The Rufford Foundation
Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course, but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Stephanie J. Rousso
Project title	Enhancing the Community-based Sea Turtle Conservation Model
RSG reference	24752-D
Reporting period	July 2018-July 2019
Amount of grant	£9920
Your email address	Stephaniej.rousso@gmail.com
Date of this report	25 August 2019

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Record strandings of sea turtles				We were able to record strandings, many based on citizen science reports from local groups via Facebook, WhatsApp, email, and VHF radio. Sea Turtle Spotter is a great platform for recording sightings live and dead, but for recording strandings, we require more real time reports.
Necropsies				During the course of this past year, the Mexican government released a new law that a certified wildlife veterinarian conduct the necropsies. There are no certified vets for necropsies in the region yet. We were only able to conduct a visual external exam after the law and some key necropsies before the law passed. Also, Dr. Monica Lara from the University moved into another position and was no longer able to serve as a team member, so I lost my permit. I was fortunately able to be put on the permit at CICIMAR then late added to the Grupo Tortuguero permit via Dr. Agnese Mancini (RSG grantee)
Citizen Science materials				In collaboration and graphic assistance from Upwell Turtles, a non-profit in the U.S., we were able to improve our previous field guides and create a poster that we posted in several marinas, SCUBA dive shops, and other tourist areas. We have passed out over 200 field guides and the material is now posted on Upwell.org and ClubCruceros.org – our main citizen science group, a sailing club out of La Paz, Mexico.

Training workshops for fishers				We were able to conduct training workshops with select fishing communities, cooperatives, and small villages where poaching and fisheries bycatch is an issue in Sinaloa, Baja, and Jalisco. We exceeded our expectations in Sinaloa based on the 10+years of work with fishers in this region by our team member, Dr. Alan Zavala. In Jalisco, Biologists Luis Angel Tello and Israel Llamas were instrumental as they introduced us to several fishing cooperatives and fabulous potential areas for yoga retreats. Their efforts went well beyond our expectations and we look forward to continuing to work with them in the future as the fishers they work with continue to surrender live critically endangered hawksbills for examination and tagging. Israel and Angel as well as Dr. Catherine Hart are collecting barnacles from the hawksbills for my independent study of a specific commensal species that may serve as bioindicators to sea turtle spatial distribution via stable isotope molecular analysis.
Standardize data collection				We are still working on the details based on feedback from citizen scientists and recently received a new volunteer with project management experience. She made an evaluation and found some gaps where we can improve and we also have some students contributing feedback. We will continue to improve this working document and publish online with Upwell in September- October.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

1. Aerial monitoring: The Cessna plane that provides the aerial services was in repair for the duration of the suspected mating season (July through September). Without the plane, we resorted to boat trips and citizen science reports. Using these

alternative methods, we were still able to register adult sea turtles in La Paz Bay during the suspected mating season. However, the vantage point from the boat is parallel to the turtles in the water when they are at the surface, not like the perpendicular vantage as we would have from the plane. Since males mount the females in the water, often, the female is held underwater just so her nose can surface to breathe. We have seen splashing from the boat as if they are mating, but we could not get photography confirmation. The plane is working now, and we have contacted the pilot to alert us if he sees mating activity. We were able to document over 50 stranded turtles along the coast adjacent to the suspected mating zone, indicating that our hypothesis holds up that this area is a mating area. However, we cannot publish with confidence that mating occurs in this area until we have photographic confirmation, which requires the use of a plane. For future study in this area, a plane flight or a boat with an upper deck, like a sport fishing boat would be advantageous, or a combination of both. In another focal area, La Ventana, we met a Canadian father and son who spend their winters here and have a plane. They are eager to try in the summer of 2020 looking for mating and will probably do it as a donation. In the meantime, the Cessna plane we previously hired is flying again and this summer he is searching for mating activity as a citizen scientist.

2. Drone: We miscalculated the cost of the drone due to shipping costs and accessories, and therefore we were under budget for the drone we wanted. Fortunately, we were able to purchase a used drone locally well under budget and also avoided international shipping costs and customs. This drone needs repair and so due to more practice time required and repairs, we were not able to use this to the full extent. For example, we intended to use the drone to survey for mating activity along with the plane, however, the drone that we purchased is no aquatic and we would risk losing the drone in the water without sufficient practice. We did use the drone to search for strandings and review the coastline, but the repairs to the camera inhibited video capture, but we can still use it via an IPad. We still continue to practice and gain more confidence in using to survey for strandings, and also film workshops and field excursions with students. Our team member Ernesto Ruiz has a drone as well that he can fly over water and next month when he returns to La Paz, he will try to fly over the mating area to see if we can capture any mating activity. Ernesto is also helping us develop marketing material for our sustainable financial plan (explained in the next section) and also help us record data and observe changes in the ecosystem much better over time. We can also use the drone to record monitoring and fishing activity from a different vantage point for education and data quality purposes. While the drone was not an asset this previous year, this project continues to grow and the drone will be used continue on our successful trajectory to advance our sea turtle conservation model.

