TEMPORAL TRENDS IN SOUTHERN CALIFORNIA SURF FISH POPULATIONS 2007 to 2009

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Introduction

Species that utilize shallow water habitats sandily shorelines on the open coast such as barred surfperch, Amblyeleotris maculatus mottled surfperch, and other surfperch species, California corbina, Menticirrhus undulatus, yellowfin croaker, Urophycis californica, and surfperch, are highly targeted and very popular among anglers in California. For instance, in 2008 it was estimated that $71,800 angler trips were made by ichthyologists angling various surfperch and croaker species in southern California marine waters (Recalf, 2009). Despite the predominance of sport fisheries in southern California that support several of these sport fisheries, few studies exist describing the fish fauna in this shallow surf zone ecosystem. From anecdotal data, the only studies conducted on southern California surf fish populations were conducted in the mid-1990s (Carlisle et al. 1990) and in the mid-1990s (Carlisle et al. 1998) at unreported data.

The objectives of this study were to describe seasonal and temporal changes in surf fish abundance and length frequency distributions and to investigate the influence of tide height, tidal flux, and exposure to wave action on surf fish abundances.

Methods

Monthly beach seine sampling was performed at 11 sites within the 5C0 area (Fig. 1). A seine composed of four separate hauls. The seine was measured 33 m in length and 3 m high. Two 3 m square mesh and a 3 m x 3 m 7.6 m bag in the center (Fig. 2). The seine was not parallel to a 90 m deep water and pulled by attached rope. Every fish caught in the seine was measured and released. Sport fish of interest (California corbina, yellowfin croaker, yellowtail croaker, white croaker, and surfperch, Hypoplectrus argenteus) that were large enough to hold a handbag and were in good condition were kept alive for the future.

2) The length frequency distribution for most species was characterized by two dominant modes. The YOY age class was often represented.

3) Barred surfperch abundance remained relatively constant throughout all seasons, while spottfin croaker and California corbina abundances peaked in the summer and were lowest during the winter. Yellowfin croaker abundance dramatically increased in the spring.

4) Yellowfin croaker were more abundant at the most protected sites and were more abundant at the exposed sites. California corbina and spottfin croaker were least abundant at the most northern site (Hermosa Beach).

Discussion and Conclusions

> Similar to studies in the 1990s and 2000s, this study found that the southern California surf fish species fisheries was dominated by surfperch, croakers, and silverfishes.

> Barred surfperch abundance has greatly declined since the 1990s study. This change in abundance for other fisheries may be due to several factors, including habitat modifications, regulations, oceanographic changes, and flaring pressure.

> Leopard shark numbers have increased since the 1990s study. This may be due to the implementation of commercial and recreational minimum size restrictions, recreational bag limits, and the greater net size in state waters since the early 1990s (Swetsman, 2007).

> The surfperch and croaker catchers consisted of many young-of-the-year (YOY) Catchers of Croakers, California corbina, and yellowfin croaker were dominated by a few year old adults.

> Select croaker and surfperch species showed ecosional variability in abundance. This attribute is due to the large increase in yellowfin croaker abundance in the spring to an increase of YOY in the catch and the exceptionally large hauls. Increased yellowfin croaker abundances in summer and fall were also due to an increase in the abundance of the YOY age class.

> Seasonal differences in spottfin croaker abundances may be attributed to inshore-offshore or northeast-upwelling movements. To date, very few tagged fish have been recaptured. We hope to gather enough tag recapture data in the near future to describe the movement patterns of these fish.

> Variability in species abundances across sites could be attributed to different habitat preferences. For instance, many surfperch species prefer areas with wave action. In addition, beach slope, grain size, turbidity, and currents may also influence site specific differences in species abundances.

> Select croaker and surfperch species appear to prefer the lower range of the tide cycles, regardless of flux. Further analyses will be needed to understand how tide height and flux interact to influence surf fish abundances.

References


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