"Enhancing the Community-Based Sea Turtle Conservation Model"

RUFFORD SMALL GRANT (24752-D)
Grantee: Stephanie J. Rousso
FINAL REPORT 2018-2019

The Rufford Foundation
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Cover Photo: Daniel Vazquez, Team Member 2014 - 2019

Highlights

While we parted ways with one of our team members and another was more limited to participate than planned, we increased our collaborate team by adding Vanessa Pelayo, Israel Llamas, Luis Angel Tello, and Chef Andres Hernandez Acevedo. This core team brings decades of experience together and forms a strong collaboration by unifying various ongoing sea turtle conservation projects in the region.

Vanessa has been instrumental with administrative tasks here, organizing and scheduling outreach workshops, assisting with promotional materials and VHF radio announcements, and accounting needs. Israel and Luis collected and preserved over 1000 sea turtle barnacles from critically endangered hawksbill sea turtles that Vanessa and I are now analyzing in the lab. These barnacles serve as indicators of a sea turtle geographic movements.

Our citizen science approach has proven successful and sustainable to build capacity for our sea turtle conservation model. This year we expanded our reach with sailboats originating from California and extended participation with other key constituencies, most notably SCUBA divers and seasonal foreign residents. The Patos Buzos dive club has been phenomenal in compiling data from sea turtles they encounter on each dive. Upwell turtles was instrumental is the legal aspect of media releases with these divers so we could use their photos and videos for outreach and website.

Over 300 people attended our outreach workshops, 73 people signed up to participate or wanted to follow our progress, and 50 created a structured citizen science club in La Ventana Mary Sim, our first Sea Turtle Ambassador has been leading the club by training volunteers on what data to collect in the field. She also initiated the group to volunteer to spot and mark off nests with Grupo Tortuguero.

We began developing a long-term funding strategy to offer citizen science based expeditions and retreats, specifically targeting the $81 US billion yoga industry, but also academic groups. So far for 2019, we have two yoga retreats marketed, and in 2020, we have three academic groups confirmed, a yoga retreat confirmed, and another retreat being planned, which will yield approximately $3000 US in conservation dollars, 2 monitoring trips, and $1000+ to artisanal fishers and coastal communities.

This funding strategy is possible due to the partnerships we made over the past year with two eco-lodges, a ecotourism company, a yoga teacher based in the U.S. and another one based in La Paz, and a sustainable seafood gourmet chef. Upwell Turtles, a non-profit organization based in the U.S. will be the beneficiary of the sea turtle data derived during retreats and expeditions.

New Partners

As my team evolves, so does the list of new partners we make as we grow. Our partners include U.S. based and Mexico sea turtle organizations to collaborate on larger, more effective research initiatives, sustainable seafood groups with the aim of collaborating with artisanal fishers to modify fishing gear, practices, and locations to help protect sea turtles from accidental captures, citizen science groups, ecotourism companies, and constituencies with the aim of reducing plastics that can indirectly harm sea turtles and other marine life.

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PROTECTING TURTLES AT SEA

SINALOA, MEXICO

Sinaloa boasts the second largest fishing fleet in Mexico. This provokes a large competition driving prices for fish down, making poaching sea turtles and other marine life attractive. The black market is not well patrolled or laws enforced due to remote areas, fishers significantly outnumbering law enforcement, and still a cultural demand for sea turtle meat even within the government.

In this photo, a former head poacher now serves as an informant and activist for protection of sea turtles. The fisher demonstrates how to kill and extract the meat of sea turtles and explained the black market.
On this day, we counted 73 bat rays of various size discarded after their gillrakers and wing meat were extracted, and 22 sea turtle carcases Team member, Dr. Alan Zavala has been collaborating with fishers for the past 15 years to change the culture from poacher to protector

