

Rufford Small Grants Conferences

Report



"Creating big conservation efforts
in Mesoamerica"

Oct 30th - Nov 1st

Organizers



Financed by



Introduction

The first Rufford conference in El Salvador, held in San Salvador and in Puerto Barillas, located in Jiquilisco-Xirihualtique Biosphere Reserve, October 30th to November 1st, 2021, had the main objective of promoting the RSG in El Salvador for other students who are committed with conservation efforts and searching to increase scientific research at a national or regional level. The invitation was initially extended to 58 researchers from NGOs, Foundation, Universities, awarded by Rufford for the support of research in Mesoamerica.

The first written and digital announcement was sent on August 17th, 2021, to the emails issued by the Rufford Foundation website, each of these researchers was asked to fill out a google forms document to show interest and availability in participating and they could choose between participating in a virtual or presence way in the conference considering the travel restrictions and risk due to COVID-19. A positive response was obtained to the participation of this first Rufford conference in El Salvador by 16 participants (8 present and 8 virtually). However, due to COVID-19, two of them had to be cancelled 10 or 15 days before the Conference and were changed to the virtual section of the Conference. The topics covered by the conference were diverse and allowed to increase the attention of national students and professionals in Conservation through our social media networks. In the Conference we had 41 attendees from Universities, NGOs, the Ministry of the Environment, including park rangers among others.

For the virtual participation the talks had a public audience with 8 to 33 listeners approximately (this numbers vary according to the topic and hour of the day where the presentations were given). For the field trip other students and interested people were invited to join the activities to watch and learn about marine turtles conservation and some projects that Asociación Territorios Vivos is carrying out, including our actual project funded by the RSG at Jiquilisco Bay.

We thank The Rufford Small Grants Foundation for all their support for strengthening conservation initiatives in Mesoamerica and funding the Conference that allowed to socialize research results and open opportunities for collaboration in the region, as well as promoting RSG for other researchers to develop new projects in Mesoamerica for the promotion of conservation.

Pre conference planning

Title: RSG (El Salvador) Conference (2021)

Rufford Small Grant Mesoamerican Conference

Catchword: Creating big conservation efforts in Mesoamerica

Date: **October, Saturday 30th - November, Monday 1st 2021**

Venue

The conference was held at the [Crowne Plaza Hotel](#), located in the Capital city of San Salvador, El Salvador. The Rufford grantees stayed in the comfortable and well located [Plaza Hotel and Suites](#), which is a three star hotel, next to the conference area of the Crowne Plaza Hotel.



Additionally, we organized a RSG grantees field trip to Puerto Barillas lodge, located in Jiquilisco Bay, on the southeast Pacific coast of El Salvador in the department of Usulután and is an important natural area in El Salvador due to the great biodiversity and beautiful landscapes. Jiquilisco Bay is one of the sites where the RSG has supported two projects in the past (1. Enhancing Nest Protection of the Critically Endangered Hawksbill Turtle in the Bahía de Jiquilisco-Xiriualtique Biosphere Reserve, El Salvador and 2. Dispersal of Large-Seeded Plants by Tent Roosting Bats (Phyllostomidae) and Understory Forest Conditions in Two Alluvial Forests of El Salvador).

Country: **El Salvador**

Organiser: **Melissa E. Rodríguez** (Terrestrial Ecosystem Director Asociación Territorios Vivos El Salvador) and TEAM

Conference Staff



Melissa Rodríguez
Event coordinator



Karla Zaldaña
Event co-coordinator



Katherine Agreda
Logistic support



Lucía Sánchez
Designer



Jorge González
Communications



Karla Lara
Communication and logistics

Summary of the conference

Main objectives of the RSG Conference

- To promote the RSG in El Salvador to other students who are committed with conservation efforts and looking to increase scientific research at a national or regional level.
- To show how RSG has contributed to the Bat Conservation Program of El Salvador and other projects that have been supported by the grant.
- To gather other RSG grantees to learn from their experience and to create an opportunity for scientific exchange in the region.

Impact of the RSG Conference

- **Were there examples of where Rufford Funding has enabled disproportionately large and tangible conservation impacts to be delivered?**

Yes, the case of Mike Liles grantee, and how RSG helped to strengthen his NGO that now is called Procosta in El Salvador. As well as, the case of Jimmy Andino grantee, and his local community group that after more than 10 years, those younger leaders now run their own initiative for ecotourism.

- **Were there examples of locally developed approaches to biodiversity management?**

Yes. Mike Liles grantee and how his team now manages hawksbill turtle and green turtle nest and ecotourism projects. The project from Valerie from Guatemala, and how she is teaching the locals to commit to crocodile conservation.

- **Were there examples of how has Rufford support helped early career conservationists achieve their goals?**

Yes. The case of Johan David Reyes from Honduras, as Rufford supported his project when he was starting his career, now he is keeping up with his studies in London. Another case was the salvadoran Claudia Ascencio, her project about marine mammals was her Bachelors degree project, now she is in Spain finishing her Masters degree.

- **Were there examples of how Rufford funding has helped support work on species and ecosystems that are traditionally difficult to fundraise for?**

Yes. During our Rufford Conference there were some examples of how Rufford helped projects based on species or topics that are hard to find grants, like the projects on catfish species, which are not listed in the IUCN red list of endangered species and sometimes it is hard to find support to study them. These projects were developed by Antonio Juarez and Yasmine Quintana, both from Guatemala but worked on different species of catfish.

Other examples of projects that are not easy to get funding are the projects about ecosystem services provided by bats. One of those projects was made in Costa Rica by David Villalobos and the other one is being developed by our team in El Salvador (Rufford grantee Melissa Rodríguez).

- Were there examples of how Rufford grants have provided seed funding to build capacity, identify conservation needs and develop replicable models for future projects?**

Yes. In the conference held in El Salvador, there were some examples of projects that had contributed to capacity building and identified conservation needs.

(1)The project developed by Jimmy Andino in Honduras in which seven local teenagers (15 to 21 years old) were trained by GUARUMA naturalist tour guide under the role of “Ecotourism adventures rangers” of the Cangrejal basin. They have kept up with the project until nowadays.

(2)Mike Liles project in El Salvador, developed an innovative livelihood incentive program for “careyeros” (local people working with hawksbill turtles) to protect hawksbills and concurrently facilitated the formation of the Local Hawksbill Conservation Network to build local capacity and cultivate values for long-term sustainable resource use.

(3)Our large seed dispersal project in El Salvador has trained at least 15 park rangers in bats ecology and forest regeneration process, and has contributed to develop new questions and more projects to come by early career biologists of the Bat Conservation Program of El Salvador.

