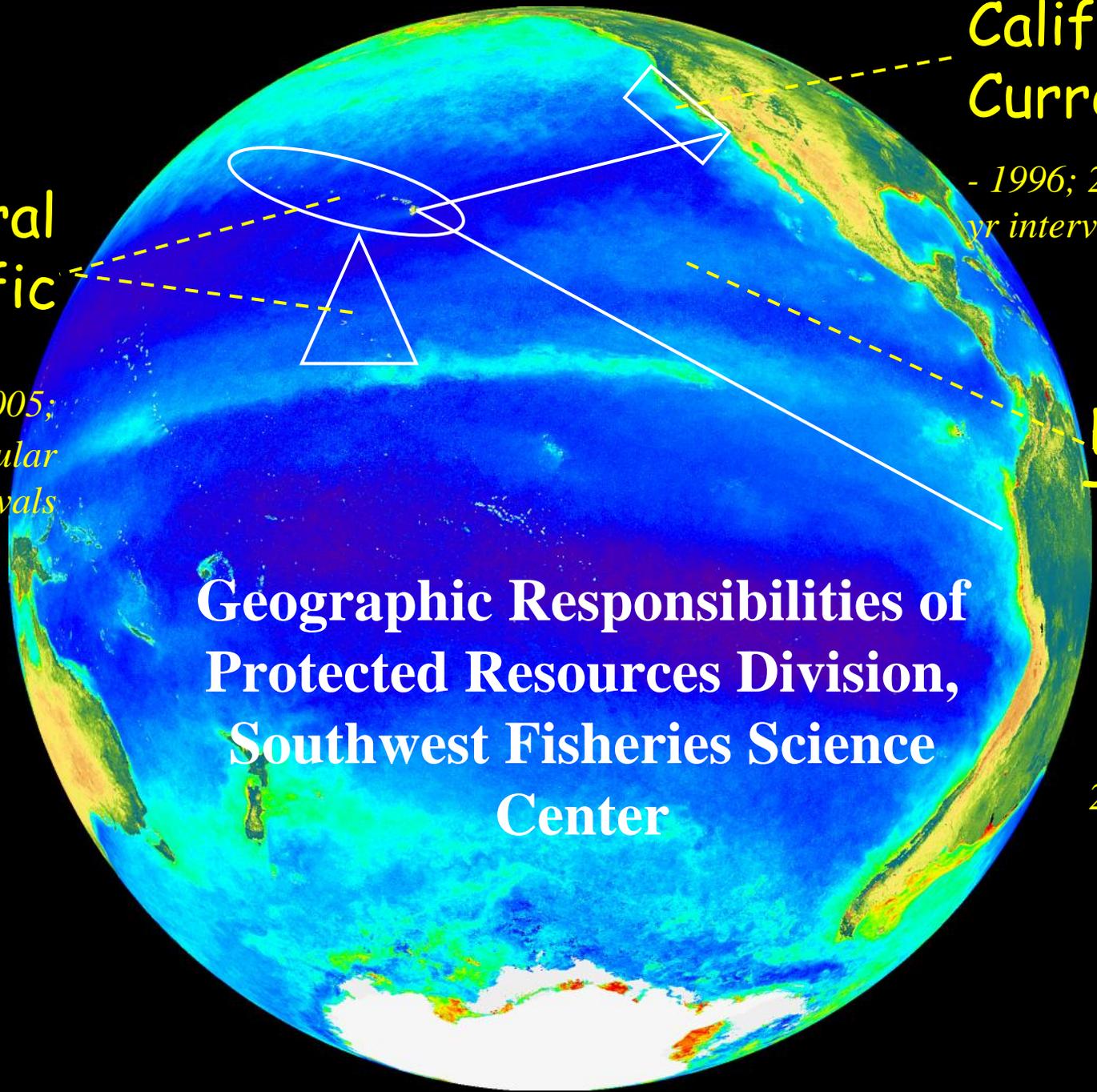
California Current

- 1996; 2001; 2005; 3
yr intervals

Eastern Tropical Pacific

- 1986-1990;
1992-1993;
1998-2000;
2003; 2006; 3
yr intervals

**Geographic Responsibilities of
Protected Resources Division,
Southwest Fisheries Science
Center**



Protected Species Monitoring Through Assessment Cruises

- Annual
- 240 sea days/year
- August - November
- 2 NOAA research vessels



A Multidisciplinary Approach



Protected Species Abundance

- Abundance Estimation



- School Size Calibration



Protected Species Biology

- Population Structure



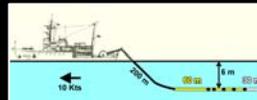
- Behavior



- School Structure



- Acoustics



- Photo Documentation



Ecosystem Assessment

- Physical and Biological Oceanography



- Prey Fishes and Squids



- Seabirds



- Cetaceans



- Marine Turtles



Science Piggybacks

- Sperm Whales

- Status of Seabird Populations and Species

- Acoustics

- Cetacean Photo-ID and Photo Documentation

- SIO Aquarium Collection

- Food Web Isotope Signatures

Why Ecosystem Assessment?

