ECOSYSTEM PRODUCTIVITY OFF THE U.S. WEST COAST DURING 2006

This report summarizes the most recent observations of oceanographic and biological conditions in coastal waters off the U. S. west coast during 2006. A more complete analysis, which will include additional results from ongoing and near-future surveys, is underway. However, scientists, managers, and the media are quite interested in the unusually poor productivity of the California Current ecosystem (CCE) this year, particularly in the context of similar anomalous conditions of 2005 and the associated reproductive failure of a number of fish and sea bird species.

Oceanographic Background

Coastal upwelling is the most important process for providing nutrient-rich water to surface waters in the CCE. Typically, the onset of sustained upwelling in April-May initiates the spring bloom and stimulates biological productivity. Through July 2006, coastal upwelling has been unseasonably weak off California. Coastal sea surface temperatures have been 1-4°C above normal during spring and summer, an indication of weak upwelling and low nutrient availability in surface waters. This pattern is similar to 2005, when the onset of sustained upwelling off northern California, Oregon, and Washington was delayed by several weeks and upwelling was generally weak during most of the summer. This has been implicated in the overall poor biological production of the ecosystem in 2005. Upwelling has been generally strong off Oregon and Washington in 2006, although very weak in May and June. The warm conditions in the CCE have occurred during a weak La Niña period in the equatorial Pacific; thus El Niño is not the source of the present state of the ecosystem. (Frank Schwing, POC)

West Coast Fisheries

The SWFSC and PWCC/NWFSC completed a coastwide midwater trawl survey of young-of-the-year (YOY) groundfish that lasted 45 days and surveyed the entire west coast from San Diego CA to Cape Alava WA. This is the sixth consecutive year that a large-scale pre-recruit survey has been completed. Sampling during the survey, which was conducted by the R/V David Starr Jordan and the F/V Excalibur, was designed to measure the reproductive success and year-class strength of winter-spawning species of rockfish (*Sebastes spp*.), including bocaccio, widow, chilipepper, shortbelly, and canary rockfish. The 2006 survey encountered very low catches of YOY rockfishes and other groundfish (e.g., Pacific whiting and sanddabs), similar to results obtained in 2005. Although the abundance of YOY rockfish in recent surveys has been very low, the relationship of those observations to future recruitments of groundfish stocks is uncertain and is a topic of active research. A Pre-Recruit Survey Workshop will be held September 13-15th at the SWFSC Santa Cruz facility to further explore this issue.

In addition, the survey monitors interannual variability in the distribution and abundance of the epipelagic micronekton community (e.g., krill, squid, sardines, anchovies, and lanternfishes). An assemblage analysis of those data indicates that off central California the community is shifted to a more southerly/offshore set of species. Likewise, ichthyoplankton data indicate reduced (or perhaps delayed) spawning of several species (e.g., Pacific sardine and northern anchovy). Catches of market squid (*Loligo opalescens*) were also much lower than normal. Lastly, reproduction of some sea bird species in the Gulf of the Farallones, off San Francisco, is very poor. Together these observations suggest a large-scale failure in production in the CCE during the upwelling season in 2006. (Stephen Ralston, POC)