Annual Report of the Shark Foundation 2020

May 2021

General

Foundation

The Covid-19 pandemic has severely impacted work on the Foundation's shark conservation projects from early 2020 to the present. Many researchers found it impossible to conduct their fieldwork as planned due especially to travel restrictions and uncertain and rapidly changing quarantine requirements. Laboratory work was also partially affected by temporary closures of universities. It was early September 2020 when we received the first positive news that work could resume in some projects. At the beginning of 2020, a project on shark fishing in Greece was successfully completed.

Scientific research is expensive, especially with marine organisms. Thus, in addition to effective research materials, there are often costs for boats, crew, fuel, travel, etc. Molecular biological research, such as the analysis of population dynamics or the study of large-scale migrations using satellite transmitters, consumes vast amounts of research funds and can usually only be financed by large laboratories which often have several donors. The relatively small Shark Foundation supports or participates, where appropriate, in such larger projects that are specifically aimed at shark protection. Sometimes, however, the small, more inexpensive projects such as the analysis of local fish markets and shark landings in poorly studied regions can be even more interesting. These are rarely supported by large donors, especially by national research institutes. By funding such projects and by networking the project leaders among themselves and with larger laboratories, the Foundation can contribute substantially to shark conservation with relatively little effort.

The Shark Foundation has been committed to the worldwide protection of sharks since 1997. Without the support of many small and large donors, it would be impossible for us to do our work for sharks and hence to protect our oceans.

We thus take this opportunity to thank all our donors and patrons whose generous support makes our work possible!

EEA Conference, Leiden, Holland

Unfortunately, the annual conference of the EEA (European Elasmobranch Society) planned for the Fall of 2020 in Leiden, Holland, had to be cancelled due to Covid-19. An online version of the conference with video lectures could also not be realized. However, the annual general meeting of the EEA did take place in January 2021 via video conference. For late autumn 2021 Leiden was again chosen as venue for the conference, once more depending of course on the Corona situation.

Publikations

In 2020 two scientific papers were published based on the results of projects supported by the Shark Foundation: one publication dealt with whale sharks and the other with the "Great Fiji Shark Count."

Since 1997 a total of 79 scientific publications, three books, various conference reports and posters, as well as diverse dissertations and theses were supported by the Shark Foundation.

U.S. Shark Foundation

In 2020 the U.S. Shark Foundation was again registered as a nonprofit foundation seated in Miami, Florida. Unfortunately, Gary and Brenda Adkison have decided to step down from the Board of Trustees of the U.S. Foundation after more than 10

years of leadership. We thus also take this opportunity to express our sincere thanks and appreciation for their strong commitment to our Foundation.

At the same time we are pleased to announce that we were able to win Professor Mahmood Shivji as the newly appointed director of the U.S. Shark Foundation.

Total administrative costs to date: approx. CHF 58,000

Projects

Shark Exhibit	The exhibit is in storage and we are again looking for new exhibit locations. *Expenditures / investments to date: approx. CHF 260,000*
Population Genomics of Large Shark Species	Under the direction of Professor Mahmood Shivji, this project is being carried out in his laboratory and includes molecular genetic analyses of various large oceanic sharks such as great hammerheads, makos, great white sharks or whitetip sharks. The analyses will help in molecular-biological research on global genetic links between populations of especially large oceanic and other shark species. Genetic connections provide information on whether individual populations are isolated or if they mixed with other populations, in the latter case this would enable them to compensate for losses through the immigration of species. Due to Corona both laboratory and field work were only possible with long interruptions in 2020. *Expenditures 2020: CHF 11,800* *Investments to date: approx. CHF 48,400*
Global Analysis of Large Shark Migrations	Many shark species are in massive decline worldwide, mainly due to increased fishing pressure because of their sought after meat and especially their fins. As top hunters, however, large sharks grow slowly, become sexually mature at a late stage and have few offspring. This makes them particularly sensitive to overfishing. Deep-sea sharks in particular often move in regions where international fishing fleets are also active. Analyzing their migration routes is therefore especially important. Although laboratory and field work were possible in 2020, they were severely impeded by long, Corona-based interruptions. *Expenditures 2020: CHF 7,850* *Investments to date: approx. CHF 32,250*
Shark Nurseries	The shark "nursery" project in Rookery Bay, 10,000 Islands, Florida, has been managed by Pat O'Donnell in collaboration with the Mote Marine Lab since 2000. The region is used by sharks as a primary nursery (newborns) and secondary nursery (juvenile sharks one year and older). The study region includes Fakahatchee, Faka Union and Pumpkin Bay. The marshlands whose waters flow into these bays were drained over 20 years ago for a land reclamation project. The project failed. It was only a few years ago that the State of Florida decided to restore the original marshlands. This project was severely delayed and to date has not been completed although results are

beginning to show. The amount of fresh water that used to be diverted to the sea through canals to drain the swamp is decreasing. The goal of this research is to determine how any salinity change in these nursery areas affects juvenile sharks.

