

OCEARCH – Saving Our Oceans: One White Shark at a Time

Gary Lehman

On August 21 *Dive News Network* had the opportunity to go aboard the marine science ship *MV Ocearch*, the floating laboratory ocean-saving fortress for the Ocearch team. Ocearch is led by activist, visionary, filmmaker and outdoor adventurer Chris Fischer. The ship was anchored a few miles offshore the eastern tip of Long Island, NY southwest of Montauk point. The 20-day mission off Montauk was to catch juvenile white sharks, and gathering data about them in order to build a data baseline about this species in this ocean region. The waters off Long Island show strong and persistent indications that this ocean region is a pupping/nursery area for *Carcharodon carcharias*, the white shark.



Montauk Lighthouse at east end of Long Island

Many questions surface: why care about sharks - and about 'dangerous' white sharks in particular? What is Chris Fischer's mission and mindset? How does OCEARCH fit into the general scheme of marine environment conservation and environmental advocacy? What is the business/funding model here? What and who is benefitting from OCEARCH's work? DNN sat down with Chris for a look backward and forward, and got to the bottom of these questions and more!



We've come a long way from this model of the 3,500lb white shark caught by Frank Mundus in 1986

A Day In The Life Aboard *MV Ocearch*

To catch the sharks, fishermen are positioned aboard *MV Ocearch* and use the back deck as their fishing platform. Local fishermen also join



Crewmember scans the sky during the August solar eclipse on the day of our white shark tagging

the fray, trolling the waters around the mothership in smaller sportfisherman-style boats. (Long-time Long Island Eastender and high school teacher Greg Metzger was aboard such a fishing boat when he caught the white shark on August 21st ; Greg is a veteran white shark fisherman with many years



of collaboration with Ocearch, and a long history of friendship and professional association with other LI Eastenders in the Long Island Shark Collaboration research project. Relatively benign circle hooks (which are easily removed and do not cause any internal injuries to



sharks) are used. Once a target species (on this expedition, the white shark) is caught, the shark is maneuvered to the starboard side of *Ocearch*, and positioned over a custom platform which is pre-lowered into the water. The platform is then raised up out of the water, with the shark accessible and docile on the platform.



A team of marine biologists and scientists then quickly descend upon the shark, with a maximum of fifteen minutes to take all samples and perform all measurements and tagging. The team keeps water flowing through the shark's gills, and covers its eyes and head with a wet towel to keep it calm and minimally stressed. The exoskeletal skin of the shark is kept wet throughout the procedure. The wellbeing of the shark is paramount; on the day *DNV* was aboard, the veterinarian team included Alisa Newton (Harley), Head of Aquatic Health at Wildlife Conservation

Society's New York Aquarium (<http://nyaquarium.com/>) and Dr. Mike Hyatt, lead veterinarian of the Adventure Aquarium in Camden (<http://www.adventureaquarium.com/>). Several other scientists, marine biologists and environmental advocacy leaders participated in this expedition and assisted with many aspects of the care of the shark, including Scott Curatolo-Wagemann (marine biologist, educator); Gaelin Rosenwaks (marine biologist, Fellow at Explorers Club and Royal Geographic Society, and Coast Guard captain) and Tobey Curtis, Fishery Management Specialist at NOAA -- among others with whom we did not have an opportunity to speak.



2 Juvenile white Azlyn getting measured and tagged

The data collected/actions taken on the detained sharks include: size and weight measurements, stress levels monitored, blood samples, health assessment, and the implanting and attachment of various kinds of tags and monitoring devices. Azlyn is believed to be the first juvenile white shark to have an abdominal implant to measure internal temperature. (Implanting a pinging thermometer deep into the shark seems intrusive, however the relationship between internal and external temperature is important to understand because apex predators like white sharks must be able to generate an instantaneous burst of speed to catch prey. White sharks and makos have the ability to generate sudden

bursts of speed by keeping their body temperature and muscles warmer than the surrounding water if necessary).