In regards to conservation needs, Yasmin Quintanilla project in catfish, helped to identify that the abundance of plecostom has a negative impact on some native fish. This study allows us to understand this invasion at different scales, as well as to identify the intensity of its impact on native ichthyofauna and its various components of biodiversity.

Hernando Rodríguez-Correa from Mexico found that Quercus insingis still conserves high levels of genetic diversity and a high potential to maintain stable populations in the absence of disturbances, but faces the threat of the reduction of environmentally suitable areas for its survival under climate change scenarios.

- Were there examples of how Rufford funding has helped train a future generation of conservationists?**

Yes. Many of the Rufford grantees that presented during the Conference have continued with their conservation projects, either to continue their graduate studies or as part of actions within non-governmental organizations or Universities to which they are affiliated.

Some Rufford grantees are now in charge of conservation programs or have an influence on decision-making in their countries, some examples are:

- Jose Daniel Ramírez Fernández: in charge of small-felid conservation Program for the NGO Costa Rica Wildlife
- Mike Liles, who actively participates in the sea turtle conservation initiative in El Salvador and Nicaragua.
- Nicola Ransome, who is collaborating with the national whales conservation program of the Ministry of the Environment in El Salvador through the Megaptera initiative.
- Arlet Quiros, who is helping Fundación Saimiri to focus conservation efforts for the Saimiri populations in Costa Rica.
- Melissa Rodríguez who is in charge of the Research subprogram of the Bat Conservation Program of El Salvador and helps the Ministry of the Environment to focus conservation actions for mammals including bats.
- **Were there examples of where Rufford grantees have published important biodiversity information?**

Yes. At least the following grantees published or are preparing the drafts of publications based on the results of the projects funded by RSG:

- Mike Liles (status: Published)
- Johan David Reyes (status: Published)
- David Villalobos-Chaves (status: Published)
- Hernando Rodríguez-Correa (status: Published)
- Mónica Emilia Torres (status: Published)
- Melissa E. Rodríguez (status: in prep.)

Issues raised and any recommendations made

- **Were there any other issues specifically raised by attendees? Also, were there any recommendations that arose as a result of the conference?**

The attendees of the Conference were very interested in the topics of the talks, there were many questions for the grantees' projects and also in knowing the requirements to apply for a RSG.

List of participants

CONFERENCIA RUFFORD EL SALVADOR 2021 "Creating big conservation efforts in Mesoamerica"							
30 de octubre de 2021							
REGISTRO DE ASISTENCIA							
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REGISTRO DE ASISTENCIA							
Nº	Nombre completo	Profesión	Institución	DUI	Correo electrónico	Tel.	Firma
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Conference Schedule

October 30th, 2021				
Hour	Activity	Responsible	Country	Modality
8:00 - 8:10	Welcome	Organizers		
8:10 - 8:40	Conservation actions in El Salvador	Ministry of Environment and Natural Resources (MARN)		
8:40 - 9:10	What is RSG and its importance for ATVES and its Bat Conservation Program	Melissa Rodríguez	SV	In-person
9:10 - 9:40	RSG Grantee 2: Enhancing nest protection of the critically endangered hawksbill turtle in the Bahia de Jiquilisco-Xiruaultique Biosphere Reserve, El Salvador	Ani Henríquez	SV	In-person
9:40 - 10:10	RSG Grantee 3: Current status of <i>Crocodylus acutus</i> populations and their anthropogenic interaction in the Sarstún River Multiple Use Area, Izabal, Guatemala	Valerie Andrea Corado	GUA	In-person
10:10 - 10:30	Coffee break			
10:30 - 11:00	RSG Grantee 4: Distribution pattern of ferns and lycophytes along the altitudinal gradient in the Celaque Mountain National Park, Honduras	Johan David Reyes	HON	Virtual
11:00 - 11:30	RSG Grantee 5: Interaction of marine mammals with artisanal fishing communities El Cuco, Esteron and Icacal, El Salvador	Claudia Ascencio	SV	Virtual
11:30 - 12:00	RSG Grantee 6: A tale of plants and animals: Bats as ectozoochoric dispersers of neotropical seeds	David Villalobos-Chaves	CR	Virtual
12:00 - 12:30	RSG Grantee 7: Can predation pressure control invasive armored catfish (<i>Pterygoplichthys spp.</i>) populations in Northern Guatemala?	Antonio Juárez	GUA	Virtual
12:30 - 13:00	RSG Grantee 8: Investigating cetacean diversity in El Salvador	Nicola Ransome	ENG/SV	Virtual
13:00 - 13:30	RSG Grantee 9: Ecological impact of the invasive armored catfish (Loricariidae) on fish assemblages and implications for conservation in North Guatemala	Yasmín Quintana	GUA	Virtual
13:30 - 14:30	Lunch			

Conference Schedule

October 30th, 2021				
Hour	Activity	Responsible	Country	Modality
14:30 - 15:00	RSG Grantee 10: Conservation of endangered <i>Quercus insignis</i> Martens & Galeotti, 1843 (Fagaceae) under climate change	Hernando Rodríguez Correa	COL/MX	Virtual
15:00 - 15:30	RSG Grantee 11: Spatial modeling for the search and conservation of the endangered Harpy Eagle and King Vulture in Mexico	Alan Monroy Ojeda	GUA/MX	Virtual
15:30-16:00	RSG Grantee 12: Conservation of the natural resources through local environmental campaign in Cangrejal River Watershed	Jimmy Andino	HON	In-person
16:00-16:30	RSG Grantee 13: Landscape and management factors related to terrestrial mammal conservation in the Golfo Dulce Forest Reserve, Costa Rica	Raquel Bone	CR	In-person
16:30: - 16:50	Coffee break			
16:50 - 17:20	RSG Grantee 14: An overlooked endangered endemic small-cat? Redefining the taxonomic status of the oncilla (<i>Leopardus tigrinus oncilla</i>) in the highlands of Costa Rica	José Daniel Ramírez	CR	In-person
17:20 - 17:50	Contribution to scientific knowledge in El Salvador: Research grant program	Fundación Naturaleza	SV	In-person
17:50 - 18:20	Closure and acknowledgments			

October 31st, 2021	
Hour	Activity
6:00 - 8:00	Travel to Jiquilisco Bay
8:30 - 9:00	Arrival and travel in boat to Pirraya island
09:00 - 12:30	Welcome Procosta Projects and field activity for Rufford Grantees
12:30 - 13:30	Lunch
13:30 - 14:30	Meeting with local people that participate in Procosta Projects
14:30 - 15:00	Boat to Puerto Barillas lodge
15:00 - 16:30	Accommodation in cabins and free time
16:30 - 17:30	Walk through Puerto Barillas Lagoon and Spider monkey Conservation Project (ATVES)
19:00	Dinner