3. Necropsies: Due to the change in Federal Mexican law requiring a veterinarian to be present and conduct necropsies, we were unable to conduct many full necropsies. Most vets in the area only have an undergraduate degree focused on livestock and domestic pets. We are also required by permit to report a stranding to the environmental law enforcement and with their limited staff and resources, they usually do not respond for a few days, or sometimes not at all. This prevents us from

getting to the turtle for a necropsy within the 12-hour decomposition window for necropsy. This unfortunately is out of our control and something that we are working on collectively and bringing up for discussion at international and national sea turtle conferences.

Another challenge with necropsies, is that due to the desert environment, decomposition occurs rapidly. For example, through citizen science reports, we received notification of a stranded dead turtle, a rare loggerhead, only the fifth we have recorded in the region. The report came in the morning via WhatsApp, and by the afternoon when we could find it, beetles and flies had already made their way into the body cavity, making a necropsy very difficult. The time we receive a report, the remote, access, and the procedures all make necropsies challenging.

Despite these challenges we continue to register the spatial distribution of stranded turtles and conduct an external exam to check for obvious injuries on the carapace, plastron, head, and flippers. We also conduct a mouth scope to search for possible plastic ingestion. An external exam allows to positively identify fishing gear entanglement from net markings, injuries from boat strikes, and knife puncture or cuts. We use the spatial information to correlate the timing with mating, fishing, or harmful algal bloom (red tide), but we cannot definitely identify the cause of mortality. Yet, with this spatial information, we can also correlate to currents, collect barnacle samples for stable isotope analysis, and collect bone fragments for heavy metal studies. This will still lead us to some forensic answers that no one else in the region is doing. The use of citizen scientists also helps raise awareness and allows the community members to take an active role in conservation through research and outreach within their communities. As we make progress and reach a point where we can publish, these findings will lend more confidence with the government and more credibility in our voice to make modifications or exceptions to the current inhibiting laws.

3. Briefly describe the three most important outcomes of your project.

Since the start of this 2nd booster, I have constantly contemplated and worked toward a confident answer to the following comment by the RSG board: *"We feel it is very important to think about either an exit strategy or long-term sustainable funding strategies, since presumably the need for a project of this nature will not go away soon." (Attachment A).*

I have been working diligently on developing several avenues for long-term sustainable funding through international non-profit collaborations and a business plan focused on sea turtle citizen science that incorporates academic and ecotourism groups and an innovative idea to tap into the $84 billion yoga industry. This innovative idea integrates research and conservation for sea turtles by targeting niche markets largely focused on wellbeing and education. In this way, I maintain the basic concepts (community-based sea turtle conservation action and local education and career opportunities) we have developed through RSG funding while simultaneously reducing our dependency on foundational funding. The human beneficiaries remain the same: fishers, students, and coastal community residents.

Outcome #1: I am excited to report that the first important outcome of this project is that Upwell Turtles invited me as part of their research team to serve as their Mexican coordinator, yet I remain an independent scientist. They matched funding from Rufford which enables me to contribute 100% of my time to further developing the model for sea turtle conservation "Sea Turtle Spotter" (STS). Upwell is well invested in the future and sustainability of the sea turtle model using the citizen science approach that we have created. Together, we recently applied to National Geographic for funding for the next two years and the director, Dr. George Shillinger has formally been invited and adapted to be a core scientific advisor on my PhD committee (PhD details below).

Outcome #2: The second important outcome is that I have created new partnerships with eco-lodge centers to create a long-term sustainable funding idea. Our business idea is to design and implement yoga retreats that finically benefit my team's research initiative in four states in Northwest Mexico: Baja, Sinaloa, Nayarit, and Jalisco. In this way, we can all reduce our dependency on grant funding and create market-driven conservation funding. The yoga industry is estimated to be approximately $84 billion worldwide and exponentially growing. The core philosophy of yoga is "finding one's path to enlightenment through compassion for all beings grounded in our relationship to all of life." Since sea turtles are considered charismatic, iconic, and the ancient spirits of the ocean, it makes sense to market sea turtle conservation to the yoga industry. Yoga retreats are a growing business, especially in tropical areas, like Mexico. Yet many yoga teachers want to host a retreat but do not know where to start and many want a unique artisanal experience where they can give through their yoga practice. I want to offer to design and implement yoga retreats at eco-lodges adjacent to sea turtle research centres where my team works. In addition to yoga twice a day, the guests participate in conservation of sea turtles through engaging in Bluemind citizen science activities. Bluemind is an exciting concept coined by Dr. Wallace J. Nichols a sea turtle biologist who studied in Baja, Mexico and founded Grupo Tortuguero, the largest and strongest sea turtle nonprofit in Mexico.