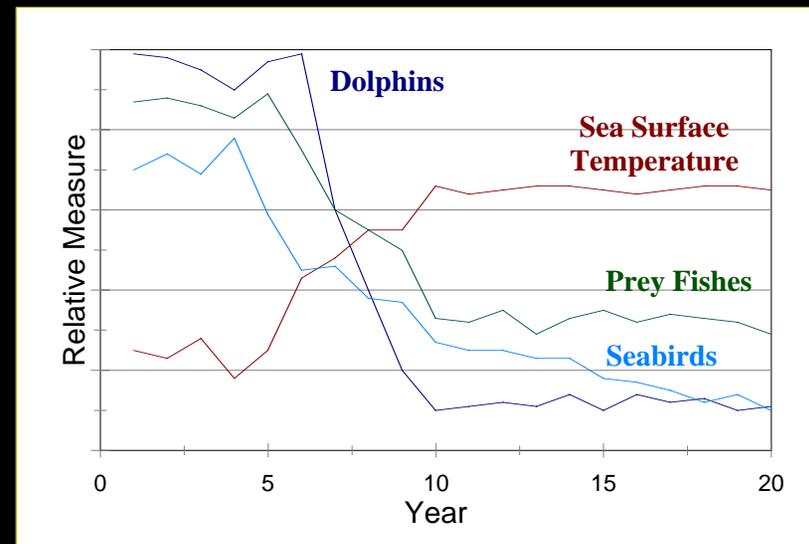
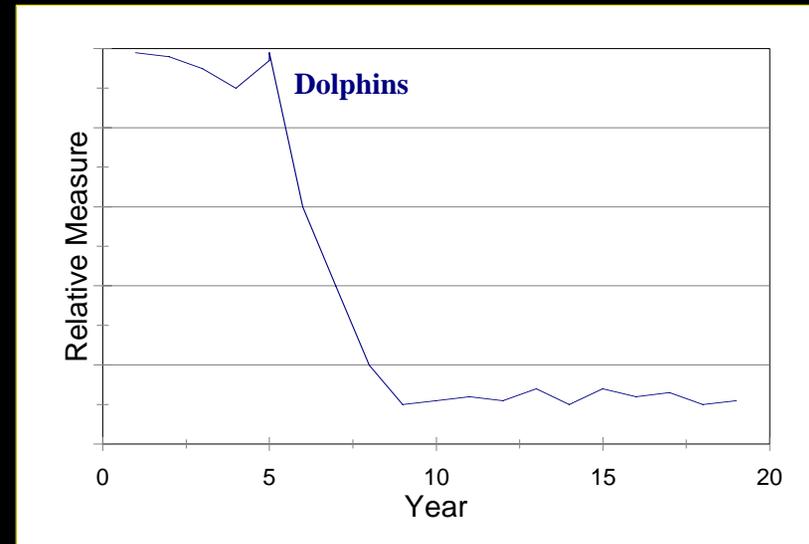
➤ Provide Context for Interpretation