Poaching: Beyond bycatch

After the founders of the Wildlife Department at CIIDIR, Dr Alan and Dr. Cesar Rey established trust with fishers, they began bringing in sea turtles accidentally caught in their net to the CIIDIR graduate facilities. The team built a temporary structure and received a large pool donated by the local aquaculture industry. While hawksbill and greens are the primary species, loggerheads, with their large, powerful heads used for crushing hard marine invertebrates, bit holes in the rehab tank. The four loggerheads provided the first documented sightings of this species in the Gulf of California. The team did their best to make repairs, but ultimately, the damage was too much and the tank has been dismantled. Turtles were rehabilitated and released. Since this is the only rehab center in all of NW México, with the exception of some holding tanks in La Paz, I have committed to helping find funding to purchase a new rehab tank, one strong enough for all sea turtle species. This will be an integral component of my PhD as I will be working with these fishers on evaluating bycatch and developing collaborative solutions to reduce bycatch and improve their economic gain through sustainable seafood marketing.

CIIDIR IPN
UNIDAD SINALOA

Guasave, Sinaloa: CIIDIR Rehabilitation Center

Collaboration

During my trip to Sinaloa, I met Dr. Kai Okamoto, a researcher from Japan studying bycatch in artisanal fisheries. He is a friend and colleague of Dr. Alan's and has visited Sinaloa several times. He has experience in finding solutions to bycatch working with fishers in a collaborative manner. His research and insights inspired me to develop my PhD research in bycatch. Now, Alan and I, along with researchers from CICIMAR and Upwell, are forming a four-year doctoral study to determine the spatial distribution of bycatch with fishers in Sinaloa.

Fisher Abelino Angulo hosted me in Costa Azul, Sinaloa for my workshops with fishers there. He gave me an incredible tour of the fishing villages, of Costa Azul and La Reforma and introduced me to the fishers with whom I will be collaborating for my PhD research. Currently, Alan pays fishers for their gas and time to report and tag sea turtles accidentally caught in their nets, so part of my research will be an bio-economic evaluation in order to create a market-driven solution by providing sustainable seafood products for our future academic and citizen science groups.

Upwell matched Rufford funds for my trip to Sinaloa so I could attend the 21 annual conference in Mazatlan, Sinaloa. This conference is where we solidified my commitment to Sinaloa and my PhD research project. A major advancement was the acceptance and integration of my research into the network of GTC. Dr. Agnes Mancini, a 5 time Rufford recipient, has been instrumental in welcoming me and the Upwell team into the GTC network.

JALISCO, MEXICO

A last minute change in our project, we switched San Cosme for Jalisco. In Jalisco, along the central to southern pacific coast, biologists Israel Llamas and Luis Angel Tello began collecting and preserving dry barnacles and other exhibitions from hawksbill that fishers began bringing to the Mayto Sea Turtle Research Center.

Israel, Angel, and I met at the 1st International Conference, also where I met Dr. Alan Zavala. They have contributed over 1000 sea turtle barnacles to study the movements and habitat use of sea turtles based on the molecular profile of the barnacle. The barnacle project is going to be ongoing for decades as so little is known about the special commensal barnacle species, *Chelonibia testudinaria.*

Dr. Catherine Hart in Nayarit has also been assisting in the project. I am very motivated and inspired to be working with such an amazing team of colleagues.

Reducing incidental capture (bycatch) of sea turtles with artisanal fisheries in Northwest Mexico begins by building trust and listening to the needs of fishers. While we cannot stop the illegal poaching and bycatch of sea turtles everywhere, we are creating initiatives with a few select coastal communities eager to work with us. So far, we have proven success in our methods with Las Pacas, and even more so with fishers and collaborating team members in the states of Jalisco and Sinaloa.

Our collaborative team continues to promote the positive changes these and other fishers are making for the sake of sea turtle conservation. Collectively, we aim to promote the solution rather than focus on the problem.

Las Pacas fish camp

Crystal Sanders, Fish Revolution teaching Las Pacas fishers and CSU students about pole and line fishing as a sustainable seafood solution.

CSU students learning from fishers about the impacts of gillnets and solutions they are trying to use to reduce bycatch

Crystal Sanders, founder of "Fish Revolution", a non-profit organization in San Fransisco devoted to the sustainable seafood solution, visited us April 2019. She spent time with the Las Pacas fishing cooperative to learn more about how she can collaborate with our team, especially our Chef to develop economic incentives for the region through sustainable seafood products.