Conference Schedule

November 1st, 2021	
Hour	Activity
07:00 - 08:30	Breakfast
8:30 - 9:00	Rufford grantee 15: Creation of biological corridors using family plots, for the conservation of <i>Abronia campbelli</i> , within a new distribution zone for the species (Mónica Emilia Torres/ virtual)
9:00 - 9:30	Rufford grantee 16: Assessing impacts of human disturbances on jaguars and terrestrial vertebrate communities in the Maya Biosphere Reserve (Luc Perera-Romero/ virtual)
9:30 - 10:00	Rufford grantee 17: Distribution of titi monkey (<i>Saimiri o. oerstedii</i>) in Osa Peninsula: new insights and recommendations for the species conservation (Arllet Quíros-Calvo/ virtual)
10:00 - 11:30	Free time
11:30 - 13:00	Lunch and check out
13:00 - 13:30	Travel to Normandía
13:30 - 16:30	Visit the large seed project in Normandía (Melissa Rodríguez) and meeting with local people that participate in ATVES Projects
16:30 - 18:30	Travel to San Salvador
19:30	Dinner

Conference Abstracts

Mike Liles & Ani Henríquez (El Salvador)

Enhancing Nest Protection of the Critically Endangered Hawksbill Turtle in the Bahía de Jiquilisco-Xiriualtique Biosphere Reserve, El Salvador

Hawksbill turtles (*Eretmochelys imbricata*) are critically endangered globally and in the eastern Pacific Ocean are among the most endangered sea turtle populations in the world. Bahía de Jiquilisco-Xiriualtique Biosphere Reserve (Bahía) in El Salvador hosts the largest remaining hawksbill rookery in the eastern Pacific and is a top priority for conservation action. However, despite its critically endangered status, hawksbill eggs remain an important subsistence resource for local communities located near nesting beaches. Prior to 2008, local egg collectors (i.e., careyeros) collected nearly 100% of all hawksbill eggs deposited on beaches for sale to local markets for human consumption. By 2011, hawksbill protection efforts had increased but conservation gains had yet to be maximized as egg consumption and ineffective nest protection strategies continued to threaten their survival.

In partnership with local communities in the Bahía, this project developed an innovative livelihood incentive program for careyeros to protect hawksbills and concurrently facilitated the formation of the Local Hawksbill Conservation Network to build local capacity and cultivate values for long-term sustainable resource use. Additionally, this project achieved the first-ever protection of sea turtle nests *in situ* on a public beach in El Salvador, demonstrating its feasibility in the Bahía. This highly successful hawksbill conservation program continues today and has transformed a nearly 0% egg protection rate in 2007 to a nearly 100% protection rate in 2020, resulting in a total of 3,450 nests protected, 250,000 hatchlings produced, and >400 nesting females identified.

Valerie Corado García (Guatemala)

Current status of the American Crocodile (*Crocodylus acutus*) population and its anthropogenic interaction in Izabal, Guatemala

The American crocodile (*Crocodylus acutus*) is classified as Vulnerable in the IUCN Red List and locally in Guatemala is listed as critically endangered in the Threatened Species List of Consejo Nacional de Areas Protegidas (CONAP). This project is carried out in Izabal, Guatemala and aims to provide the first baseline on *C. acutus* wild population and its anthropogenic interaction crocodile-human in the study sites (Sarstoon river, Río Dulce and Bocas del Polochic). The preliminary results have shown an encounter rate (ER) of 0.09 croc/km in the three study sites during seven months of monitoring (March-September), however, the situation for each place is different in the social as environmental aspect and the diverse threats crocodiles face. Regarding to the social aspect, information gathered from surveys evidenced a lack of knowledge from the locals about the biology and importance of the species within the ecosystem, despite the constant interaction in past years, which has led a rejection toward the crocodiles. Related to the environmental component, there has been a high presence of gill and trammel nets between 100m and 600m length along the rivers in the lower, middle, and upper part; this fishing activity tends to be greater at night. This project not only pursues to give an initial diagnosis of *Crocodylus acutus* population, but to provide environmental education and encourage the local communities and key actors (e.g. governmental institutions, NGOs, private sectors) to work on the conservation of the species and its ecosystem.

Johan David Reyes (Honduras)

Nowhere to escape-diversity and community composition of ferns and lycophytes on the highest mountain in Honduras

Mountains are ideal for studying the effect of climate change on the distribution of species due to their strong climatic variability over short altitudinal distances. Ferns and lycophytes are excellent study groups for evaluating the future impact of climate change as they are organisms susceptible to an increase in temperature and a reduction in precipitation, which are expected to be affected in the short and medium term by climate change. In addition, these organisms have a diversity of habits and ecological niches that allow evaluating the different possible responses in the altitudinal gradients.

Previous studies have reported an “upward march” that has potentially negative implications for future diversity, by increasing the risk of extinction for species that occupy high-altitude sites and that have a narrower range of distribution. This study investigated for the first time how the species richness, diversity, and community composition patterns of ferns and lycophytes change along an altitude gradient in Honduras (Parque Nacional Montaña de Celaque). 80 plots of 20x20 m were sampled distributed within the protected area with a number of 5 plots per altitudinal band (increase in 100 mosl) with the stratified random method (1200-2849 mosl). The variables in situ were taken within the plots such as relative humidity (proxy with bryophytes), coverage, inclination, among others and the precipitation and temperature data were obtained from the ChelsaClimate database and the IPCC predictions were used for the years 2050 and 2100. This allowed documenting 11,098 individuals belonging to 61 genera and 160 species, of which 78 are epiphytes and 82 are terrestrial. The results allowed observing a distribution according to the medium domain effect (MDE) with a marked differentiation in epiphytic and terrestrial plants. Epiphytic species have a proportionally shorter range of distribution and are located at higher places in the mountains, due to this they have a greater risk of local extinction. 63/160 species are expected to have strong changes in their range of distribution and between 7-32 species are expected to contain a future range totally outside the mountain (local extinction). These species at risk are 65% epiphytic despite the total percentage of epiphytic species being 45%.

In conclusion, the effect of climate change is uneven and depends on the habits and altitudinal ranges, therefore if it is desired to reduce its impact on the displacement of plant communities, a conservation protocol is required to ensure the identification and survival of these threatened species.