Yoga retreats rely heavily on wellness through nutrition. A new addition to my team is a chef. He has been working directly with the fishers who participate in citizen science of sea turtles by understanding and knowing their seafood products. He has calculated a premium price to pay fishers for their seafood product that we can serve up at the ecolodge centres where the retreats and academic groups will stay. We have an agreement with the fishers that they continue to register sea turtle bycatch and sightings and participate in trial modifications of gear and fishing practices that helps reduce and eventually eliminate unwanted bycatch of sea turtles. The ultimate goal is to recycle all gillnets and only fish with line and pole using circle hooks that inhibit sea turtles from getting entangled or hooked. In this way, we not only provide long-term, market-driven sustainable funding for our research, we also increase citizen science participation with fishers, reduce bycatch of sea turtles, and reduce grant funding needs. Fishers in this scenario work in conservation through the market of their product in an active way with pride.

This business plan extends into academic groups, taking the yoga component away, but maintaining the sea turtle citizen science and funding complement for monitoring and sustainable seafood with fishers as stakeholders and collaborators. Upwell has agreed to be the beneficiary of the data that is collected during the activities so that we ensure the credibility of the program with an international non-profit and that the activities have a solid scientific foundation and applicability in sea turtle conservation. Our programs will inspire guests to donate to Upwell, especially Americans who seek a tax deduction through philanthropy. Upwell has proposed that donations from our programs and citizen scientists will be reserved for our research initiatives in Mexico. They currently provide financial aid through stipends and travel reimbursement and vital administration support.

Outcome #3: The third important outcome is my alignment with the largest Mexican non-profit organization dedicated to sea turtle research and conservation: Grupo Tortuguero. This includes forming partnerships with Dr. Agnes Mancini, a five-time recipient of RSG funding. This is very exciting for both of us to be joining forces and sharing our Rufford experiences. This has also cultivated a strong connection between Grupo Tortuguero (GTC), Upwell, and two graduate biological centers with the National Polytechnic Institutional system in Mexico: the Center for Marine Science in La Paz (CICIMAR), and the Center for Integral Sustainable Development in Guasave, Sinaloa (CIDIIR). We are currently finalizing research agreements, and GTC has added my director from CICIMAR and me to their research permit. I am currently assisting Agnese in planning for the Rufford Conference in La Paz which further strengthens our collaboration.

While not a yoga retreat, Agnese and I collaboratively financed a sea turtle monitoring activity through our first attempt in our long-term sustainable financial strategy. We encouraged the expedition group to donate the funds to cover monitoring costs in exchange for the opportunity to participate in monitoring and learn first-hand and hands-on about our sea turtle research and conservation. For the first time ever, our Chef came aboard, and prepared sustainable shrimp provided by an artisanal fisher from Sinaloa working with Dr. Alan Zavala. It was a fabulous first trial run of the promise of long-term funding strategy to incorporate citizen science, sustainable fisheries/seafood, and promote community-based conservation for sea turtles. The shrimp was especially delicious and the first time I have eaten shrimp in over 10 years for fear of sea turtle bycatch. This time, I am 100% confident buying shrimp directly from the fishers in Sinaloa who are protecting and assisting in the research of sea turtles with Dr. Alan. During the two-week expedition, the group registered several critically endangered hawksbills and endangered green turtles in remote areas not currently under monitoring by GTC or anyone. Based on this success, we may include sailing expeditions in our business idea with Jersey Girl, a 73-ft sailing charter boat who loves citizen science and wants to contribute to our research. These sailing expeditions will be part of our long-term sustainable funding strategy along with the upcoming yoga retreats and academic groups.

Outcome #4: The forth important outcome is my own personal academic advancement. I have passed 90% of the entrance process to enter a PhD program

at CICIMAR. Dr. Dinorah Herrero and Dr. Felipe Galvan (CICIMAR) and Dr. Alan Zavala (CIIDIR) have agreed to serve as part of my PhD committee in a joint registration between the two centers. The Executive Director of Upwell, Dr. George Shillinger, has also formally been invited and accepted to be a core scientific advisor on my committee. Together, we will be studying the spatial distribution of sea turtle, shark, and ray bycatch comparing different small-scale fishing practices in the southern Gulf of California between Sinaloa and Baja California Sur. Given the huge success in gaining trust and participation from fishers in Sinaloa, I will continue to advance the citizen science program with fishers as they will be reporting bycatch and monitoring sea turtles. I will be entering the four-year PhD program in January 2020. In terms of sustainable long-term funding, I will have a full scholarship and some field travel will be generously supported by Upwell.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

The premise of project is encouraging coastal communities to take an active role in the conservation of sea turtles through outreach, in-water monitoring, and economic incentives. Our sea turtle model for conservation emphases a citizen science approach. In return, the communities benefit from unity in conservation, sharing stories of sea turtle sightings, and inspiring festivals and education curriculum in the schools about sea turtles and ocean conservation overall.

