C-13. Dynamic Habitat Mapping for Pelagic Shark Species of the California Current

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We are developing a Pelagic Habitat Analysis Module that integrates satellite imagery and ocean circulation models into the management of commercial and threatened pelagic species. The project merges data from fishery surveys, tagging projects, and fleet reported catch and effort with satellite imagery and circulation models to analyse the habitat of each species. We use this information to predict fish distributions, analyse population overlap between species, and inform models of population dynamics that are used for stock management.

The PHAM resides within the EASy GIS system which provides a 4 dimensional (latitude, Longitude, depth, & time) home for all of the various types of data. Tools include EOF analysis of satellite imagery, data matching between environmental data and shark location data, and statistical regression techniques for examining relationships between environmental conditions and shark habitat. Results are applied 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 by-catch of several species of shark along the Californian coast, including Blue (*Prionace glauca*), Mako (*Isurus oxyrhynchus*), and Thresher sharks (*Alopias vulpinus & Alopias pelagicus)*. We are using environmental data to define habitat for each species and identify the interactions between several species. The results allow us to identify both temporally and spatially where a targeted species and a threatened species have overlapping habitat, providing decision support for management of by-catch issues.

As well as describing fish distributions in space and time, the remotely sensed data and NASA circulation models are allowing us to improve understanding of 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.