After a three-week expedition in the waters off Montauk, NY, where OCEARCH and its collaborating scientists tagged a total of nine young-of-the-year white sharks and confirmed the first known nursery – and likely birthing site – for the great white shark in the Northwest Atlantic, OCEARCH headed to Nantucket, MA for its 27th expedition to tag mature great white sharks.

The expedition, largely supported by Costa Sunglasses and YETI Coolers, began on September 20 and ended on October 10th. The data gathered will build on the ongoing research and previous findings from great white sharks Mary Lee, Lydia, Katharine, Betsy, and Genie. During this expedition, OCEARCH and its collaborating scientists were able to increase the sample size necessary to get a complete picture of the movements and habitats for adult white sharks in the North Atlantic.

This expedition was a great success socially. Facebook had 6.9M impressions. Twitter had a reach of 19M and on Instagram the following increased by 2.3K with total engagement at 36K. The local community in Nantucket, including the press, was welcomed to tour the ship and meet the science and fishing team. OCEARCH participated in several events, including a presentation at The Nantucket Project.
The expedition media coverage registered a total of 624M impressions for online news sites and 8.3M impressions for broadcast.

OCEARCH assembled a collaborative science team of 15, representing 12 of the finest research institutions in the world – Center for Shark Research at Mote Marine Laboratory, Wildlife Conservation, Society’s New York Aquarium, MA Marine Fisheries, Woods Hole Oceanographic Institution, University of Massachusetts, Adventure Aquarium, Cape Eleuthera Institute, University of North Florida, Auburn University, College of Charleston, Cape Canaveral Scientific, Georgia Aquarium – and world-class fishermen to catch, tag, and release sharks safely.

“12 procedures in 15 minutes and then off they go, that’s our goal,” said lead scientist Dr. Robert Hueter, Director of the Center for Shark Research at Mote Marine Laboratory. “It’s such an incredibly rare opportunity to learn everything we can about these magnificent predators so that we can understand and protect them.”

The team of scientists, led by Robert Hueter, Senior Scientist and Director of the Center for Shark Research at Mote Marine Laboratory, tagged and sampled six great white sharks (Grey Lady, Cisco, YETI) including the first male (George) ever satellite-tagged in the North Atlantic.

"The six large white sharks sampled and tagged during Expedition Nantucket provide a major leap forward in science in the Northwest Atlantic,” Dr. Hueter added. “We more than doubled the sample size of large sharks sampled for the institutions taking part in OCEARCH-supported studies.”
OCEARCH now has a total of 20 satellite-tagged white sharks of various life stages swimming in the North Atlantic.

“It’s especially exciting that we sampled and tagged our first large males, one of which was sexually mature,” said Dr. Hueter. “Once a male shark has been satellite tagged, you can overlap his tracks with the female tracks and begin to understand where they meet, eventually locating the breeding areas.”

All 20 satellite-tagged white sharks are on the Global Shark Tracker and we are currently following the patterns of these sharks to learn more about their migratory behaviors. Anyone and everyone can follow their movements by accessing the near-real time, free online Global Shark Tracker or by downloading the Global Shark Tracker App available for Apple and Android platforms.

All sharks were fitted with a satellite transmitter tag, PSAT tag, and an acoustic tag. In combination with the satellite tags, the PSAT tags will allow researchers to reconstruct three-dimensional movements of the white sharks up to six months after deployment. The resulting data will shed light on the interactions between white shark behavior and their physical environment.
All research – tagging, sampling, etc. – was conducted aboard the world-class 126-ft M/V OCEARCH research vessel. The M/V OCEARCH gives scientists unprecedented access to sharks of all sizes in terms of time at sea but more importantly hands-on access to the animals. This combination allows research to carry out previously impossible scientific data collection.

Sharks were caught using OCEARCH methods, i.e. handlines from tender and brought onboard the mothership platform. Once caught, tiger sharks were measured, sexed, tissue (blood, muscle and fin clip) samples were collected and animals were tagged with satellite and acoustic transmitters. Fin clips were removed with a pair of scissors; a muscle sample was removed from the flank with a 8mm biopsy punch, and blood was taken from the caudal vein. Fin samples were stored in alcohol, muscles samples were kept in ice and frozen as soon as possible after collection. Blood samples were spun in a centrifuge to separate red cells and plasma, with both
components immediately placed on ice and transferred to a freezer.

The satellite tag will help scientists examine fine and broad-scale movements, habitat use, site fidelity, residency, and feeding behavior of white sharks in southern New England and along the east coast of the US.

The blood collected will help scientists: (1) quantify relative acid-base, electrolyte, and metabolite disturbances in the blood of white sharks exposed to capture, air exposure, and handling; (2) examine immediate and delayed post-release mortality with satellite tracking; and (3) characterize post-release recovery in this species using accelerometry. The blood will also help in the analysis of reproductive hormones (estradiol and progesterone for females, testosterone for males) with the objective to assess reproductive condition, reproductive cycle, gestation period, and fecundity.

Compound-specific stable isotope analyses will be conducted on the muscle tissue collected from the sharks to examine temporal shifts in trophic position, changes in isotopic baseline values, and/or migration between isotopically distinct habitats, in order to understand the trophic ecology of white sharks.

Muscle tissue will also help develop reference values for trace minerals, vitamins, and fatty acids for a variety of elasmobranch species in order to identify parameters that may need to be adjusted or supplemented in captive diets. These nutritional parameters may also lend some insight into the nutritional status and health of free-ranging populations when partnered with other sample analyses (e.g., stable isotopes, clinical pathology panels, heavy metals).

The parasites collected will be used to begin to understand baseline ectoparasite data (parasite species presence, abundance, and infection site) from large white sharks.