

NMFS SWFSC HMS RESEARCH REPORT

Juvenile Mako and Blue Shark Survey

The juvenile mako and blue shark fishery-independent survey, conducted to determine abundances, was completed in July and extends the time series for the annual survey to 17 years. Few juvenile mako and blue sharks were encountered this year in the focal survey blocks; the nominal catch-per-effort for both species was the lowest for all years sampled. Cold water conditions may have resulted in a delay in pupping or a change in distribution of the juvenile sharks. Following the survey, the cruise traveled farther offshore to conduct a study to test rare-earth metals as possible shark deterrents. A large number of blue shark pups were encountered during the latter part of the 30 day cruise, many near birth size with visible umbilical scars, supporting the idea that pupping was delayed relative to previous years. The deterrent study, that was initiated in collaboration with the PIFSC last year, is now complete and shows that the deterrents have no effect on the catch rate of either mako or blue sharks, but has proven effective at deterring hammerhead shark pups in Kaneohe Bay, HI. During the research cruise, the SWFSC continued conventional and electronic tagging studies and collected biological samples for population genetics and other studies.

Neonate Thresher Shark Survey

The neonate thresher shark fishery-independent survey, conducted in nearshore waters from Point Conception to the US/Mexico border, was completed in September. This is the fifth year of the survey and aims to monitor the relative abundance of thresher shark pups as a measure of relative recruitment of reproductive female abundance. In contrast to the results of the mako/blue shark survey, a large number of thresher shark pups were caught; the nominal catch-per-effort was the highest for the history of the survey despite the lowest average surface temperature. During the research cruise, the SWFSC continued conventional and electronic tagging studies and collected biological samples for population genetics and other studies.

Post-Release Survival of Thresher Shark

The SWFSC, SWR and Pflieger Institute of Environmental Research are conducting a study to assess the post-release survival of thresher sharks caught by recreational anglers. During the first phase of the study, sharks were released after tail hooking and results demonstrated that survivorship is low for sharks greater than 185 cm fork length or enduring fight times exceeding 85 minutes. Mouth hooking techniques are likely to increase survivorship and efforts are underway to educate anglers about mouth hooking techniques and to promote catch and release practices for the recreational shark fishery.

Archival Tagging of Albacore

Since 2001, over 600 archival tags have been deployed off the US West Coast in order to determine migration patterns and other life-history characteristics of albacore. Recovery rates for albacore are very low with only 22 tags returned to date. A publication describing the results from the first 20 tags returned has been submitted and is currently under review. The results show that juvenile north Pacific albacore move throughout the entire North Pacific. Movements of subgroups of fish were limited, however, and 5 distinct migratory patterns were described. Horizontal and vertical movements showed seasonal and spatial patterns that were linked with oceanographic features, particularly the depth of the thermocline. In

coastal US waters during the summer and fall, where the sport and commercial fleets concentrate, albacore tend to be surface oriented spending most of their time in the mixed layer. Offshore and in winter and spring, or off Japan, the nighttime swimming depths are highly correlated with the bottom of the mixed layer whereas during the day albacore spend significant time below the thermocline and may exploit prey in the deep scattering layer. This fall two tagging trips were conducted off the US West Coast in cooperation with the commercial and recreational fleets with an additional 76 tags deployed.

International Shark Collaborations

In July 2010, the ISC created a shark working group that will initially focus on assessments of shortfin mako and blue sharks. The new working group aligns with recent initiatives of the IATTC under the new Antigua Convention to advance research and assessments of sharks encountered in IATTC fisheries.

ISC Albacore Working Group

The Albacore WG held 3 meetings in 2010, including one 12-19 October 2010 and is on track to complete an assessment with data through 2009 in March 2011. The WG will use the forward simulation, fully integrated model, Stock Synthesis 3, and has explored many modeling scenarios and comparisons with the former VPA based assessment.