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Evolution, history and conservation of two species of sea turtle in the coast of Oaxaca, Mexico

Progress Report



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1.- Advances

Although the coronavirus pandemic has definitely delayed my work, we finally received the collecting permit in March 2021. This allows me to start sampling tissues from two individuals of the Olive Ridley turtle *Lepidochelys olivacea* at the Centro Mexicano de la Tortuga (CMT), located in Mazunte, Oaxaca (Mexico). The centre is devoted to promoting the conservation and environmental awareness of sea turtles in the Mexican Pacific and will be our principal ally in this project. They also are responsible for the protection of nests of all turtles that use the Oaxaca coast beaches to complete their life cycle (green turtle, olive ridley, hawksbill and leatherback) on the nesting beaches such as La Escobilla, Cahuitán, Barra de la Cruz and Morro Ayuta. Within its facilities various species of sea turtles, freshwater turtles as well as crocodiles and bats are exhibited. Even during my stay, I was fortunate to witness a freshwater turtle nest in the CMT.



Fig. 1 Taking a tissue sample.

To collect the tissue samples, we worked together with the CMT personal. A veterinarian helped us to take the samples and make the subsequent cures, at the same time we took the opportunity to put a serum to the turtles because they were not eating enough because they had little time to be rescued, and we cleaned them too. During all fieldwork in this project, we will be collaborating with the CMT.



Fig. 1 applying serum to an appetite less olive ridley.

Subsequently the collected tissue was taken to the ECOSUR laboratory in San Cristóbal de Las Casas, Chiapas and with the DNA extraction method with cell lysis/phenol-chloroform-isoamyl alcohol, we were able to quantify the amount of DNA in our processed samples and we obtained an approximate of 0.803 μ g/ml of DNA. Later, we proceeded to amplify the mtDNA using oligos LTEi9 and H950 then with an electrophoresis we verified that we were successful in our DNA extraction and amplification. This allowed us to advance in the standardisation of the DNA

extraction and amplification method for both mtDNA and microsatellites that will be used to compare the evolutionary trajectories of the olive ridley and the leatherback.



Fig. 2 Electrophoresis of DNA extraction and PCR of the first olive ridley samples to standardize the laboratory method.

2.- Future activities

Because of the delay in our permit processing (due to the Coronavirus pandemic), I missed the 2020 nesting season for the leatherback and will need to take the sample in November 2021. Currently, we are setting up preparations to begin field work when the first olive ridley "arribada" begin. That will take place in July/August 2021 in order to finish collecting the enough samples to make the comparison of the evolutionary trajectories of both species. With my advisory committee we calculated the results will be ready to be share by the end of January 2022.



Fig. 4 Two juvenile sea turtles in the exhibitions of the CMT

On the other hand, we have also contacted a scientist who has been involved in the conservation of sea turtles in Mexico. She is now one of the guests at the focus group workshop, and we are currently scheduling with two more scientists who have also dedicated to study sea turtles.

To contact fishermen and businessmen who have been involved in the exploitation and / or conservation of sea turtles, we began by contacting those who in the past were dedicated to exploiting these animals and in the present are dedicated to conserving them. We have also learned (through articles and news) that a very successful businessman in the beginning was dedicated to sea turtle fishing in Oaxaca (when it was still allowed) and is now one of the main suppliers of tuna in the country.

The workshop will take place at the latest in March 2022, so I can incorporate the results of the discussion in my thesis that will be submitted at the end of May 2022. I have plans to continue with my PhD aimed at identifying the possible strongest lineage of leatherback turtles for restoration purposes in the coast of the eastern Pacific Ocean. The application for the PhD program at ECOSUR is in August 2022.