The Foundation continues to invest in this project whenever necessary.

Expenditures 2019: CHF-0-
Investments to date: approx. CHF. 61,500

Fiji Shark Sanctuary

The Fiji Shark Conservation Park project is now self-sustaining, but the Foundation continues to provide financial assistance as required. At The end of 2013 Mike Neumann requested continued support for the Fiji Shark Count project whose purpose is to inventory all sharks in the region as of 2012. The Fiji Shark Count is ongoing and was co-funded by the Foundation in 2013/14. In 2015 Christine Ward-Paige from Dalhousie University, Halifax, evaluated the data collected during the Fiji Shark Count.

The Foundation continues to invest in this project whenever necessary.

Expenditures 2019: CHF -0-
Investments to date: approx.CHF 41,800

Migration of Large Coastal sharks in Jupiter, FL, and the Bahamas

Great hammerhead sharks around Jupiter/Bimini/Bahamas

Hammerhead shark species are severely overfished in many areas. In March 2014 great hammerhead sharks were listed as endangered in both Appendix II of the CITES Convention and the IUCN Red List. They migrate long distances through the territories of various nations. For this reason, they are also listed in Annex I of the UN Convention on highly migratory species which calls for all participating countries to strongly cooperate in their management.

Hammerheads are often found in bycatch, but are also actively fished because their fins command a high market value. Regulating bycatch and demanding that hammerhead sharks be thrown back into the sea makes little sense because their mortality rate of about 90% in bycatch is the highest of all species. For this reason the locations, seasonal space usage and behavior of this hammerhead species need to be much better known in order to protect them more effectively.

The project got off to a good start. However, after the death of Professor Samuel Gruber in April 2019, and due to the 2020/2021 Covid pandemic, it fell severely behind schedule. In early 2020 the project was taken over by Matt Smukall, CEO of the Shark Lab in Bimini.

Expenditures 2020: -0-
2021/22: CHF: 18,700
Investments to date: approx. CHF 86,200

Whale Sharks

In 2020, the work of the team led by Dr. Simon Pierce and Dr. Chris Rohner was also massively affected by the Corona pandemic. Travel to their research projects was almost impossible and some members of the team were trapped on the "wrong" side of the continent due to border closures.

Nevertheless, a few successes were celebrated. With the passing of the national REPMAR law – which the team had been fighting for over several years – whale sharks and manta rays were officially protected legally throughout Mozambique. Information gained over the years about whale sharks, manta rays, turtles and other large marine life in Mozambique also prevented an oil and gas extraction project in the Bazaruto Archipelago National Park.

With the Foundation's support, an article about whale sharks in Mozambique was published in mid-2020.

Expenditures 2020: approx. CHF 9,900
Investments to date: approx. CHF 110,900

Investments to date: approx. CHF 16,900

White Sharks in the North Atlantic: Analysis of Hormones and Microplastics

As top predators of the oceans, white sharks are at the end of food chains. As such, they accumulate environmental toxins such as mercury and microplastics. Surveys of great white shark populations conducted in collaboration with Ocearch should provide information on their health status.

Veterinarian Michael Hyatt will be assisted financially in his research on microplastic accumulation in great white sharks, in the analysis of the general health of the populations, as well as stress studies during capture and on-board examinations.

In January/February 2020, the Ocearch team collaborated with various researchers who studied great white sharks in the Northwest Atlantic. In August and October/November of 2020, analyses were repeated in the Massachusetts and Nova Scotia regions, respectively.

Preliminary analysis results show that great white sharks accumulate microplastics. These can not only clog the gills but can also enter the bloodstream. Since microplastics can bind dangerous environmental toxins these can then enter the body's cells via the bloodstream where they can cause long-term damage.

Expenditures 2020: CHF -0-
Investments to date: approx. CHF 20,100

Cape Verde Shark Conservation Project

West Africa's Cape Verde is an archipelago consisting of ten volcanic islands and is home to over 60 species of sharks and rays, including whale sharks, tiger sharks and manta rays. These species have been exploited uncontrollably in West Africa for many years. However, the Cape Verde Islands – particularly Brava and Maio – are exceptional in that they are the only country in this region where sharks and rays are not intensively fished, making them a hotspot for these species and one of their last refuges in the northeast Atlantic.