Ami Meite (Ocearch), Harley Newton (WCS) and Tobey Curtis (NOAA) take five after successful tagging



Marine biologists and scientists welcome a newly-tagged juvenile white shark

The various geographic positioning tags work in different ways due to different technologies. The goal is to effect non-intrusive attachment of tags which communicate to satellites, providing accurate geographic positioning whenever the dorsal fin breaks the surface long enough for the satellite to lock on. Repeating locational data points shed light over time about the shark's movements, migration, and life and times. The tags work very well... if you want to check out where 16' 3,900lb white shark Mary Lee last pinged in, you can easily do so at the Ocearch website. (Unfortunately, as of August 29th 2017, her last tag read was over two months ago - so the team is somewhat concerned about her welfare and speculate that her tag might have simply just worn out, having been placed on her dorsal fin in September, 2012. Tags have improved tremendously since that time, and it is possible that this older, early generation tag is now no longer working as designed. However, for it to have worked so long and so well with such a dramatic and rich history of geographical location pings from Mary Lee is fantastic!)

Who Cares, it is just a bunch of sharks

What about all this data? Who gets it, and who pays for it, what is the overall idea behind all this data? Why bother? It's just a bunch of sharks - and how about "get even, eat a shark"? Fortunately, even the commercial fisheries industry (initially all for shark destruction) now has emerged (mostly) from these retrograde pronouncements. That said, some local politicians have grandstanded for a 'shark cull' for their presumed supportive constituents near Chatham, Massachusetts (whose maritime visitors include white sharks making occasional predations on the local seals). Hopefully though, enough science, common sense (and ridicule...) has been delivered to those individuals to suppress further nonsense talk about shark culls. In fact, scientist and marine biologist Scott Curatolo-Wagemann – himself a shark attack survivor – is part of a group of shark attack victims who travel extensively and vigorously defend and advocate for sharks. He conducts outreach for kids and groups across NY.

The facts about sharks - similarly to terrestrial apex predators – wolves and bears and lions and all the rest—is that these species make predations on the sickest, weakest (and unlucky) members of the target prey. The best gene pool survives the predations; the weakest gene pool holders do not. Chris Fischer gave us a primer on the results of wolf reintroduction in Yellowstone; it is pretty straightforward: Without the wolves the elk population was booming, and they were wiping out the aspen and willow trees. When wolves were reintroduced, that stopped. Balance returned. Desertification of Yellowstone was reversed. OTHER animals returned with renewed/corrected vegetation growth patterns and because the wolves kept the coyote population in check. Very few predations were made on local livestock on a wolf-by-wolf basis, and individual problem wolves were relocated. This was a total win/win for all involved. Chris noted that apex predators not only remove bad gene pool and control the prey population, but also *change behavior*. Seals off Chatham for example, would happily swim around devouring all the local fish, but they risk the high likelihood of predation by the white sharks in the area if they do that, so ... they don't. They swim out to deep water, grab a snack of fish, and quickly high tail it back to shallow water - where the sharks aren't. Similarly, squid come to the surface at night to feast on cod and pollack fry (babies). (I have seen tens of thousands of squid at the surface at night, illuminated in the lights of the tuna boat I was on. Then, silver flashes – blue sharks gulping down squid. And in so doing, saving untold zillions of cod and pollack babies from the attacking squid.)

So, Chris points out, if you want your kids and grandkids to ever actually eat a fish, *save a shark!*

Fischer's Transformational Initiative

Fischer's formula is also pretty simple: we are all in this together, on spaceship Earth. The overarching objective is to create an Ocean Community – a basis and central open source for data for worldwide scientific, academic and commercial collaboration/synergy/integration in support of the health of our oceans - without which we perish. Fischer says that he is not a 'shark guy'; he says he is an 'OCEANS



Chris Fischer, founder of OCEARCH

guy'. The Ocearch team is in the forefront of collecting baseline data for keystone species like the white shark. Never before in history has this data been collected. Basic life cycle & etiology awareness of the white shark - and shark disappearances of up to 90% for some species - was a blank page as recently as 2005; Fischer discovered to his stunned amazement while working on a plan to help billfish that scientists and academics were not sharing whatever little data they had on sharks, and limited to no cooperation was offered or even possible. There were islands of substandard information and data – isolated

and not connected – and no collaborative efforts among the 'siloes' -- with no opportunity for the integrative, methodical analysis which is necessary to serve as a basis for policy formulation. As go shark populations, so goes the rest of life in the oceans, plain and simple. This explains the surging interest in Ocearch and the data being collected. Ocearch pioneers these data collections methods, and they are not held as proprietary and are freely shared, as is all the data. *You just have to go to the Global Shark Tracker and look at it or ask for it.* Academic, scientific and commercial organizations are rising to the challenge and supporting Ocearch's operations.