With Rufford funds, we purchased a pole and biodegradable fishing line so Crystal could teach the fishers how to catch from shore or their boat. Then we purchased a sport fishing permit which allows them to catch other, larger species of fish. Now they gain just as much catching 2-3 larger more in-demand fish (marlin, wahoo, sierra, tuna) on line than they did with a gillnet.

Las Pacas is a unique cooperative in that thy have been working on finding solutions to bycatch and overfishing. The older fishers (65+) recognize that approx 70% of the fish they used to catch is now gone. They claim they must go farther to catch much of anything worth value in the market, the competition has increased with more and more fishers from other areas coming into the bay with larger and faster boats, catching more with their big nets.

When we brought academic groups, the fishers explain how they catch fish using gillnets and fish traps. Now with four academic groups confirmed for 2020, we hope the fishers will share more progress.

Las Pacas fish traps used to be more selective fishing practices, yet still not reaching the economic goals they need to survive.

Colorado State University academic groups visited Las Pacas fish camp which is appox 3 km from the La Duna Ecology Center, where they stayed. La Duna is our field site for hosting for academic, yoga and citizen science programs as part of our long-term funding strategy.

CSU is returning for week long programs and have four groups confirmed for 2020 as part of our long-term funding strategy.

La Duna ecology center

Some CSU students couldn't stay away. Kim Wynn, Abigail Bearce, and Danielle Palms returned for a month long internship where they learned about citizen science and sustainable seafood solutions. These three amazing women are now spearheading a citizen science expedition with over 200 sailboats in the 2019 Baja HaHa rally promoting Sea Turtle Spotter along the way and organizing all the sea turtle data for Upwell.

Las Pacas is a success story and have formed a major collaborative partner over the years thanks to Rufford support. The hawksbill in the photo was rescued from a fisher's bait net only 5 meters from shore. Given the trust we have been able to build with these fishers from Rufford funding, they knew to call us immediately so we could collect barnacles for a stable isotope study and release the turtle.

This success inspired Upwell and Grupo Tortuguero, new partners who have committed to helping Las Pacas with training to be part of the official sea turtle monitoring network once we have the funds to replace their motor and buy the field equipment.

Las Pacas Fish Camp: SUCCESS STORY

OUTREACH WORKSHOPS

Outreach workshops at festivals, farmers markets, restaurants, fish camps, and other planned events are all effective ways to get the word out about participating in Sea Turtle Spotter citizen science program. As our audience grows, so does the format and dynamic of outreach workshops.

Our team and outreach grew effectively with the participation of Dr. Agnese Mancini. She shared information about GTC and has been instrumental in collaborating the support of GTC for Sea Turtle Spotter.

Upwell Turtles provided not only financial support but also administrative support by professionally designing field guides and posters that we could use at outreach events and to hand out to interested participants.

We reached over 300 people from events and workshops. Of those, so far, 73 have signed up to participant. However, while numbers are important n outreach, we have a core base of 23 active and ongoing participants, who we call Sea Turtle Ambassadors.

The sustainability of Sea Turtle Spotter relies on these generous volunteers to not only provide the data we are seeking, but also continue to spread the word and generate more active conservation from more community members.

After their study abroad program facilitated by Colorado State University in January 2019, Dani, Kim, and Abigail returned to Mexico in March to participate in an internship with our team. They spent time in the field documenting strandings, collecting barnacles, mapping out foraging habitat with citizen scientists, and spent many days and nights talking about Sea Turtle Spotter.

For graduation, they helped raise awareness for Sea Turtle Spotter on sailboats, at coffee shops, and collected sighting data via the VHF radio at the local marina de La Paz. Upwell provided some matching funds so we could increase our reach and provide these girls with a great experience.

They are returning again in November as the Sea Turtle Ambassadors during a two week sailboat rally extending from San Diego through La Paz collecting data from over 200 participating cruisers.