Claudia Ascencio-Eliozondo (El Salvador)

Marine mammals' interaction with artisanal fishermen from El Puerto de La Libertad, El Salvador

El Salvador possesses a high presence of marine mammals that use their coastal shores as a place for reproduction, resting, or movement. Even though the country does not have any studies focus on the interaction that marine mammals can encounter with artisanal fishermen. This investigation was made in the Departamento de La Libertad and followed the fishing routes from the coastal artisanal fishermen who use the Port of La Libertad as a port of shipment. The investigation was developed under the methodology of sightings from land and boat for each type 28 days were destined during the eight months (October 2015 till May 2016) of dolphins and whales sighting season for the country. As a result, the composition of marine mammals was divided into five species: *Globicephala sp.*, *Stenella attenuata*, *Tursiops truncatus*, *Megaptera novaeangliae*, and *Zalophus wallebaeki*; with a presence of individuals of 5:31:56:1:1, respectively. Most of the sightings were from individuals who are in the adult stage and a few calves. In addition, the highest sightings registered were during October, December, January, and April. According to the data collected, the operational type of interaction was null, since 100% of all marine mammals registered did not present any interest in the artisanal fishermen's presence. Finally, the knowledge that the fishermen possess is implicit because they can cause severe damage to their working equipment. The perception they have from the dolphins and whales is based on fear of them.

David Villalobos-Chaves (Costa Rica)

A tale of plants and animals: bats as ectozoochoric dispersers of neotropical seeds.

Plants dispersed by animals generally depend on multiple dispersers. In many ecosystems, most of these interactions are yet to be explored, so documenting the degree of contribution of each animal partner to the reproduction and survival of plant species is key to understanding the ecology and evolution of mutualisms between plants and animals, as well as the potential responses of ecological networks to the loss of biodiversity due to defaunation. Here, by characterizing the effects and differences of the epizoochoric dispersal carried out by two species of fruit bats (*Artibeus phaeotis* and *Uroderma convexum*) Neotropical forests, in addition to investigating the spatial movement related to their food resources, we tested hypotheses regarding the influence of bats behavior on the dispersal and subsequent survival of seedlings of multiple plant species. Through direct sampling at bat dispersal sites (tent food shelters) and surrounding areas, we found that bats significantly influence overall seed density and seedling survival in both food shelters and surrounding areas. Additionally, we detected that the spatial movements of one of the species are limited to small areas generally associated with food resources but not necessarily associated with food shelters in tents.

Interspecific comparisons showed that despite the fact that both bat species exert similar effects on dispersal, seedlings in the surrounding areas related to *A. phaeotis* show better survival. Our results demonstrated that both species of bats mainly disperse seeds of various tree species by ectozochoric means in different localities of the study sites. These results suggest that bats are moving and depositing seeds near and far from the maternal trees, in different locations where the seeds can generally germinate, establish and survive, which highlights the positive contribution of these species in the reproductive success of trees. that inhabit tropical habitats. Our results contribute to the growing understanding of frugivorous interactions in hyper-diverse forests and of the role of small vertebrates in seed dispersal mutualisms.

Diego Juaréz-Sánchez (Guatemala)

Can predation pressure control invasive armored catfish (*Pterygoplichthys spp.*) populations in northern Guatemala?

According to the niche complementarity hypothesis: different species use a resource in different ways, and a diverse guild can extract more biomass from a resource than a mono-species system. Some experiments have shown that a diverse group of predators perform better than a mono-species system at depleting the population of their prey (Northfield, Snyder, Ives, & Snyder, 2010; Olivares, Karger, & Kessler, 2018). Taxonomic distinctness strengthens the effect of predator diversity over uptake of prey (Griffin, Byrnes, & Cardinale, 2013). Invasive species are a leading cause of freshwater fish extinctions and a primary threat to biodiversity, only surpassed by habitat loss and degradation (Burkhead, 2012). Native predators are a primary obstacle that nonnative species face when establishing invasive populations (Beschta & Ripple, 2012; Cabrera-Guzmán, Crossland, & Shine, 2015; M. Letnic, Crowther, & Koch, 2009; Mike Letnic et al., 2011; McDonald, O'Hara, & Morrish, 2007; Ritchie et al., 2012; Wanger et al., 2011). Armored catfish (ACF, *Pterygoplichthys spp.*) have been reported as an invasive species in at least 21 countries (Orfinger & Goodding, 2018). I am working towards identifying the main native predators for the invasive ACF, and evaluating how predation drives ACF populations in northern Guatemala. This work will contribute to the discussion of invasive species impacts and ecosystem resistance in a region that has been critically understudied. My preliminary data shows that 17% of fish captures belong to ACF compared to original captures of 15% in 2015 and 31% in 2009-2010. The captures of the ACF seem to be negatively related to the Native predators' diversity. Further analysis is required accounting for some demographic parameters of the ACF and their relation to native predators' functional diversity (predation pressure).

Nicola Ransome (El Salvador)

Investigating Cetacean Diversity in El Salvador: A “Training-While-Doing” Approach to Aid Conservation and Management of Threatened Coastal Populations

Whilst cetacean research grew worldwide, El Salvador was in the midst of civil war, and still little is known of cetacean presence. Coastal populations are likely threatened by intense anthropogenic activities of fisheries, shipping and uncontrolled tourism. Fundamental information on cetacean abundance and distribution is critical for effective management. I am part of a team undertaking the first dedicated cetacean surveying along the entire Salvadorian coastline, which involves boat trips along the coast using a survey design of transects. At the same time, we are training local biologists in cetacean surveying to aid in their career development as cetacean researchers. This will provide vital baseline data on cetacean presence for efficient population management and threat mitigation, whilst simultaneously building local capacity to ensure continued research. I have also been part of workshops to help train whale watching guides and captains in cetacean biology and good practices in whale watching. This year we will also be doing classes in local schools and asking children to help us name the humpback whales that we have photo-identified in the country’s waters, and teaching classes about whales and dolphins. I am just a small piece of the jigsaw of the development of cetacean research in the country and I feel very fortunate to be part of this work in El Salvador.

