DYNAMIC HABITAT MAPPING FOR LARGE PELAGIC SPECIES OF THE CALIFORNIA CURRENT

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We are developing a Pelagic Habitat Analysis Module (PHAM) to inform management on the spatial and temporal distributions of commercial and bycatch pelagic species. The project merges fishery-dependent (logbooks, observers, surveys, etc.) and fishery-independent (research surveys, tagging projects, etc.) data with satellite imagery and circulation models to analyze the habitat of each species. We use this information to predict the distribution of species of interest, determine areas of species overlap, and inform the population dynamics models used in stock management.

The PHAM resides within the EASy GIS system which provides a 4 dimensional (latitude, longitude, depth, and time) platform that integrates the various types of data. Data analysis tools include EOF analysis of satellite imagery, data matching between environmental data and species distribution data, and statistical regression techniques for examining relationships between environmental conditions and species habitat. PHAM utilizes the results from these tools to produce dynamic maps of predicted species density based on given environmental conditions. We have begun to apply the tools in a study that aims to assist management of target catch and bycatch of several species along the California coast, including blue shark (*Prionace glauca*), swordfish (*Xiphias gladius*), and common thresher sharks (*Alopias vulpinus*). The results of this study will indicate both temporally and spatially where a targeted species and a bycatch species have overlapping habitat, providing decision support for management. In addition to species distribution and interactions, PHAM integrates the remotely sensed data and NASA circulation models to provide further insight into the environmental drivers that affect recruitment variability and stock size.

In this talk we will present data and preliminary results from our analysis and demonstrate the utility of applying remotely sensed satellite data sets and circulation models to fishery management, which is often conducted with little or no environmental data.