DSU Research Focuses on Sand Tiger Shark Conservation

Posted: December 24, 2010

The Sand Tiger Shark has been around for 250,000 years.

Despite the female shark's ability to only produce two baby sharks every couple of years, the species has managed to survive very well over most of that time.

DSU graduate research student Johnny Moore assists in measuring a sand tiger in the Delaware Bay.

However due to directed fisheries and unintentional bycatch, the sand tigers are now considered to be a Species of Concern by the U.S. National Marine Fisheries Service (NMFS) as a result of significant population declines over the last several decades.

In an effort to reverse this trend, DSU fisheries staff and students are working in collaboration with the Delaware Department of Natural Resources and Environmental Control (DNREC) and the NMFS as part of a five-year $350,00 grant. The primary focus of this grant is to develop a conservation plan for sand tigers in the Delaware Bay, which serves as an essential habitat for sand tigers. Working with regional stakeholders, Dr. Dewayne Fox, associate professor of fisheries, is leading the effort to identify threats to sand tigers to assist in rebuilding populations of this large shark.

Since 2005 Dr. Fox and his lab have been working in collaboration with Dr. Brad Wethebee of the University of Rhode Island on Delaware's sharks. Sand tigers are the largest commonly occurring shark in Delaware waters and ecologically serve as an apex predator, feeding on mainly smaller fish and invertebrates. Although sand tigers are found in many nearshore areas that are also popular swimming destinations, they are generally not considered dangerous to humans.

The Delaware Bay serves a unique role in the conservation and recovery of sand tigers as it serves as a critical foraging habitat during the summer months when most growth occurs. In fact, the Delaware Bay is thought to have one of the largest population of sand tigers in North America, further emphasizing the need to collect information on their habitat requirements.

The sand tiger research efforts at SDU take place during the warm summer months when the species return from their overwintering grounds spanning the waters off of North Carolina to Florida. There are three components to the project:: 1.) is developing a better understanding of the sand tigers' habitat needs; 2.) to identify threats or hindrances to the species recovery; and 3.) outreach and education.

Research on the sand tiger habitat requirements is based on cutting edge technology that utilizes an extensive array of passive acoustic receivers. DSU staff and students capture sand tigers using baited lines with up to 100 hooks at a time. Upon capture, each sand tiger is measured and the sex is determined. In 2010, DSU researchers managed to land a total of 113 sand tigers – some of which were as much as 11 feet in length.

Throughout the course of the summer research work, about 25 to 50 sand tigers are surgically implanted with transmitters that have a battery life of 6.5 years. These transmitters are individually coded and allow researchers to track the movements of tagged sand tigers. The data on the movements of sand tigers is then developed into predictive models, which allow the NMFS and DNREC to better predict the impact of human action on sand tiger habitats.

The information on the movements of tagged sand tigers is also central to planned outreach and education activities. Through a web-based interface, members of the public will be able to track the movements of individual sand tigers during the species' residency in Delaware Bay as well as in locations where the transmitters are detected on distant arrays.

DSU's sand tigers have been recorded numerous times in North Carolina and Georgia. One sand tiger that was tagged in the Delaware Bay in 2008 has been recorded by NASA scientist at Cape Canaveral, Fla. during the past two winters. That same sand tiger has returned dutifully to Delaware's waters during the summer months in a previously unknown linkage between Delaware and Florida.

DSU graduate researcher Johnny Moore implants a transmitter in a small sand tiger prior to release in the Delaware Bay. Dr. Dewayne Fox (l) restrains the sand tiger.

Dr. Fox joking noted, “Who doesn’t want to visit Florida during the winter months?”

The DSU researcher said the goal is to work with stakeholders such as commercial fishers, the U.S.Army Corp of Engineers, and others to provide them with guidance on when is the best time for conduct their activities.

He noted that the need for a better understanding of the species' habitat is especially important in light of the dredging activities of the U.S. Army Corp of Engineers. Such research data can help provide guidance to minimize the impacts of such activity on the sand tiger.