Yasmín Quintanilla (Guatemala)

Ecological impact of the invasive armored catfish (Loricariidae) on fish assemblages and implications for conservation in North Guatemala

Plecostomes (Loricariidae family) have become one of the most invasive fish species in the world. Plecostomes are capable of modifying ecosystems, disrupting ecological processes, altering nutrient ratios, causing loss of biodiversity and damaging fisheries. Currently, this is an invasive species in the Usumacinta River basin, a critical area for the conservation of ichthyofauna in Central America. The objective of this study is to identify the impact of the abundance of plecos on the assemblages of native fish at the local and spatial level in two tributaries of the Usumacinta. The sampling of the fish assemblages and the characterization of the habitat were carried out in 18 localities of each river. The results indicate that although the plecostomo occurs in Río San Pedro, the population is small compared to Río La Pasión, which is a river subject to strong anthropogenic pressures. In Río La Pasión, the plecostomes present a multimodal distribution, with abundances of > 40 individuals per locality. The estimated α and β diversity, as well as the relative abundance and biomass of native fish is lower in Río La Pasión. Both rivers show high exchange rates and differences in species richness. These β -diversity patterns are strongly associated with environmental factors, as well as the influence of the abundance of plecostome.

Specifically, the displacement of species with a trophic level similar to that of plecostom was identified in the sites with high invasion. At the local level, it was identified that the abundance of plecostom has a negative impact on some native fish. This study will allow us to understand this invasion at different scales, as well as to identify the intensity of its impact on native ichthyofauna and its various components of biodiversity. The information generated will allow us to provide recommendations to better direct conservation efforts in the area, including local actions in the sites identified as critical.

Hernando Rodríguez-Correa (México)

Conservation of endangered *Quercus insignis* Martens & Galeotti, 1843 (Fagaceae) Under Climate Change

Quercus insignis (Fagaceae) is an endangered oak species that inhabits the tropical montane cloud forests of Mexico and Central America. It naturally exhibits small, fragmented and low-density populations that make it vulnerable to the loss of genetic diversity and the effects of climate change. In this study, the conservation status of the populations of *Q. insignis* in Mexico was determined, based on the estimation of demographic attributes, genetic diversity, genetic structure and gene flow considering the different stages of development of the species. Additionally, the expected changes in the potential distribution of the ecological niche under different climate change scenarios and the degree of connectivity of the distribution areas were estimated. The demographic attributes (DBH and population density) were measured in 524 individuals of the species; For the genetic analyzes, 340 individuals from four locations were characterized by combining information from eight nucleic microsatellites and four chloroplast microsatellites. The demographic attributes showed that the population density in *Q. insingis* is influenced by the effects of anthropic disturbances of its habitat, but its populations still have a high potential for regeneration and long-term stability. Despite the vulnerability of the species, its populations conserve high intrapopulation genetic diversity and no evidence of genetic erosion between generations was found for any population. It was found to have a high structure and population genetic differentiation related to the limited dispersal of its acorns and its isolated and restricted habitat. Climate change will systematically affect the distribution of *Q. insingis*; in Mexico the reduction of areas is more severe and the regions to the south of its distribution represent the regions with the least impact of climate change. In general, our data indicate that *Q. insingis* still conserves high levels of genetic diversity and a high potential to maintain stable populations in the absence of disturbances, one of its main threats to conservation being the reduction of environmentally suitable areas for its survival under climate change scenarios.

Alan Monroy-Ojeda (México).

Spatial modeling for the search and conservation of the endangered Harpy Eagle and King Vulture in México.

Neotropical raptors are a particularly sensitive and vulnerable group to the loss and fragmentation of the Mesoamerican rain-forests. Raptors, as predators and debris eaters, are largely co-responsible for the structure of the ecosystems where they live. Its effects are not only noticeable in the abundance and behavior of its prey, but can also be amplified through food chains or webs affecting biodiversity patterns. Within this group of raptors, the Harpy Eagle (*Harpia harpyja*) and the King Vulture (*Sarcoramphus papa*) are enlisted in danger of extinction in all Mesoamerican countries -from Mexico to Panama-, and given their ecological importance and cultural value, they are considered priority species for conservation.

In order to prioritize the conservation efforts of these two endangered species of neotropical raptors, the Harpy Eagle and the King Vulture, we use distribution models to reevaluate the current distribution of the two species as a way to prioritize search areas and conservation efforts in highly suitable areas in Mesoamerica, with special emphasis on Mexico. Species distribution models (SDM) are based on a statistical approach called maximum entropy, which makes predictions using incomplete information, in this case, data on the presence of the species to estimate its potential distribution. Predictor variables used for modeling include various bioclimatic, topographic, digital elevation models, hydrological layers, and vegetation cover. The generated models are subsequently evaluated using AIC, AUC and pROC criteria. Once the priority areas have been identified, the model is verified in the field. In parallel, the implementation of community biological monitoring by local actors is also one of the fundamental strategies to materialize search and conservation actions in the field and within communities. Groups of local monitors have been trained, which carry out search and investigation actions of the two endangered species in areas considered optimal by the modeling.

Jimmy Andino (Honduras)

Conservation of the natural resources through a local environmental campaign in Cangrejal River Watershed, Honduras, 2007

The “Conservation of the natural resources through local environmental campaign in Cangrejal River Watershed” held in 2006-2007 involved more than 110 primary school children and their families in 4 different rural communities (Las Mangas, El Naranjo, Rio Viejo and El Pital) in the Cangrejal River Watershed, Honduras. Activities were focused to improve community awareness, creative self expression, youth leadership and training in ecotourism. Some of the main outputs generated by this project were: the “Ecocangrejal econews”, “The Cangrejal Kid’s photographers”, the “Nature Classroom” and “Ecotourism Rangers” (Naturalist Tour guides).

During the period project and through environmental activities and the expansion of an already existed program, it has been set up a campaign promoting an environmental local awareness and educational development on a variety of levels in the region. The main activities held during this project were: 1. The Nature Classroom: from the beginning of the project GUARUMA staff and locals start to build infrastructure and display improvements for the nature classroom in Las Mangas community in Cangrejal, it 2007 were attended more than 450 students coming from outside the region and more than 300 locals students who constantly visit the nature classroom. 2) The Ecocangrejal Newspaper: The Cangrejal environmental bulletin called "ECOCANGREJAL" was set up and it is been functioning since February 2007. Six local kids (17-21 years old) from Las Mangas and El Naranjo form the editing staff. Since then, nine Ecocangrejal editions were release monthly in the communities, 600 issues each edition (around 5000 issues in total during the period project). 3) The Ecotourism Rangers/ Naturalist Tour Guides: Seven local teenagers (15 to 21 years old) were trained by GUARUMA ecotourism coordinator as naturalist tour guide in their role as Ecotourism adventures rangers in Cangrejal. 4) The photography Kids Club in Cangrejal: The photography has been use as a learning tool to Guaruma from the beginning of the project through pictures the children can capture the essence of the nature. Around 23 kids (10-21 years old) from El Naranjo, El Pital and Las Mangas were formed this photography kid's club lead by the instructor of GUARUMA and 5) Environmental Cangrejal Campaign: This campaign was name " For a new generation with environmental awareness" running in 5 villages in Cangrejal.