In particular, the communities that continue to benefit from this project are small fishing and tourism villages. For example, the La Ventana fishing and seasonal kite boarding village recently formed an organized citizen science club of approximately 50 volunteers. They were inspired and impressed with the success of our program and the outreach we have been doing in this village with a few foreign Americans and the Mexican secondary school. The club is mostly American and Canadian (Ex-pat) with a growing number of local Mexicans. The seasonal "expats" contribute resources in the form of funds, professional expertise, field equipment such as boats, snorkel gear, SCUBA gear, SUP boards and kayaks they use to search and register sea turtle sightings. The club brings people together, fosters outdoor activities for families, and unites the Mexican and expat groups for a positive and inspiring sea turtle citizen science program. The club is currently preparing a series of workshops for the kiteboarding tourism season which alleviates logistics and planning time and costs that my team and I usually incur. Several of the members also offer accommodations and food while my team and I are in the area overnight or for workshops, thus reducing future workshop costs.

Another community that is benefiting from our program is a local group of SCUBA divers. Our outreach material that we improved and refined with the help of RSG funds and Upwell support, provides the divers to engage more during their dives with the sea turtles they see. They learn about the different species and how to protect them through their favorite activity. In particular, we advanced our citizen science program at the Cabo Pulmo Marine Park thanks in part to EcoAdventurs Cabo Pulmo, the main SCUBA dive center and with the support of the park Director. Palapas Ventana is another SCUBA dive business that has adopted Sea Turtle

Spotter as part of their dive activities. Both businesses are actively reporting sea turtles and providing valuable data that we can use to better understand habitat use of protected and non-protected marine areas and frequency of use as divers register the same sea turtle. The latter has been evident with the "Patos Buzos" local dive club, where Alex and Tamera Double, founders of the club *and should be noted, they are a fabulous couple from England*, have taken initiative to register sea turtle sightings at an underwater seamount, "La Reina". They created a map with Manta Pacifica and register their sea turtle sightings with photo documentation on the map and supply our team with the vital data.

Another community is the university students. We hosted Colorado State University at the La Duna Ecology Center, the home base for our sea turtle research. With RSG funds, combined with Upwell funds and a small grant from the International Community Foundation, we were able to invite several local Mexican students into the field with us with Colorado State University. The students were able to share their experiences and cultures and native languages surrounding the theme of sea turtle conservation. As part of our long-term sustainable funding strategy, CSU has agreed to return in 2020 with three more groups for longer periods. We are looking forward to their contribution to cover the cost of monitoring with GTC and further strengthen our partnership so Agnese and I can grow our RSG collaboration.

5. Are there any plans to continue this work?

ABSOLUTLY! Sea Turtle Spotter is gaining international traction and credibility in several communities and various sectors thanks to my new research agreement with Upwell. Our outreach materials are available for download PDF so we can reduce the cost of printing to only waterproof guides for SCUBA divers and fishers. Club Cruceros, the sailing club in La Paz, Baja California Sur has posted the project on their website and continue to support our actions through marinas, newsletter, and other means.

We have also been working with a sailboat charter, Jersey Girl II, to generate citizen science sailing trips to search for and register sea turtles. Jersey Girl raised approximately £5000 for their first citizen science expedition. They will be sailing for two weeks from San Diego to La Paz with 6 paid guests and taking three of the Colorado State University graduates who interned this year with me. Their sailboat will be the main citizen science vessel and the graduates will be organizing and recording all the sea turtle sightings from over 200 sailboats during the 24th Baja HaHa Rally. Upwell will be hosting the data and supporting the expedition with Facebook and Instagram posts and providing some give away T-shirts for the three sailboats with the most and exciting sea turtle sightings with photos. The rally takes place 3-16 of November with a big, fancy welcome part in Cabo San Lucas. The girls will be highlighting Upwell as well as Rufford via workshops, presentations and outreach materials.

Now that my research is sponsored by Upwell and I am part of the Mexican Turtle Network (Grupo Tortuguero) with another RSG recipient, Dr. Agnese Mancini, we have long terms plans to expand sea turtle spotter with fishers, students and scientists

that are also part of the network. Finally, my PhD will be a four-year project that involves fishers and students to help collect data on sea turtles within the fisheries, and as I work with these communities in Sinaloa and Baja California Sur, it is easy for me to include outreach workshops and further row our success. My PhD will be funded in part by Upwell and a Mexican scholarship and also in part with our fundraising idea to incorporate sea turtle citizen science into the rapidly growing yoga retreat market. These retreats will not only generate conservation dollars to continue our program and economically benefit the local communities, but it will also provide jobs for local Mexican biologists, internships for students, and an economic incentive for fishers to continue to work in coordination with us for sea turtle conservation and cultivate a larger and collaborative movement and culture for sea turtle conservation.