The addition of a chef to our team was unexpected, although very innovative. Chef Andres spent many years working in high-end tourism restaurants and most recently a yoga retreat center. He has devoted his career to finding sustainable seafood products that he uses to make creative gourmet recipes. During our outreach workshops, we discuss the threats to sea turtles, one of those being bycatch in fisheries practices. During the workshops, to encourage people to not only participate in Sea Turtle Spotter, Chef Andres inspired people to take on another role by being conscience consumers to help reduce the threat of bycatch as he prepared sustainable seafood bites and talked to people about the fishers, how we are working with them to reduce sea turtle bycatch. During the project, he forged partnership with Smart Fish, a nonprofit devoted to sustainable seafood solutions, to get our team fishers into their program.

International Sea Turtle Day, 16 June 2019, was a great success. Even though it coincided with Fathers Day on a Sunday, and a huge event downtown La Paz, we still had a great turnout. A new partner, No Mas Basura. which means no more trash brought 14 high school volunteers to celebrate their role in cleaning up the beach and being advocates to reduce plastic near sea turtle habitat. Upwell rewarded these young conservation leaders with an award and Chef Andres prepared them sustainable fish kabobs.

La Ventana Bay Citizen Scientists

Thanks to the fabulous efforts of volunteers from the La Ventana Citizen Scientists club, they helped organize several workshops in La Ventana. La Ventana is a small fishing village which exponentially grows from November through March when 1000's of foreigners flock here for one of the best kite-boarding sites in th world.

We were able to reach over 100 people during our workshops to talk about sea turtle spotter. Unexpectedly, kite boarders can spot sea turtles from their kites, a great vantage point, making kite boarders a new constituency to target for future years.

The club is now monitoring the beach for nests and using my methodology from my first Rufford grant to mark every nest with GPS and index the beach to calculate density. As the town grows for the kite-boarding industry, it is more imperative than ever to have a strong coastal habitat management plan. The data they collect and we can analyze will be the foundation for the protection measurements along the coast as developed flock in with the kite boarders.

Kite boarding season @ Baja Joe's

San Diego Sea Camp @ Palapas Ventana

STRANDED SEA TURTLES

Photo Mary Sim, Sea Turtle Ambassador

Strandings continue to occur and almost every turtle we find dead on the beach has a human impact. With the law change in Mexico requiring a veterinarian be present for a necropsy, this made it challenging to determine cause of death from only an external exam. Regardless, our motive for reviewing strandings is not to classify mortality, but rather to map out the distribution and timing of strandings. With this information we can correlate fishing seasons, locations with oceanographic conditions, and determine potential origins of bycatch. This information, once published can facilitate evidence to design conservation strategies with the Mexican Commission for Fisheries in the future.

While stranded, dead sea turtles are not the highlight of our work, they do provide important insight into marine habitat use and spatial distribution. We have registered four loggerhead turtles (three shown here) via the Sea Turtle Spotter citizen science program.

We are drafting a scientific article of these strandings to complement the recently publication from Dr. Alan Zavala who documented the first sightings of loggerheads in the Gulf of California reported by Sinaloa fishermen.

Accept for Alan's report and these findings, there have never been loggerheads reported in La Paz Bay or the larger Gulf of California before. This demonstrates true, valuable success of our citizen science program.

For several years, Mary Sim has been a dedicated volunteer and one of our citizen scientists. As I have reported in previous Rufford grant awards, she found a foraging and resting area of hawksbill and green turtles in the small village she lives in El Sargento/La Ventana.

This year, she helped formed the La Ventana Citizen Science club and gained the support of over 50 volunteers. I helped them design and structure the club, connected them with Grupo Tortuguero for nest monitoring, and together, we are diligently working on a citizen science manual with data sheets, an online database where citizen scientists can enter in their own data, and even give outreach workshops.

Mary delights in showing her sea turtle collection of skulls and complete skeletons to people, especially my students and interns. Her workshop is in her backyard, but during the kite boarding season, her neighbors are less than supportive of the smell that radiates from drying carcases. We hope in the future we can find her some laboratory space where she can keep doing the amazing work she contributes to us.