Raquel Bone (Costa Rica)

Landscape and management factors related to terrestrial mammal conservation in the Golfo Dulce Forest Reserve, Costa Rica

Large and medium-sized terrestrial mammals (LMTM) are among the most affected organisms by the increasing biodiversity and habitat loss crisis due to anthropogenic actions. Protected Areas (PA) are the primary strategy to halt that loss. But isolated public PAs are not enough to hold viable populations of endangered LMTM. Therefore, it is necessary to evaluate PA's efficiency in private lands, including landscape and management features associated with the achievement of conservation purposes. The Golfo Dulce Forest Reserve (GDFR) is a PA located between two National Parks, in southern Pacific, Costa Rica, where land tenure is mostly private. Through a rotary sampling of 16 months (2019-2020), we set 70 single-camera trap stations, for 90 days each, to evaluate the LMTM presence and distribution in the GDFR. We found 24 LMTM species (weight >1kg), including the most threatened: White-lipped peccary (*Tayassu pecari*), jaguar (*Panthera onca*), puma (*Puma concolor*), Baird's tapir (*Tapirus bairdii*), margay (*Leopardus wiedii*), Central American red brocket (*Mazama temama*), jaguarundi (*Herpailurus yagouaroundi*), ocelot (*Leopardus pardalis*), collared peccary (*Pecari tajacu*) and paca (*Cuniculus paca*). These species were detected even close to human settlements. We recorded regular habitat use, even reproductive, for the felines.

However, white-lipped peccary records were scarce and near the Corcovado National Park limits, this species is under heavy hunting pressure. Activities like illegal logging and poaching probably affect LMTM presence rather than developmental activities such as ecotourism or small-scale crop plantations. Conservation within private lands can be succeeded with socio-economic welfare for landowners, for example, with payments for ecosystem services (PES). Also coupled with governmental, academic and NGOs support for the protection and surveillance of wildlife, environmental education and training for local sustainable entrepreneurship.

José Ramírez-Fernández (Costa Rica)

An overlooked endangered endemic small-cat? Redefining the taxonomic status of the Oncilla (*Leopardus tigrinus oncilla*) in the highlands of Costa Rica.

The Central American oncilla or tiger-cat (*Leopardus tigrinus*) is the smallest, rarest and most endangered small wild cat in Mesoamerica. It is classified as endangered by Costa Rican environmental authorities and as Vulnerable by the IUCN red list. Although the global distribution of *L. tigrinus* sensu lato ranges from Costa Rica to central Brazil and northern Argentina, recent studies have shown that this taxonomic entity could be up to three distinct species. However, the scarcity of biological samples of the Central American subspecies for analysis has made it difficult to clarify this situation. The collection of more samples is necessary to determine if the Central American oncilla is really a distinct recognizable species endemic to the region, which would directly affect its conservation status. The Oncilla Conservation program, within the CRWildlife Foundation, was born in mid-2019 to work on this and other aspects that could impact the conservation status of the oncilla and other small-cats in Costa Rica. Through an interdisciplinary approach, guided by the axes of education, research and communication, and involving the communities neighboring the oncilla's habitat, efforts are made to identify, understand and mitigate the threats faced by this endangered species and to monitor its populations. To date, data has been collected from 225 camera trap stations, totaling ca. 250 detections of the species since 2011, to determine its distribution in the country. Through national and international collaborations, 15 biological samples have been collected for genetic analysis. More importantly, working with the communities, an action plan has been developed to seek solutions to the different threats faced by the oncilla locally in order to achieve coexistence with humans.

Mónica Emilia Torres (Guatemala)

Creation of biological corridors using family plots, for the conservation of *Abronia campbelli*, within a new distribution zone for the species

The endemic arboreal alligator lizard *Abronia campbelli* is considered the most threatened Abronia species in Guatemala. Severe habitat loss has resulted in a fragmented habitat to such an extent that most of the remaining habitat consists of mature oak trees that are highly isolated from one another, compromising natural movement and dispersion and thus limiting the genetic flow and the population numbers of the species. The original description area for the species was the only known distributional zone but recently two new distributional zones have been discovered, this project marked the beginning of habitat restoration efforts in one of these new distributional zones focusing on habitat connectivity through creation of biological corridors. As a result, more than 20,000 seedlings of key forest species were planted, covering 100,000 m², and creating over 8 kilometers of biological corridors. Habitat restoration took place within family plots used for subsistence agriculture, farming and forestry. Families are the protagonists in the implementation of this conservation strategy, hosting activities that sustain local livelihoods and biological corridors for the conservation of *A. campbelli* on the same land. The consequent maturity of the trees will reduce by half, the existing gap between this new distribution area and the original one. These corridors will increase the quality, quantity, and connectivity of habitat available for *A. campbelli* and its associated biodiversity, reducing the main threat for the species. This will allow the species to increase its population and mobility patterns, increasing the resilience of *A. campbelli* and its ability to thrive for the long-term.

Arllet Quirós (Costa Rica)

Distribution of titi monkey (*Saimiri o. oerstedii*) in Osa Peninsula: new insights and recommendations for the species conservation

During this 2021, the Saimiri Foundation, thanks to the researchers M.Sc. Arllet Quirós-Calvo and M.Sc. Daniela Solano-Rojas, and with the support of the Rufford Foundation, continued to make progress in evaluating the distribution of the marmoset (*Saimiri oerstedii*) in the Osa Peninsula. This time, covering the sector from the Rincón river towards Drake and towards Chacarita. In this area the least common monkey was precisely the marmoset, which shows the importance of protecting this species. In addition, new threats to the species such as run over and electrocutions were documented. It is important to emphasize the need to strengthen and / or create a network of owners committed to the protection of the marmoset, which depends mainly on private lands in regeneration.