6. How do you plan to share the results of your work with others?

October 2019 – I am preparing an abstract for the 2nd International Conference for the Conservation of Marine Turtles of the Eastern Pacific in Morelia, Michoacán, Mexico. I will be submitting a poster with instructions for other scientists and students working with sea turtles about how we are studying a specific species of sea turtle barnacles as bioindicators for determining habitat use of the sea turtle host. I will also be submitting an abstract for an oral presentation about the efficacy of citizen science in developing a sea turtle model for conservation. Upwell will be providing funding for travel for this conference.

November 2019 – During the Baja HaHa Sailboat rally, Jersey Girl and three graduates from Colorado State University will be promoting Sea Turtle Spotter with approx. 200 sailboats for two weeks. They will be sharing results with rally participants in PowerPoint format and also beach printouts. Jersey Girl is a charter sailboat and has a large flat screen onboard with USB ports for showing presentations, photos, and videos.

January 2020 – I will be hosting 2 academic groups from Colorado State University at the La Duna Ecology Center, our sea turtle field research headquarters. Our team Chef will be providing sustainable seafood menu options at center in which we will include a strong aspect of reducing bycatch through mindful, responsible seafood choices. We will be taking the student to visit to the Las Pacas fishing village of whom these fishers are participating in sea turtle citizen science. The fishers will be presenting the results of their work with us regarding sea turtle bycatch and strandings. I will have a local Mexican biologist on staff to help with activities and curriculum which highlight results and advancements in our sea turtle conservation model. This is the CSU group where 2-5 students usually return for an internship with us.

February 2020 – Puerto Vallarta. Grupo Tortuguero (GTC) holds their annual network meeting in January/February. In 2020, I have already asked to present about encouraging students and other scientists to be collecting information about barnacles they remove from nesting or foraging sea turtles and also spreading our outreach materials to sea turtle centers where there is a high incidence of tourism.

This will ideally encourage more ecotourism destinations to report their sea turtle sightings during their regular planned activities.

March 2020 – I have the first 5-day yoga retreat confirmed for March immediately followed by a 6-day academic workshop with a study abroad group from Colorado State University. Both groups will be staying at the La Duna Ecology Center where we are basing our sea turtle research centre and provide excellent opportunities to share the results, progress, and experience of our sea turtle spotter success. Both events will include results from our sustainable fisheries initiative with Sinaloa and Baja fishers through offering and discussing how choosing sustainable seafood products help to reduce sea turtle bycatch.

April 2020 - I have offered to volunteer to help Dr. Agnese Mancini to plan the next Rufford Conference in Mexico. Agnese and I met previously at the Rufford conference in Los Cabos in 2014. While we are planning the conference and not anticipating to be presenters, these conferences are a fabulous way to communicate success and lessons learned with other RSG grantees, especially those who are in their first round of funding to hear and meet from grantees such as Agnes and I about our experience.

Scientific Articles: I aim to publish papers regarding the barnacle study we are currently working on in the lab at the marine science centre in La Paz, Baja California Sur, Mexico. I also want to publish a cases study about the formation and advancements of the first regional citizen science club for sea turtles. In this paper, I will be highlighting our model for sea turtle conservation using a citizen science approach and illustrating our success with demographic, ecological data and spatial distribution maps of sightings.

Collaborative Poster/ Book Release: Earlier this year, Dr. Vanessa Hunt from the University of Washington presented results via poster format from our project at a conference in Washington State, U.S. She spent a month here in La Paz, shadowing me and our team whilst also conducting interviews with fishers, scientists, and students. She attended the GTC meeting in Sinaloa as well with Agnese, Alan, and me. She is publishing a book as Agnese and I are co-authors. The poster we created together will continue to be used here in La Paz with the above workshops and events. We will update the poster in 2020 with more results and look forward to sharing and promoting Dr. Hunt's book.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

As per the guidelines of booster II phase, we acquired matching funds and support from Upwell (£24,000 approx.), the International Community Foundation (£6500 approx.) and conservation funds through hosting and promoting academic and expedition groups (£2000 approx.). Thus, this project continues a successful trajectory using funds remaining from Upwell and proposed budget to Upwell for 2020 and upcoming academic and expedition groups and yoga retreats.

Rufford funds were used over an estimated 9-12 month period, but it is difficult to determine the actual period compared to the actual length of the project since matching funds were integrated into the overall project funds as we continue to expand and evolve with partnerships. I am currently looking for an accountant to help me organize the funding spent and keeping matching funds separate, however, as it is, I am having a challenging time keeping up with prepping and administering planned field time, responding to stranded sea turtle reports, attending to the needs, questions and demands of individual citizen scientists, cataloguing photos and videos, organizing citizen science data from 5 different reporting avenues (Facebook, WhatsApp, email, verbal, and STS), corresponding with team and volunteers, and providing progress reports. The most important aspect is that the funding has increased thanks to RSG, in correlation with data, number of citizen scientists and new partners, and funding opportunities.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Travel: Sinaloa	1600	2500	+900	I combined my travel to Sinaloa for the annual meeting with GTC which included additional travel costs, lodging, and registration for the meeting. Upwell matched the amount we needed that exceeded our budget. I also travelled to more fishing communities than originally anticipated. I was not expecting such a warm welcome from the fishing cooperatives. Almost everyone invited me to their fishing village to meet me, so without rejecting fishers who I knew would be integral in this project and in such an encouraging and inspiring area, I put more money to this travel budget.
Travel: Jalisco	1440	2000	+560	We exceeded this amount because we originally planned for travel within the state of Baja California Sur to San Cosme.