❖ Provide data for development of ecosystem approaches to management

❖ Add to basic knowledge for logistically challenging marine systems

Ecosystem Studies standard on all Assessment Cruises

Hypothetical Data



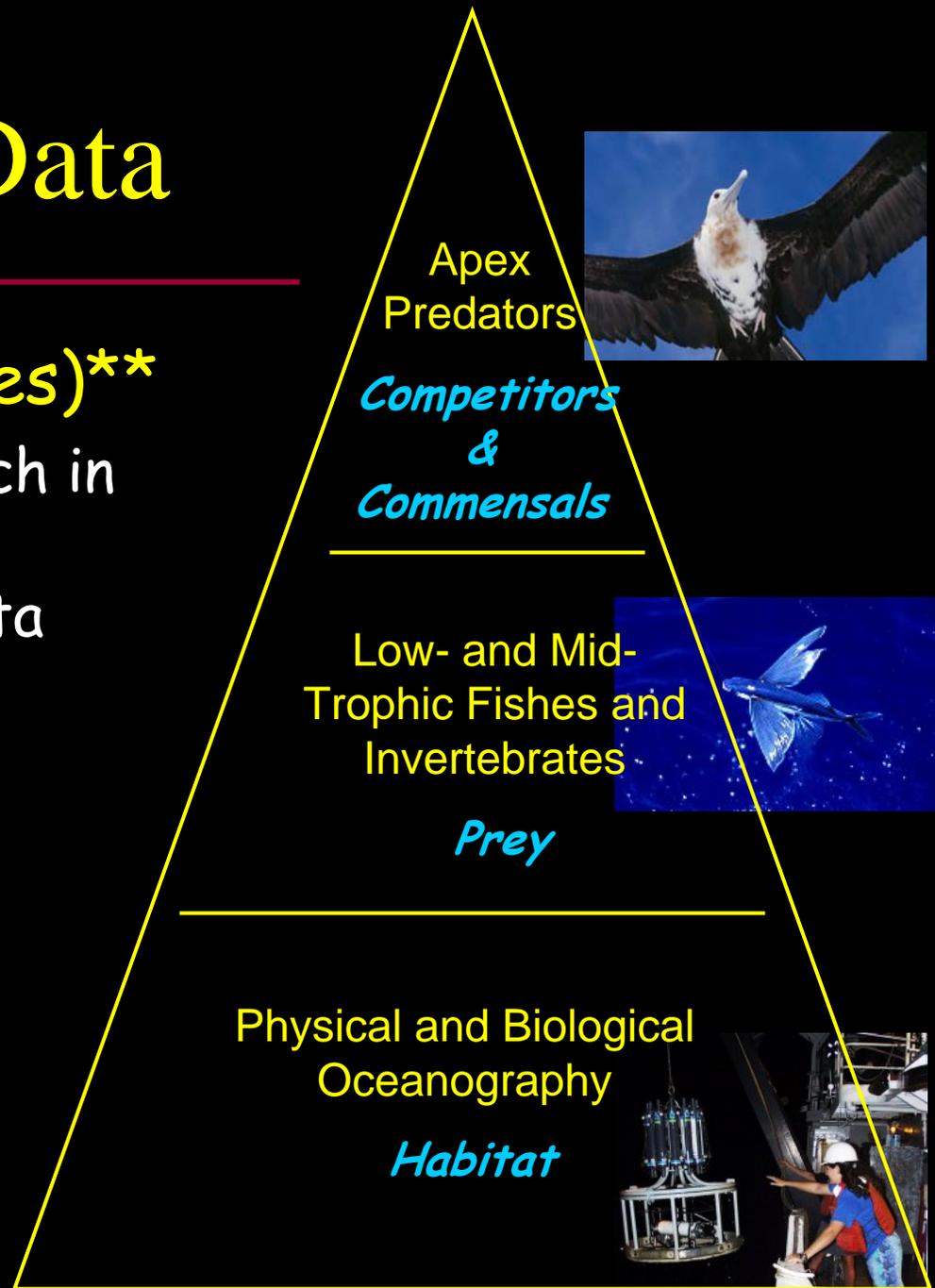
The Mission of the Ecosystem Studies Program

- Use Ecosystem Measures to Contribute to Protected Species Assessment
 - Interpretation
 - Prediction
 - Informed Decision-Making
 - Provide Ecosystem Data

an Ecosystem Approach to Management

Ecosystem Data

- ****In Situ (R/V Cruises)****
 - Provide an exact match in space and time with protected species data
 - Provide water column properties
- **Remote Sensing**



Research Goals

1. Identify habitat requirements for protected species
2. Develop models that predict distribution and density of protected species
3. Understand the effect of ecosystem variation in space and time on protected species
4. Identify physical and biological indicators that track (predict) protected species
5. Incorporate ecosystem measures into protected species assessment
6. Construct models that predict the ecosystem effects of various management strategies, so as to better inform policy makers
7. Make ecosystem data available on site to our constituents in a manner that complies with IOOS standards

Five-Year Goals

- Develop species-habitat models for a suite of cetaceans in the ETP and CA Current
- Compare line-transect abundance estimates with those produced from habitat models
- Determine how to best interpolate oceanographic data between sampling locations
- Identify physical and biological oceanographic sampling that must be done in-situ, and what can be accessed via other means
- Quantify biological effects of late 1970s regime shift in the ETP
- Construct a model for the eastern tropical Pacific to predict ecosystem effects of different methods of tuna fishing
- Lead 2006, 2009 STAR Cruises, 2007 Process Cruise
- Fully implement Data Management system; data request policies and tracking of data requests