Fishing for Science

A recent study led by scientists at the University of Miami takes a close look at the physiological effects of catch-and-release shark fishing.

Throughout Florida and the nearby Bahamas there's an increasing trend in conservation initiatives promoting the health and well being of critical shark species, although worldwide populations continue their rapid rate of decline. While recreational sport fishermen almost always release sharks, the associated stress has profound effects on their fitness and health. In an effort to enhance the data and future management of these apex predators, scientists at the University of Miami (UM) Abess Center for Ecosystem Science and Policy and the Rosenstiel School of Marine and Atmospheric Science carefully studied and observed the consequence of fisheries interactions.

NEARLY 100%
of all tracked tiger sharks reported for at least 4 weeks after release, which was significantly higher than bull sharks (74.1%) and GREAT HAMMERHEAD SHARKS (53.6%).

After observing the effects of catch-and-release fishing on five coastal shark species found in South Florida and The Bahamas, the UM scientists ranked each species by degree of sensitivity to stress, from most to least disturbed.

1. HAMMERHEAD SHARK
2. BLACKTIP SHARK
3. BULL SHARK
4. LEMON SHARK
5. TIGER SHARK

83 SPOT tags have been deployed, with total time needed to affix a satellite tag averaging 4 minutes.

Analyzing blood physiology and conducting reflex impairment assessments, scientists also sampled pH, carbon dioxide and lactate levels, and attached satellite tags to study post-release survivability.

Fight times for all 102 blood- and reflex-sampled individuals ranged from 9 to 185 min.

Sharks were captured using standardized circle-hook drumlines and restrained on partially submerged platforms.

“Our results show that while some species, like tiger sharks, can sustain and even recover from minimal catch and release fishing, other sharks, such as hammerheads, are more sensitive. And just because a shark swims away after it is released doesn't mean that it will survive the encounter. This has serious conservation implications because those fragile species might need to be managed separately, especially if we are striving for sustainability in catch-and-release fisheries and bycatch scenarios.”

- Abess Center Ph.D candidate Austin Gallagher.