				However, as I mentioned before accepting this grant, the contact for San Cosme left his position and the government had not yet placed anyone new and the person in charge in the interim was not familiar or accepting of our program due to sensitive issues with endangered sea turtles. It takes a lot of time to develop trust with fishing communities when asking for coordination with registering sea turtle data especially in areas where poaching is an issue. We also travelled to several sites looking at potential yoga retreat sites for our sustainable market-based financial program.
Travel: La Ventana	1250	1500	+250	With the formation of the citizen science club and the amount of strandings in this region, we spent a majority of time here. We also accepted three interns from Colorado state university on a sliding scale cost basis so our costs exceed our funds. Upwell was able to match and complement this budget item and gas coupons were utilized from the budget from the strandings. We also used some of the gas coupons to help citizen scientists attend meeting and outreach workshops in La Paz so they could participate more.
Field Equipment	800	600	-200	We found a drone for $250, so we saved a great deal on field equipment. We were able to buy some other items for the field and travel, such as luggage rack for the field truck, a tune up for the field truck, tires and other items such as gloves, alcohol, containers, label, etc to help us better organize citizen scientists

				and our team for strandings and mapping out the mating area.
Citizen science Workshops	1200	800	-400	With the aid of the marina la paz conference room, we did not have to spend as much as anticipated on workshops. We did develop a partnership with a chef who incorporated sustainable seafood products from the fishers we work with as citizen scientists to 1. Highlight fishers for their participation by paying a premium price for their product and using the food as an outreach tool to encourage more people to participate in sea turtle conservation model.
Strandings/ Necropsy	1000	1800	+800	Under this budget item, we purchased gas coupons for the entire year that provided fuel for travel to survey for strandings, ground travel for La Ventana, and coupons were used as payment with fishers who registered strandings and bycatch, which was not anticipated.
Mating Area	1930	800	-1130	The plane was not available during the potential time for mating, so this funding was redirected to gain for citizen science reports and additional gasoline for the truck and boats to explore more of the bay in various formats. We also paid fishers gasoline vouchers for their time reporting sea turtle sightings and bycatch. We also used these funds for additional team members to travel and additional students to participate in field work in Sinaloa, Jalisco, and Baja.
TOTAL	**9220**	**9200**	**-200**	

9. Looking ahead, what do you feel are the important next steps?

The next step is to begin a PhD program focused on bycatch where Upwell is a major stakeholder in providing peer-review and guidance. I am preparing my final report and budget for 2020 to propose to Upwell as I am excited to stay with them as an independent researcher and renew our research agreement and financial contract. I also plan to publish scientific articles, develop a structured internship program with Upwell that benefits local Mexican students though financial aid from foreign students, develop program services from Upwell for providing citizen science expeditions.

My colleagues and I have formed a great team where we support each other rather than have a hierarchy of a leader and followers. This is different from previous years including the start of this year with Upwell, where I was in a position to delegate rather than collaborate. I prefer to collaborate with people working at the same level, ambitious, and passion. While I do like teaching and leading, I prefer to reserve that skill and energy with students in a structured internship or academic group format and with citizen scientists. Thus we will continue to collaborate to bring more academic groups, yoga retreats, and citizen's science expeditions with the ecotourism groups and sailboats who want to contribute, however, in their format where we receive and benefit data and funding, but leave the logistics and marketing to the professionals. I firmly believe in our long-term sustainable market-driven funding strategy which will help us generate "conservation funds" to continue sea turtle research, promote more active conservation in more coastal communities through citizen's science and reduce our dependence on grants.

I also want to integrate the concept of "bluemind" developed by Dr. Wallace J. Nichols, founder of the Grupo Tortuguero (GTC), into more of my curriculum. I am also inspired to explore further how to build the field of "neuroconservation" in our sea turtle conservation model. Dr. Nichols is in full support of our retreat and expeditions and willing to help us promote. So far, we have confirmed citizen science sailing expeditions, study abroad groups from Colorado State University, and yoga retreats, all under the Bluemind umbrella. All of the above business ideas have a positive conservation intention by providing the funds we need to continue our work. Dr. Agnese and I are growing our collaboration and she is aware and supportive of this business idea.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did The Rufford Foundation receive any publicity during the course of your work?