Budget

Hour	Activity	Responsible
LODGING		
Eco-hotel in San Salvador	\$ 802.04	€ 705.80
Lodge in Jiquilisco Bay	\$ 942.73	€ 829.60
Lodge in San Salvador (last night)	\$ 200.00	€ 176.00
FOOD		
Coffee breaks for the Conference	\$ 915.00	€ 805.20
Field activity with Procosta	\$ 494.00	€ 434.72
Lunch for RSG grantees	\$ 241.00	€ 212.08
Other food expenses for grantees and special guests	\$ 369.00	€ 324.72
TRANSPORTATION		
Flights from Costa Rica (2)	\$ 335.87	€ 295.57
Bus ticket from Guatemala (Pullmantur ejecutiva)	\$ 59.00	€ 51.92
Bus ticket from Honduras	\$ 68.00	€ 59.84
Bus from San Salvador to Jiquilisco Bay	\$ 370.00	€ 325.60
Airport transport to San Salvador	\$ 100.00	€ 88.00
Lagoon tour and use of dock for field trip	\$ 138.99	€ 122.31
MATERIALS		
For each RSG Grantee and special guests	\$ 113.00	€ 99.44
Zoom pro (TWO months)	\$ 29.98	€ 26.38
Projector and sound for the conference	\$ 113.00	€ 99.44
T-shirts STAFF	\$ 288.15	€ 253.57
SALARIES		
Organizer	\$ 1,300.00	€ 1,144.00
Assistants (5)	\$ 2,260.00	€ 1,988.80
Stand in SMBC Congress to promote event	\$ 300.00	€ 264.00
Field staff	\$ 225.00	€ 198.00
OTHERS		
Administrative expenses (4%)	\$ 425.00	€ 374.00
Unforeseen	\$ 128.71	€ 113.26
TOTAL	\$ 10,218.47	€ 8,992.25
Rufford Conference grant received	\$ 10,603.71	€ 9,331.26
Balance*	\$ 385.24	€ 339.01

The balance shows the amount of money that was not spent and is currently in ATVES bank account*

Photos of the event

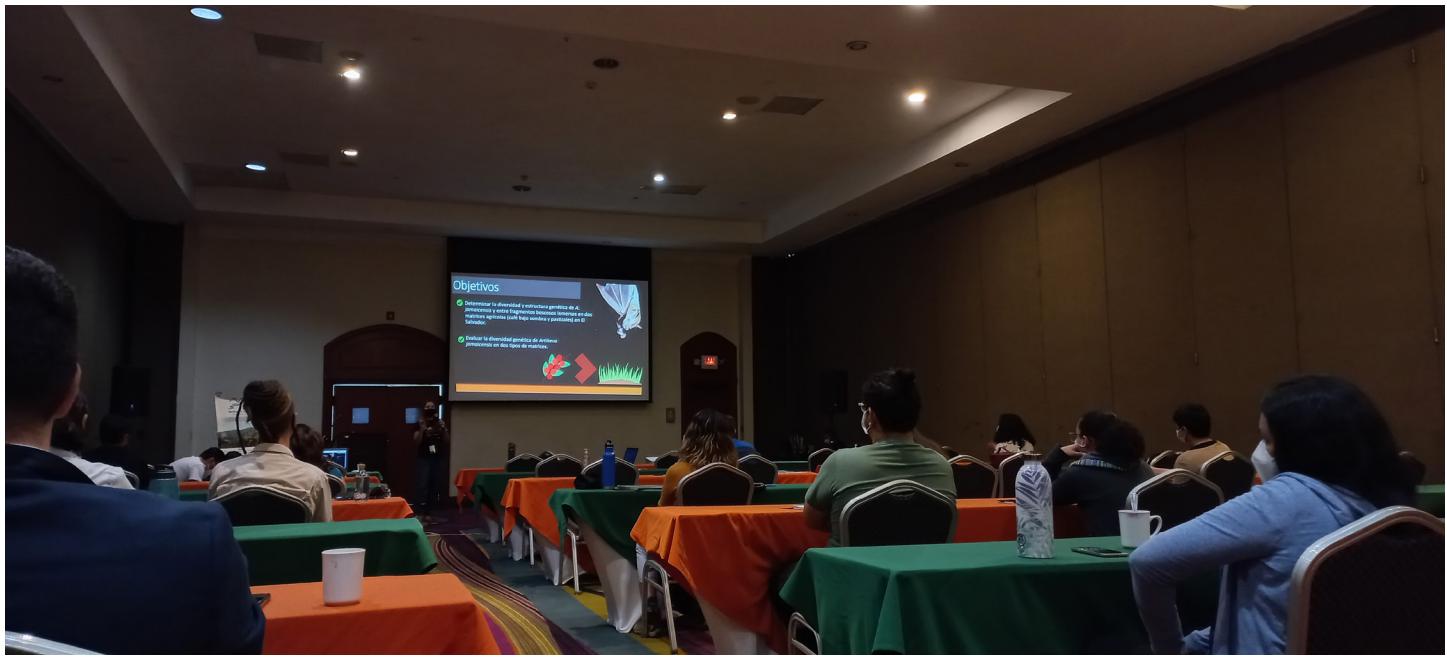


Figure 1. Conference participants listening to presentations at Crowne Plaza Hotel.



Figure 2. Grantee and event coordinator, Melissa Rodriguez, began the conference talking about the Rufford Small Grants and the projects financed in El Salvador.