As of 2020 and until today any scientific activities on the Cape Verde Islands were severely limited due to the Corona pandemic.

Expenditures 2020/21: CHF 10,000
Investments to date: approx. CHF 10,000

Artisanal Fisheries in Ghana

Ghana is one of the most important shark and ray fishing nations in West Africa. This fishery industry is a major employer in the coastal regions and provides livelihoods and income for many of the poorest communities on the Ghanaian coast.

The project aims to collect critical baseline information on indigenous fisheries in western Ghana, focusing on ecological, cultural, and socioeconomic characteristics of such fisheries. Specific threats to sharks typical of a region will be analyzed in more detail. Based on this data, which so far has been nonexistent, a national strategy will be developed to sustainably protect and manage Ghana's shark and ray stocks.

In 2020, any research in Ghana was also massively affected by the Corona pandemic. Nevertheless, the clear identification of shark and ray species made great progress thanks to help received from Bernard Serret and the team from Angola.

Total expenditures over 3 years: CHF 18,500

Project Manager: Seidu Issah
Expenditures 2020: CHF 8,150
Investments to date: approx. CHF 16,450

Successfully completed: Illegal trade with shark products in Greece

Greek marine waters have a remarkable biodiversity of sharks and rays with 67 species (37 shark species, 30 ray species) confirmed to occur so far. Based on the latest IUCN Red List assessment, 21 of the 37 shark species found in Greek waters are considered threatened (vulnerable, endangered, critical). Sixteen shark species are protected based on national and international legislation (including the Barcelona Convention, the Bern Convention, CITES, GFCM recommendations and presidential decrees). However, no species-specific data is available because there is no specific fishery for these species and most of them are simply discarded at sea due to their low commercial value. Landed species are reported in aggregated categories. In the absence of current data on any protected species landed, there is a high risk of illegal trade in these species.

The project team visited fish markets and auctions between January and December 2019 and collected small tissue samples from the sharks sold. They also conducted interviews with fishmongers and customers and launched a media campaign.
The results of DNA analyses of 274 meat samples clearly showed that protected sharks such as blue sharks were also sold, probably unknowingly.
The interviews showed, among other things, that fishmongers sell their fish under the name on the purchase receipt. These names often only designate categories or are incorrect. Customers do not know exactly what species they are in effect buying.

The project was successfully completed in 2019 and already resulted in the publication of one scientific paper. Two more papers are in progress.

Project Manager: Ioannis Giovos, iSea Greece
Expenditures 2019: CHF 6,500

Catch analyses of sixgill sharks in the Mediterranean Sea

According to the IUCN Red List, Bluntnose sixgill sharks are not considered endangered in the Mediterranean, but fisheries in the Mediterranean are poorly documented and controlled. Sixgill sharks are also frequently found in the bycatch of deep-sea fisheries (down to 2000 m). Considering the declining trends of most other shark populations in the Mediterranean, which have shrunk to 10-20% of their former size, this positive assessment seems rather unlikely and outdated.

This study will involve interviews and observations to identify trends in sixgill shark landings throughout the Mediterranean and will cover 11 countries: Spain, France, Italy, Greece, Libya, Algeria, Tunisia, Montenegro, Albania, Cyprus and Israel. It will be carried out in collaboration with local researchers and volunteers from each country. The project is coordinated by Ignazio Nuez from SUBMON – Conservation of Marine Biodiversity in Spain, a member of the EEA. The project is not only of great interest for shark conservation but also aims to promote cooperation within the various EEA members in the Mediterranean area, especially between the new EEA members Greece and Israel.

The project is nearing completion and an initial presentation of preliminary data was presented at the IUCN workshop in Palma de Mallorca in November 2019. A publication is in the works for 2021.

Project Manager: Ignasi Nuez, MSC, Submon, Spain

Expenditures 2020: CHF -0-
Investments to date: CHF 9'650

Ecological analysis of blue sharks in South Cornwell (England)

Blue sharks (*Prionace glauca*) are large deep-sea sharks and top predators found worldwide in temperate and tropical waters. Like other shark species they are an important regulating factor in their marine ecosystems.