The majority of the workshops we give are done using PowerPoint in which we include the Rufford logo in the cover and on the acknowledgments page. We always explain how our work is funded acknowledging your generosity and the generosity of other funders who are result from our credibility with Rufford such as Upwell.

Upwell also highlights my achievements based on Rufford funds by naming Rufford in my Bio on their webpage and we use the grant award acknowledgement for other funding such as National Geographic and for my entrance application into the PhD program. Especially valuable in my career is the webpages provided by Rufford for each grant award. These provide integrity in my biography as an up and coming marine scientist and validifies my contribution to the scientific community, especially the community of sea turtle biologists with Grupo Tortuguero. Additionally, now that Agnese and I are collaborating, we bring Rufford into more conversations with citizen scientists, students, and other scientists.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

The accomplishments from this past year have allowed me to advance in a way that I have not in previous years. I feel that I have struggled in the past putting together a strong team, including this proposal. Below, I highlight the original team members proposed and the team that organically developed.

Dr. Alan Zavala Noregaray. He is one of the most fundamental people in my research. During my travels to Sinaloa, he introduced me to fishers with whom I am now working, he has a citizen science program with these fishers to record, measure, photograph, and tag sea turtles that are accidentally caught in their nets. He provided lodging, transportation, and collaboration from Sinaloa for this project. He is collecting data on strandings, bycatch, and has the other only sightings of rare loggerheads in the Gulf of California. In that aspect, we are planning to publish together this new information of the fifth species of sea turtle to be confirmed to use the Gulf of California. Our professional relationship continues to grow as Alan is now my co-director for my PhD research starting in 2020. Alan and I are very alike, we are both very ambitious, our research is holistic in that we do not just focus on the sea turtles as an item, but rather the sea turtles as a part of the whole.

Daniel Vazquez, fisheries biologist. Daniel assisted in this project much less than in previous years. Danny is a very valuable asset, however, when the administrator of FEDECOOP changed and was not open to collaborating on our project, Danny was forced to find another job. This job required him to be diving several hours per day with very little free time to work on our project. Upwell invited Danny to the team and he remains a part of our growing team, but his role is minor until we can find funding to support his salary. We are currently working on other grant applications and have submitted to National Geographic via Upwell which will allow us to contract Danny or another biologist to continue the work we have made so much progress. Danny continues to report sightings of sea turtles via his dive career. During his work, was able to video a critically endangered hawksbill feeding on a discarded shark head. This is incredibly rare footage of scavenging activity which is not published in addition to the confirmed sighting of two hawksbills that day in an unmonitored area. So, while Danny was not able to participate in coordinating with FEDECOOP, he remains part of the team and serves in a scientific role by documenting strandings and live sightings of sea turtles from his paid work.

Israel Llamas – After learning about the administrative government changes in FEDECOOP and losing the collaboration, I approached Israel, a biologist in the state of Jalisco, Mexico. Israel began the Mayto sea turtle research center where they monitor olive ridley nesting beaches and operate an open hatchery. They also offer educational and outreach programs. Israel invited me to Mayto in 2017 after meeting at the International sea turtle conference in Michoacán, also where I met Dr. Alan. I was very impressed and we both knew right away we wanted to work together but were not sure how. He was interested in my master's research on sea turtle barnacles and he began collecting barnacles from hawksbills that were brought into him by fishers. As in the case with Alan, Israel has developed several working relationships and trust with fishers in the region who are working with him to study hawksbills adjacent to the Mayto research center. Israel has been instrumental in our collaborative research.

Luis "Angel" Tello – Angel is an amazing biologist. While his research interest lies in conservation of crocodiles, his passion for herpetology extends into sea turtles and toher reptiles. He and Israel strongly collaborate in Jalisco and work in conjunction with many fishers in that area. Angel surprised me and my team when he spent 2 weeks introducing us to different fishing cooperatives where we were able to give outreach workshops with more fishers than we had originally proposed. Also, after sharing our long-term sustainable funding idea with Angel for yoga retreats and academic groups, Angel introduced us to several people who can host retreats and students in Jalisco. Our aim is to offer academic and yoga experience in Jalisco in fall 2020 that will help us generate collaborative conservation funds. Israel and Angel continue to collect and preserve barnacles from critically endangered hawksbills that are surrendered live as bycatch from fishers in Jalisco. The unique sea turtle barnacles will be used in a stable isotope analysis from CICIMAR 2019 – 2023 to help determine geographic habitat use of sea turtles based on the chemical footprint accumulated by the attached barnacles.

Chef Andrés Hernández Acevedo – Chef Andres has been working with fishers to understand their seafood products, their method of fishing, and looking into different species that can be used in menu items for our long-term sustainable funding strategy business ideas of hosting yoga, academic, and expedition groups on sailboats and at ecology centers adjacent to sea turtle team research sites. Since bycatch in fishing gear is one of the major threats to sea turtles, working with fishers in this manner where we are demonstrating an economic interest in their product, rather than threatening closures if they do not reduce bycatch is an innovative and proven way to collaborate with fishers to reduce bycatch. This is the foundation of our long-term sustainable funding strategy which will allow fishers to gain income for conservation practices.

