

## SOUTHWEST FISHERIES SCIENCE CENTER RESEARCH REPORT

The Southwest Fisheries Science Center (SWFSC) executed a number of highly migratory species (HMS) research projects in 2007 in collaboration with various domestic and international partners. During the latter half of 2007, projects executed included:

The SWFSC and Southwest Region (SWR) have been working on a project to determine the survivability of blue sharks caught and released alive by the California drift gillnet fishery. Blue sharks are the second greatest bycatch species in number behind the common mola in this fishery. Roughly 35 percent of the blue sharks caught are released alive, but their fate is unknown. During the 2007-08 fishing season, seven sharks in various conditions at time of release were tagged with satellite tags. The tagged fish were tracked and preliminary results indicate that survivability is high. The study is to continue in the 2008-09 season with smaller-sized sharks tagged to determine size variation in survival.

A collaborative project was initiated by the SWFSC, SWR and Pflieger Institute of Environmental Research in spring 2007 to determine the survivability of thresher sharks caught and released alive by recreational fishermen. Anglers often hook the tails of thresher sharks and pull the fish backwards to the boat. When long fight time is involved, the fish can be exhausted by the time it is drawn to the boat for release. Four thresher sharks, hooked by the tail by anglers, were fitted with satellite tags and released. Preliminary results indicated that mortality occurs soon after release; however, the sample size was small. Further tagging is planned for 2008 to increase the sample size, undertake physiological studies to assess capture stress and explore modifications to the gear to reduce tail hooking.

In a continued effort with the American Fishermen's Research Foundation since 2001, the SWFSC scheduled a cruise for tagging of albacore with archival tags off Oregon in October 2007. Owing to poor weather conditions and lack of fish, however, the cruise was cancelled. Another cruise is being planned for 2008 to make up for the lost opportunity and tag about 100 albacore with archival tags.

SWFSC scientists participated in a number of HMS stock assessments during 2007. One set of assessments involved review of work done by the Inter-American Tropical Tuna Commission (IATTC) staff on Eastern Pacific Ocean yellowfin tuna and bigeye tuna. The scientists were part of an international group organized by the IATTC to review their results. The scientists found the assessments to be of high quality with data as recent as 2006. Results indicated that the Eastern Pacific Ocean yellowfin tuna and bigeye tuna stocks were being heavily exploited. Fishing mortality estimates indicated that a reduction by 15 percent for bigeye tuna and by 3 percent for yellowfin tuna would be necessary to maintain the spawning stock biomass at levels producing the long-term average maximum sustainable yields.

Another set of assessments involved collaborations with Interim Scientific Committee (ISC) member scientists in conducting stock assessments for North Pacific albacore, striped marlin and Pacific bluefin tuna. The assessments for albacore and striped marlin were full assessments and

with data as recent as 2004. Results for albacore indicated that recent fishing mortality is high and recent spawning stock biomass is at record high. The ISC advised that fishing mortality be reduced to prevent the spawning stock biomass from falling to historical low levels in the future. Results for striped marlin indicated that recent fishing mortality is high and the spawning stock biomass is at extremely low levels. The ISC advised that fishing mortality be reduced.

The stock assessment for Pacific bluefin tuna was a partial assessment to verify whether the 2001 recruitment was exceptionally large and hence, able to replenish a low spawning stock biomass and support a high fishing mortality. Results indicated that the recruitment was not exceptional, but may be larger than average. Additional years of data will be required to verify if the 2001 was above average. The ISC, however, advised that fishing mortality,  $F$ , not be increased above recent levels as a precautionary measure. In the meantime, the ISC will be completing a full stock assessment in 2008.

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