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PROTECTING TURTLES AT SEA

Photo: Alex Double, Sea Turtle Ambassador

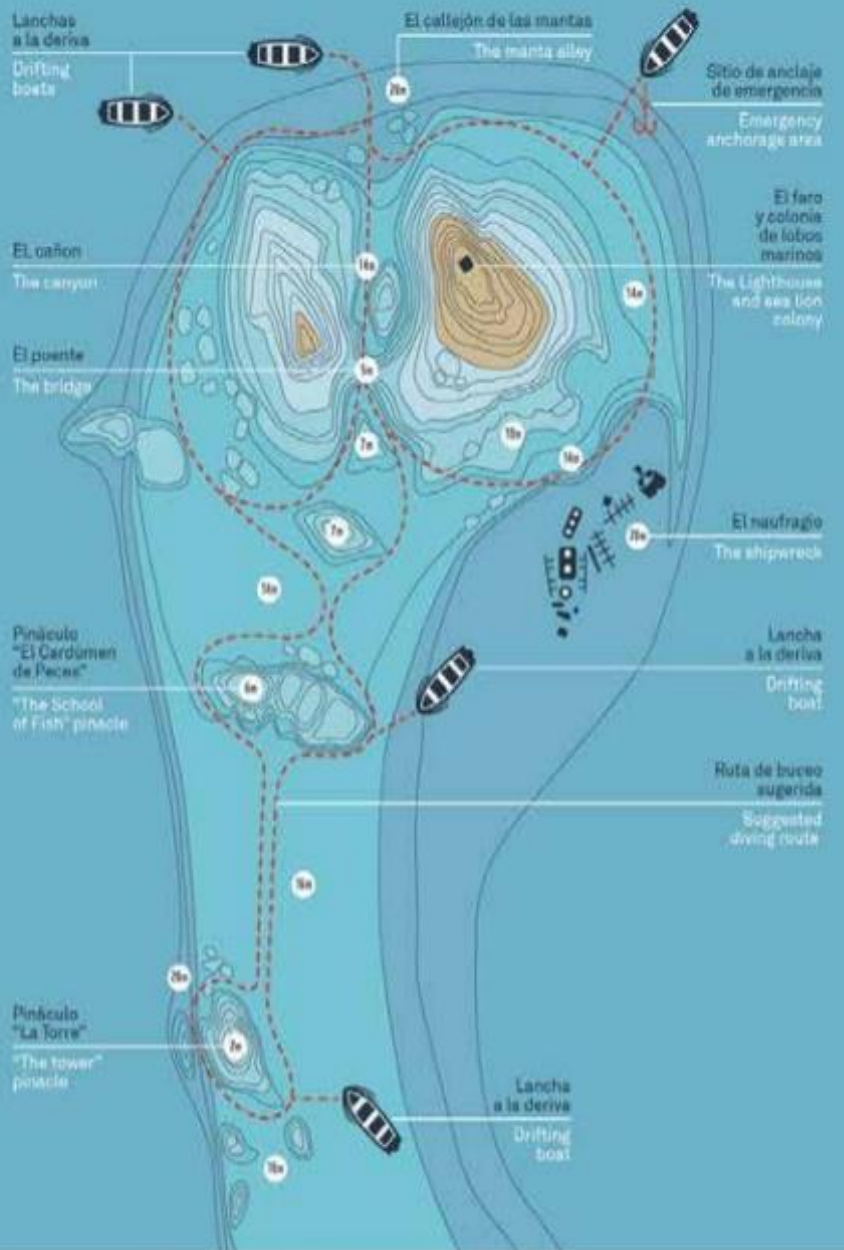
Sea Turtle Spotter: Case Study at "La Reina"

Manta Pacifico, a non-profit group in La Paz created this map of the underwater sea-mount called, "La Reina". The map was based on the drawing by Tamara Double, an English ex-pat living in La Paz with her husband Alex Double, both avid SCUBA divers. On the hand drawing, the couple notes where they spot sea turtles and report them to Upwell.