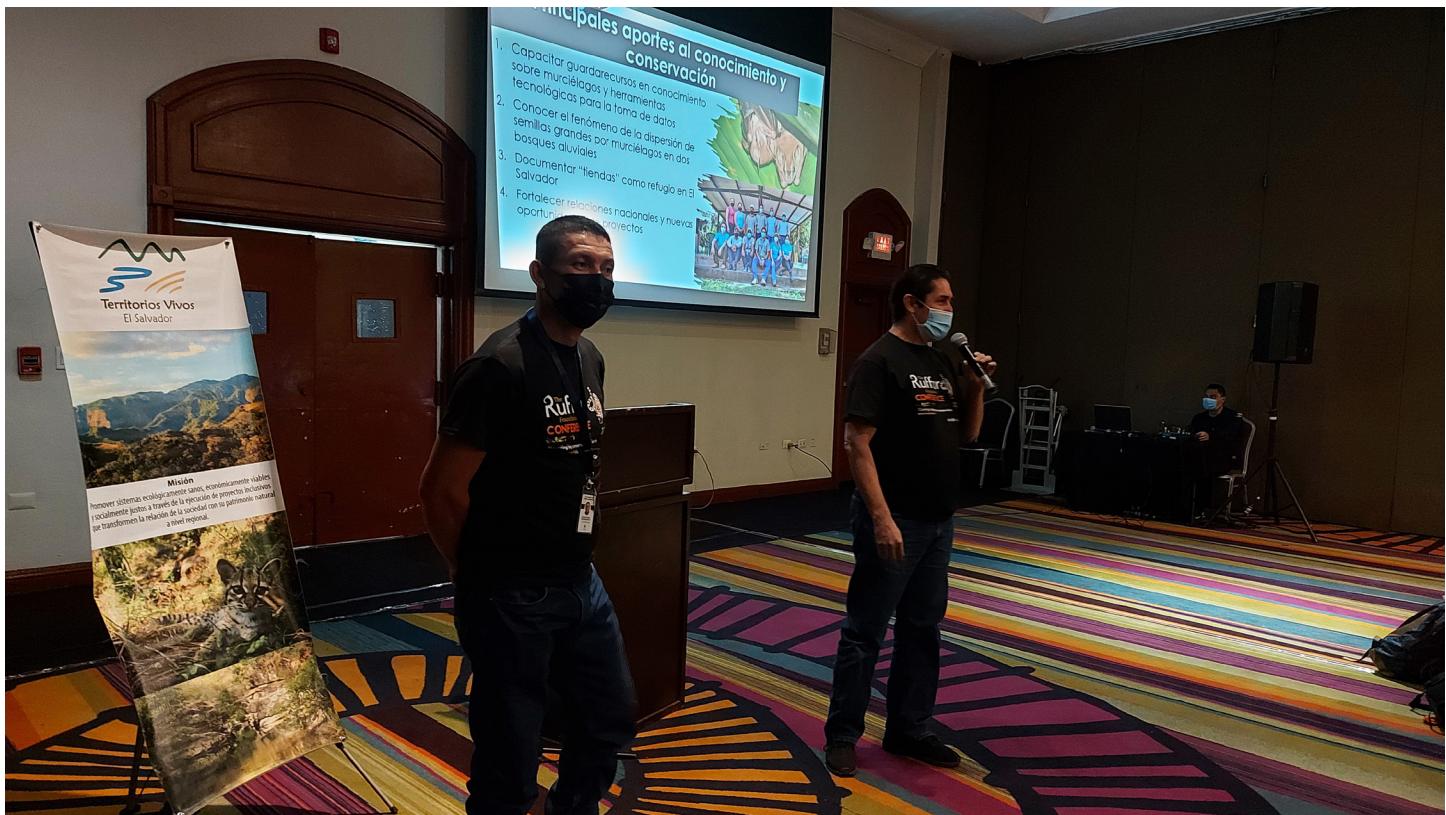


Figure 3. Parkrangers Walter Velasquez and Yinier Henríquez Serrano from Santa Rita Protected Natural Area in Ahuachapán department, El Salvador, sharing their experience and knowledge acquired with the project: Dispersal of Large-Seeded Plants by Tent Roosting Bats.

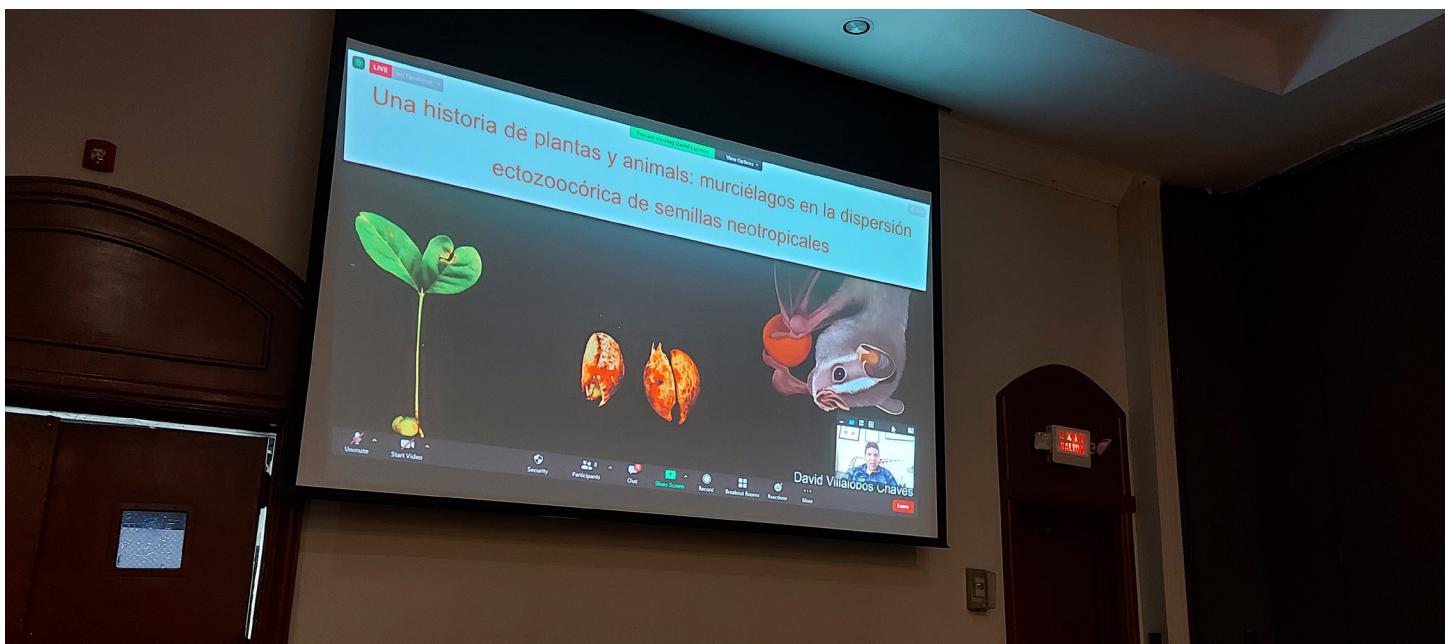


Figure 4. Rufford grantees also participated virtually through the Zoom platform.



Figure 5. Group photo of Rufford grantees, staff members and conference participants.



Figure 6. Grantees traveled to Jiquilisco Bay in the Usulutan department, where they learned about the sea turtle monitoring project, executed by ProCosta, a non-profit organization.



Figure 7. Parkranger Wilberth Mejia from Normandía Protected Natural Area in Usulután department, El Salvador, shared his experience with the project: Dispersal of Large-Seeded Plants by Tent Roosting Bat funded by The Rufford Small Grants and exposed the current threats that the forest is facing.



Figure 8. As part of ProCosta's sea turtle monitoring, three green turtles (*Chelonia mydas*) were captured, and grantees were able to collect data.



Figure 9. Grantees Valerie Corado and Jimmy Andino had the opportunity to tag a green turtle with the help of veterinarian Melissa Valle from ProCosta.



Figure 10. At La Pírraya Island, grantees visited the turtle egg nursery, where eggs are monitored and incubated until hatching.



Figures 11 and 12. Grantees also walked through Puerto Barillas Lodge and visited the Spider Monkey Conservation Project.



Figure 13. Park rangers that are part of the large-seed Conservation Project of the Asociación Territorios Vivos El Salvador.



Figure 14. Grantees and special guest participating of Procosta activities coordinated by the RSG grantee Mike Liles.