Cocos Island Trip Report

December 7-17, 2018

Underwater Visibility: Mostly good (60-90 feet)
Water Temperatures: Warm (surface temperature 81°F, coldest recorded temperature 79°F with no thermocline)
Currents: Calm to moderate

In December, a crew of volunteer divers, marine biologists, scientists, and dive masters joined Turtle Island Restoration Network (TIRN) on one of the organization's yearly research expedition to Cocos Island National Park, located 350 miles off the coast of Costa Rica.

During the 10-day trip, expedition participants helped TIRN accomplish a number of important objectives:

Download Acoustic Receivers
All receivers were recovered, data downloaded and batteries replaced.

Install Two Additional Acoustic Receivers
Two additional receivers were installed: a new site at Shark Fin Rock at the south end of the island, and a replacement receiver for a lost receiver at Ulloa at the northeast end of the island.

Acoustic Shark Tagging Underwater on Scuba
One tiger shark and one hammerhead were tagged using acoustic shark tagging, both in Coral Gardens (east side of Isla Manuelita). The approximately 14-foot female tiger shark tagged is believed by many to be the shark involved in the fatal attack in November 2017, which has been nicknamed "Laguerta" or "Victoria."

While no photo-documentation of that shark is available, the shark tagged has been implicated in aggressive behavior toward divers and forced Turtle Island's research team to abort a dive shortly after the fatal attack. The acoustic tag will allow us to understand this sharks' use of eight dive sites where acoustic receivers are installed and monitor her presence in real time by use of a mobile hydrophone.

Capture Sharks for Biopsy Samples and Internal Acoustic Tagging and Satellite Attachment
Four afternoon-evening fishing were conducted to capture sharks to collect DNA and biopsy samples for Stable Isotope Analysis, to apply internal acoustic tags, and if to attach satellite tags if tiger or hammerhead sharks were captured.

In total, nine sharks were captured in approximately 10 hours of fishing using 3-10 baited (tuna) hooks on buoys approximately between the northern point of Manuelita to Silverado (Silver Cove), approximately a half mile offshore. One of these was conducted with Cocos Island Ranger personnel on their vessel and the others were

on the UnderSea Hunter skiff. Since no tiger sharks or hammerheads were captured, no satellite transmitters were deployed.

The largest of the nine sharks captured was an adult 9.5 foot (289 cm) Galapagos, three smaller Galapagos sharks (116-226 cm total length) with two clearly juveniles, and two just below or at reproductive size. Five silvertip sharks, all (or 4 of 5) were juveniles (117-183 cm total length).

Sightings of silvertips have become rare with a declining trend in recent years, so capture of these individuals is hopefully a positive sign of their re-occurrence at Cocos. Three internal tags were placed in the silvertips and measurement and biopsies were taken from all for DNA and stable isotope analysis from all the nine sharks. In addition, one biopsy sample was taken of a marbled ray underwater using a pole spear.

Survey for Sea Turtles at Dive Sites

Sea turtles were searched for on all 21 dives. None were seen at Cocos Island. Several olive ridley sea turtles were seen on the crossing back in the blue on the way to the mainland (outside Cocos Island National Park). The lack of sightings at Cocos continues a trend of fewer and fewer turtles at Cocos, coinciding with the increased occurrence of tiger sharks in the past few years.

Conduct Transect Surveys

Sixteen video transects were conducted by Turtle Island scholarship winner Selene E. Jacobo Cabral to quantify space-time distribution patterns of large predators associated with Cocos Island reefs. This is part of a thesis project from the Centro de Investigación en Ciencias del Mar y Limnología (CIMAR), University of Costa Rica in alliance with CREMA and Fins Attached. Also included were shark and rays censuses on two dives by citizen scientist Arnie Thompson.

Provide Interviews and Footage for Economist Magazine Documentary Film

The Economist is in the process of creating a documentary on the importance of marine protected areas and connecting them through the unique concept that we have proposed to create the "Cocos-Galapagos Swimway."

Research expedition participants:

- Kevin Weng, Ph.D. Virginia Institute of Marine Science, William & Mary College and Turtle Island Science Advisor
- Todd Steiner, MS, Turtle Island Executive Director
- Elpis Joan, MS, CREMA
- Selene E. Jacobo Cabral, BS, SeaZoom Mexico and Turtle Island scholarship recipient
- NoahLani Litwinsella, BS, recent graduate and long-term Turtle Island volunteer
- Joanie Steinhaus, Turtle Island Gulf of Mexico Director
- Jeff Steinhaus, citizen scientist volunteer
- Arnie Thompson, citizen scientist volunteer
- Annalisa Belluc, citizen scientist volunteer
- Juan Manuel Camargo, UnderSea Hunter
- Giovani Castro Chacon, UnderSea Hunter
- Roy Mora Cordoba, UnderSea Hunter
- Shtefan Glezer, UnderSea Hunter
- The entire UnderSea hunter crew
- Sam Farmar, Economist Magazine
- Rebecca Bullen, Economist Magazine
- Alfredo Barroso, Economist Magazine
- Keith Black, volunteer diver & UnderSea Hunter guest
- Marisa Nelson, volunteer diver & UnderSea Hunter guest
- Robert and Irene Betcke, volunteer diver & UnderSea Hunter guest
- Eva Volf, volunteer diver & UnderSea Hunter guest