Fischer cites as his greatest victory: the dismantling of cynicism in the academic and scientific community. And yet, challenges for Ocearch remain as a function on human nature; in particular the phenomenon known as the “not invented here” syndrome – some individuals who wish to discredit Fischer and Ocearch’s methods, because the pioneering techniques and free-sharing of data take the spotlight away from their own efforts or because they advance polarizing points of view. By counterpoint, Fischer is all about inclusion, not exclusion. Open source data and methodologies, and *definitely not* proprietary. Fischer is creating a worldwide oceanic analog of the “Marshall Plan”, which was put in place for post-war Europe emerging from the ashes of humanity’s most devastating war. Fischer is working to create an awareness of ‘enlightened and mutual self-interest’ – based on the fact that as go our sharks, so goes our oceans, and our own species and life on Earth. Fischer observed that if the oceans are dead, then Millennials (those born in the late 70’s through 2000) won’t be needing any Costa sunglasses to wear while enjoying the world’s oceans! Millennials hear the call to environmental activism and are drawn to companies with a social and environmental activism. (We all experience this; I feel good about buying from companies that support the causes I support). All things considered, advocacy for the Ocearch mission must continue up the hill, constantly taking fire from skeptics, some groups feeling that they are competing with Ocearch for funding. Fischer’s initiative = dump the polarizing emotions. These are obstructionist, cause gridlock and must be bulldozed away in favor of investigative marine biology scientific and census data. Don’t expect Fischer to back off any challenges from opponents or skeptics!

Get Even, HUG a Shark

Fischer’s model is WORKING. Those of us aboard *MV Ocearch* that day have become, I dare to venture,



Happy juvenile white shark named Azlyn being returned to the sea where she belongs

emotionally attached to that shark we observed being tagged by the science team. We watched young Azlyn get caught, tagged, probed, assessed, digitized, internalized, externalized, measured and drilled for fifteen minutes. In that brief time, we developed a fondness for her. Imagine that – developing an emotional attachment for a white shark! We were so happy for her when the ramp lowered her back into the water, and she realized she was free... and - with an EXPLOSION of foam and spray - she took off like a bat out of hell, back into her own home.

Seems improbable and yet, when observing Ocearch’s Global Shark Tracker display on their website <http://www.ocearch.org/profile/azlyn/>, we feel proud because there she is – pings from young Azlyn have been received just about every day since she was tagged on August 21st. And on August 28 at 10:01AM EDT, her dorsal fin broke the surface off Toms’ River, New Jersey! ‘Our’ baby girl is on the move! She swam all the way from the eastern tip of Long Island, across the New York/New Jersey Bight over the Hudson Canyon and over to the Long Branch/Tom’s River NJ vicinity. This validates that Azlyn, and all sharks tagged by Ocean -- is doing fine after her run in with these bad Ocearch hombres – and

supports the scientific data that this whole area is a large white shark pupping/nursery area. Very exciting data – and of most amazement is the personalization resulting from observing a shark being tagged and sent off to continue its journey in life. Let's hope that Azlyn will always be well and healthy, grow to adulthood, and have her own pups, and assume her place and role in our marine environment. If the pings stop for whatever reason, we will try to not worry, and just assume that it was an equipment malfunction.

Ocearch's Manta: Educate-Inspire-Enable.

That says it all... The *DNN* readership and scuba diving community thanks Chris Fischer for his vision and leadership! Thank you also to the crew, scientists and marine biologists aboard *MV Ocearch* -- and to all the companies and organizations which financially support and partner with Ocearch in this important initiative. *We'll be watching those pings!* Hats off to Ocearch's success in creating and propagating an 'ocean-awareness' / ocean community mindset, yielding cleaner waters here and across the world's oceans, vibrant with life for subsequent generations aboard spaceship Earth.