LA REINA

ISLA CERRALVO

24°26'28.80" N 109°57'12.46" W



At La Reina, SCUBA diving is popular for the manta rays that appear in the summer to feed on plankton. Thanks to Alex and Tamara Double citizen science interest and amazing photography, they have been providing vital information on sea turtles too. Mantas and marine turtles in the same area promotes legal conservation of this area for these international migratory and protected marine species.

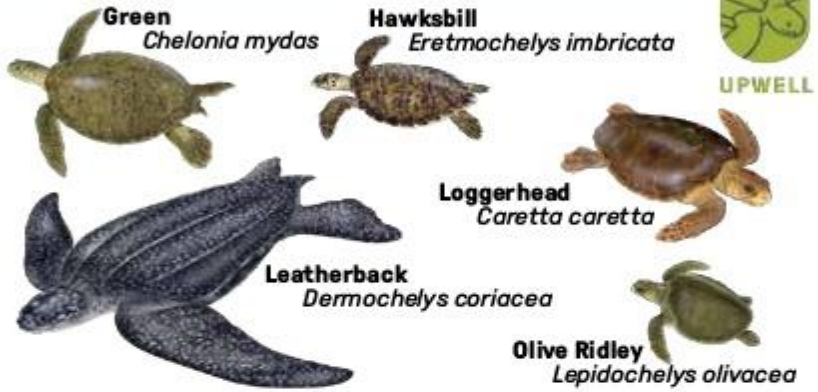
Photo: Alex Double, Sea Turtle Ambassador

The majority of sightings at La Reina are registered as green turtles. This hawksbill, loaded with barnacles in unique areas provided more evidence to place La Reina in a high priority conservation status. Hawksbills are considered critically endangered and each sighting is vital to register, owing to the value of citizen science.

Photo: Alex Double, Sea Turtle Ambassador

Palapas Ventana, Planeta Libre Expediciones, and EcoAdventures Cabo Pulmo are our newest citizen science groups helping to collect and report sea turtle sightings at La Reina and the nearby marine protected area of Cabo Pulmo. We look forward to receiving data from these groups in the near future. Below is the poster Upwell designed that we are sharing with these locations and their SCUBA divers.

Sea Turtles of the Eastern Pacific



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*All five species of sea turtles found in the Eastern Pacific (including the Gulf of California) are protected by national and international laws.

In collaboration with:

GRUPO TORTUGUERO

Become a Sea Turtle Spotter

Upwell's mission is to protect endangered sea turtles by reducing threats at sea.

Join our citizen science program and register your sea turtle sightings online at www.inaturalist.org/projects/sea-turtle-spotter or via the iNaturalist app on your mobile device.

Or email photos and videos to spotter@upwell.org with the following information:
Required: Date, Time, Coordinates (*e.g.*, Lat: 24.533633 Lon: -109.927294)
If Available: Species, Turtle Condition, Behavior and Habitat

Your actions matter!

- If you eat seafood, make sure it was captured using selective methods that reduce sea turtle mortality.
- Avoid single-use plastics; refuse straws and bring your own reusable bags, to-go containers and utensils. Clean up stray plastics before they end up in the ocean.
- Choose ecotour operators that support conservation science and protect turtles when making business decisions.
- Learn more about sea turtles at www.upwell.org.

Cabo Pulmo National Marine Park

Long-term Funding Strategy

Our long-term funding strategy sustains and enriches our sea turtle conservation model by integrating economic incentives for fishers like Aldalberto Garcia of Sinaloa shown here.

As we move into 2020, we are excited to create innovative long-term funding strategy as suggested by Rufford. Planeta Libre Expediciones is taking lead on this to develop a menu of responsible tourism activities at the La Duna Ecology Center. The founders are local graduates of Alternative Tourism with great capacity to help us be fully sustainable over the next few years. Using a citizen science approach, the program highlights sea turtle conservation targeting academic and yoga niche markets. The activities include permitted sea turtle monitoring with Grupo Tortuguero, the Upwell research mission, and coastal community involvement. These activities provide economic incentives for fishers as our Chef has prepared a menu of sustainable seafood meals with their products.

PLANETA LIBRE
EXPEDICIONES

La Duna
ecology center