Vanessa Pelayo – Vanessa has been instrumental in logistical and administrative work. She is currently finalizing and coordinating the research agreements between Grupo Tortuguero, CICIMAR, CIIDIR, and Upwell. She was also vital in logical planning for several citizen science workshops, International Sea Turtle Day, by preparing presentations, rendering payments and organizing receipts, creating promotional event materials, and reserving workshops space.

Ernesto Ruiz – Ernesto is an amazing photographer and videographer. I believe I mentioned this is an email to Jane, but just as we were awarded this grant, Ernesto has accepted a job with the BBC to do underwater photography and videography at Guadalupe Island in the Pacific. He is also working as an underwater camera man for tourism groups who go out to cage dive with white sharks at the island. As in the wild, this time, sharks win over sea turtles. Fortunately, Ernesto was in La Paz visiting and he came and photographed an outreach event for us. We hosted International Sea Turtle Day at the Marina La Paz and Ernesto was very helpful that day. He will continue to be on standby with us. As we evolve with our sustainable financial plan by offering bluemind, yoga and wellness retreats and citizen science expeditions, when possible, Ernesto will serve as our photographer/videographer to record the activities, reactions of people, and of course provide professional documentation of our research.

Dr. Monica Lara Uc – Dr. Monica decided to leave our team when we decided to transfer Alianza Keloni, the non-profit we started together with Carla Sanchez in 2014. It was a privilege to work with Monica and learn from her and work with her students at the university. However, our interest in sea turtles are different, whereas my interest lies in spatial ecology research, community outreach, and citizen science, Monica is more focused on molecular aspects and anatomy and physiology of sea turtles. She does not share the same holistic view in research as does Dr. Alan and I. Also, she is more traditional scientist, focusing on academic research without a conservation aspect and she does not feel that citizen science can serve science. She prefers to keep data private until published whereas citizen's science requires an open-source application. This honest difference in perspectives and research goals lead to our friendly and amicable separation.

Dr. Agnese Mancini – Agnese was not in my team; however, I feel it is necessary and important to mention that we are now collaborating given that we are both Rufford small grant recipients. After Monica left our team and Israel joined, having Alan and Israel, both from Grupo Tortuguero helped me gain more collaboration with Agnes. She was instrumental assisting us with developing the current field guide and poster we now use for citizen science. She has participated in several outreach workshops with sailboats, students, and brought almost the entire team from GTC to participate in the International Sea Turtle Day event at the marina La Paz. She has been my point of contact with GTC, and we are now developing collaboratively a research agreement between GTC and Upwell and GTC and CICIMAR. Since I was on the research permit with Monica, and since we separated, Agnes worked diligently to add me and my director at CICIMAR on to the GTC research permit. We have since conducted a monitoring together which was paid for by our first citizen's science expedition, leading to evidence that my sustainable financial plan is working and evolving. Even though Agnes was not part of my original team, I consider her an inspiration and a fundamental asset as is Alan, Israel, and Daniel.

12. Any other comments?

As in previous years, I have been so pleasantly surprised by the abundance of opportunities to meet new people and all the learning experienced gained as a

result of being awarded RSG funds. I feel so grateful for the traction these four phases of funding have provided over the past 6 years. The opportunity to work in sea turtle conservation is not only a privilege, but an amazing experience. RSG funds have led to other funding opportunities which collectively have allowed me to build such a successful and strong influence for citizen science to contribute to sea turtle conservation.

As our team begin to work more closely with fishers, I am very excited to move into a more sustainable and long-term impact of fostering a culture that promotes and seeks sustainable fisheries to reduce sea turtle mortality from bycatch. Looking ahead, I am passionate that cultivating sustainable fisheries with artisanal fishers and where they gain an active role in conservation and benefit economically through fair trade market, they will feel more empowered to push their communities farther into conservation roles. The next generation will be involved and thus organically, a new culture for sea turtle conservation will emerge. Thanks to the confidence from Upwell and the sustainability and actions of citizen scientists whom I call Sea Turtle Ambassadors, this project continues to evolve and grow.

I look forward to the results from the Baja HaHa expedition in November and our first yoga retreats and study abroad groups in 2020. I look forward to one day putting all my video clips, interviews, and testimonials from citizen scientists into a short film and submitting it to the International Ocean film Festival in 2021. I look forward to initiating the PhD journey with my new and incredible Mexican colleagues. All of the former is possible because RSG grant awards. My vision for the future with the final RSG funding opportunity is for my colleagues and I to take our long-term sustainable funding strategy to a level where we are running our programs effortlessly, publishing and presenting our results, and building a list of students and community members ready to share in the goal of coastal communities working together with scientists in collaboration for sea turtle conservation. Thank you for your program.