Blue sharks are caught directly for their fins or perish in the bycatch of deep-sea fishing fleets. Their status on the Red List of Threatened Species is "near threatened," i.e. close to or with a strong tendency towards "endangered." However, there is a lack of more current data which means they might already have to be classified as "endangered."

In addition to the threat posed to blue sharks from fishing, these top predators also encounter a major problem with the accumulation of environmental toxins. High concentrations of arsenic and mercury far above European limits have already been measured in blue sharks. PCBs (polychlorinated biphenyls), PAHs (polycyclic aromatic hydrocarbons) and DDT (dichlorodiphenyltrichloroethane) can also accumulate in top predators, affecting their health and fertility.

Unfortunately, 2020 saw no major progress in this project, partly due to the high costs of any ships needed for the expeditions. In addition, taking tissue samples from free swimming blue sharks proved enormously difficult. They are too fast and sinuous to enable taking on-board samples. In 2021, the plan is to switch to taking tissue samples at fish markets or directly from blue sharks that have already been caught.

Project Manager: Dr. Andrea Gaion, South Devon College
Expenditures 2020: -0- CHF
Investments to date:: ca. 13'200 CHF

Artisanal fisheries in Angola

In West Africa, an alarming decline of sharks is being observed, mainly due to the ever increasing demand for shark fins in the Asian region. Great hammerheads, lemon sharks and bull sharks are experiencing an especially threatening decline, but many other shark species are also affected.

Angola is located in the northern part of the so-called Benguela Current Large Marine Ecosystem (BCLME). The BCLME is an extremely productive marine region, as the confluence of the Benguela and Angola Currents creates eddies that bring nutrient-rich deep water to the surface.

The demand for shark fins has led to a massive increase in local coastal fishing in Angola, especially in the last 10 years (source FAO, United Nations Food and Agricultural Organization). However, since accurate data on specific shark fishing is not available, the project aims at collecting such data.

The project is progressing well. A second interim report with data from various ports in Angola is available.

In 2021, Ana Lucia Furtado Soares was accepted into the IUCN Shark Specialist Group and will continue her dissertation work in Angola.

Project Management: Ana Lucia Furtado Soares, Dr. Rima Jabado (Environment Agency Abu Dhabi)

Total expenditures over a 3-year period (2017-2019): approx. CHF 9,500

Expenditures 2020: -0- CHF
Investments to date: ca. 9,500 CHF

Public Relations: Shark Foundation and Shark Info

Media/Public Relations	The Foundation and Shark Info answered questions, edited articles in various media, and provided expertise and tips on sharks and shark protection.

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Web-Server

In 2020, the Shark Foundation's web server recorded approximately 156,700 definite visitors who viewed 717,300 pages. The visitors stemmed mainly from Germany, Singapore, Poland, Switzerland and Austria. The Shark Foundation server recorded 102,400 visits with 280,000 page views. The visitors came mainly from Singapore, the U.S., Poland, China and Germany. The leading page visited at Hai.ch and at shark.ch was the homepage. In second place of the most frequently visited pages was the shark database search page for both the English and the German web pages.

An increasing trend was seen compared to 2019. On Hai.ch approx. 67% of the browsers were mobile versions, on shark.ch it was 60%. It is astonishing that mobile accesses were more frequent in German-speaking countries than in English-speaking and Asian countries. The Foundation's new web pages went online in April 2021 and were planned to gradually replace the old pages as of July 2021. We expect the new pages – which are optimized for Google ranking, SEO and mobile devices – to provide a much better web presence.

Administration

Shark Foundation Financial Policy

The Shark Foundation was established on August 29, 1997. As an internationally active foundation, it is subject to the supervision of the Federal Department of Home Affairs / Foundation Supervision, Bern, and can accept tax-deductible donations. Once a year it submits its annual report and financial statements to the supervisory authority for approval.

The Foundation finances all its activities through donations, lectures and/or the sale of products such as T-shirts or soft toy sharks. Members of the Foundation Board work on a voluntary basis and receive neither meeting fees nor a salary. The Foundation runs a "shark store" on its internet pages (for T-shirts, soft toy sharks, tear-off blocks, postcards, shark sponsorships). Proceeds from sales flow directly back into the Foundation's account. As a rule, a mailing goes out once a year to all interested parties with a payment slip and donation request.

At the first meeting of the respective year, the Board of Trustees of the Shark Foundation decides on the use of the profit carried forward and money coming from donations of the previous year. Until now, no reserves have been set aside; instead all funds have been released for current projects, investments and administrative expenses.

The Foundation's accounts are audited annually by the auditing company Revisal (Gossau).