

PROGRAM FOR THE SUSTAINABLE CONSERVATION OF THE DAHL'S TOAD-HEADED TURTLE (*mesoclemmys dahli*), IN COLOMBIAN

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RESUMEN

Mesoclemmys dahli (Dahl's Toad-headed Turtle o Carranchina turtle) is a species of freshwater turtle, which is distributed in the basin of the Magdalena River and the Sinú River, in the Zenú indigenous territory. This species inhabits slow water bodies of the savannas and has a mainly carnivorous diet; During their life cycle the females move to the mainland to nest in the dry season. In this period of its life, the females are captured by the inhabitants of the region to consume their meat and eggs, carrying out an exploitation that has led this species to near-extinction: it is listed as Critically Endangered (CR). In addition to the direct impact on populations, changes in land use have led to the destruction of the habitat of *Mesoclemmys dahli*. The objective of this work is to analyze the current state of the populations and threat of *Mesoclemmys dahli* in Colombia, in order to stimulate conservation strategies. The conclusions of the study show that comprehensive conservation measures are necessary to articulate conservation, education, sustainability and communication; to avoid imminent extinction. This study has the support of the Zenú indigenous community and regional universities.

Keywords: freshwater turtle, extinction, Zenú indigenous community, conservation.



Figure No. 1: Carranchina turtle specimen. **Source.** E. Red.

1. GENERAL INFORMATION OF THE DAHL'S TOAD-HEADED TURTLE (*MESOCLEMMYS DAHLI*)

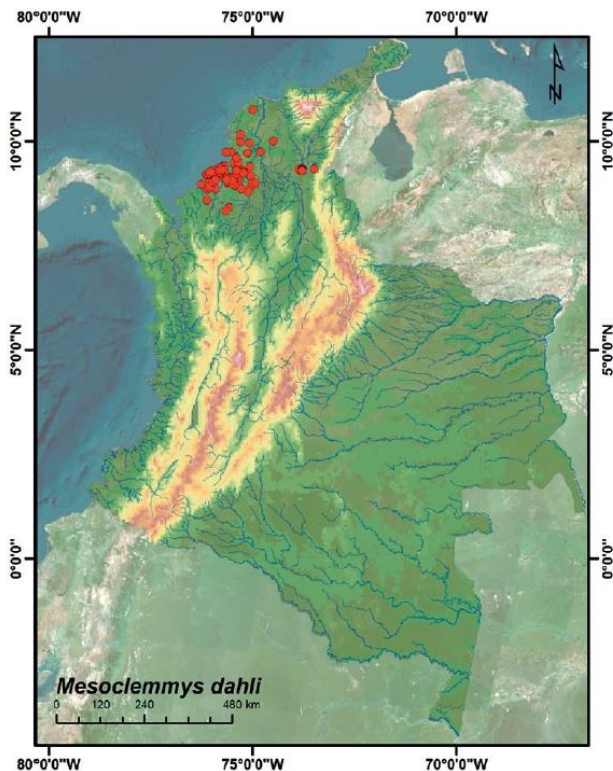
1.1. Threat category

Global: Critically Endangered CR B1 + 2c (Tortoise and Freshwater Turtle Specialist Group 1996).

1.2. Other common names

Mountain tortoise, head to the side.

1.3. Description



Small-sized tortoise; straight carapace length (LRC) maximum 29 cm (females) and 23 cm (males) (Forero-Medina, unpublished data). Head proportionally large, flattened and very L. E. Rojas widened in the temporal region; the width between the eardrums is equivalent to 23-26% of the CRL (Rueda-Almonacid et al. 2007), it lacks symmetrical horn shields. Carapace low, sometimes with barely visible medial longitudinal keel, mainly in juveniles.

In adults there is a dorsal longitudinal depression that encompasses vertebral II, III and IV. Plastron strong and long but somewhat narrow, especially in males (Medem 1966) and with a well marked posterior notch.

Head gray dorsally, laterally from nostrils to tympanic membrane is light yellow or cream. A narrow dark gray band runs from the nostril to the neck, across the eye; there are two other diffuse dark lines that border the palpebral area, pass over the eyes and end in the temporal region. Ventrally the head and extremities are yellow, like the plastron, sometimes with a red-orange tint (Medem 1966).

1.4. Geographical distribution

Countries: Colombia.

Departments: Atlántico, Bolívar, Cesar, Córdoba, Magdalena and Sucre.

Hydrographic areas: Caribbean.

Sub-basins: Caribe (Sinú), Magdalena (main channel, Cesar and San Jorge).

Altitudinal distribution: 100-250 m a.s.l.

1.5. Bioecological aspects

Aquatic turtle, mainly nocturnal (Medem 1966). It inhabits small wells, streams and streams, temporary or permanent, with slow currents with riparian vegetation in the formation of dry forest, especially in the hilly landscape (Forero-Medina et al. 2012a). However, individuals have also been recorded in swamps and jagüeyes (artificial wetlands) with abundant aquatic vegetation and small shallow wells in paddocks that are formed by the rains (Medem 1966, Castaño-Mora 2002, Rueda-Almonacid et al. 2007, Forero-Medina

et al. 2011). In the dry season, specimens have been found in bodies of water with high temperature, shallow, apparently very eutrophic and in many cases without riparian vegetation (Castaño-Mora et al. 2005). It is omnivorous (Medem 1966, Castaño-Mora and Medem 2002, Rueda-Almonacid et al. 2004, 2007). Rueda-Almonacid et al. (2007) recorded the mating season in the period of maximum rainfall and the laying of the eggs during the dry season. Rueda-Almonacid et al. (2004) found that can travel up to 1.5 km in one night across the mainland and reported a different "range area" between climatic seasons and between sexes.

In the dry season, the females ($n = 5$) presented movements between 0.94 and 12 ha and in the rainy season between 0, 12 and 10 ha. In the rainiest season, the males covered a total area of 30.4 ha and females an area of 120.7 ha. When there are heavy rains, large currents are generated in the streams that carry the turtles, with which large displacements occur. According to the results of Forero-Medina et al. (2011) on movements of the turtle, the estimated annual range area varies between 1.6-30.8 ha if estimated with the least convex polygon method and between 9.2-22.5 ha using the Kernel estimator. Although they were not found significant differences, the largest movements were recorded during the transition from the rainy to the dry period or during the dry period. Carranchina (*Mesoclemmys dahli*).

1.6. Population information

In the department of Córdoba the species is locally abundant with densities of 20 to 60 captured turtles / ha (Rueda-Almonacid et al. 2004, Forero-Medina et al. 2011). In some cases in jagüeyes (artificial wetlands) these values were up to 500 individuals captured / ha (estimated). In the department of Cesar,

densities did not exceed 10 turtles / ha (Forero-Medina et al. 2011). In this same locality, the population sizes estimated by means of mark-recapture in two streams during one year varied between 16 (95% CI, 7–30) and 175 (95% CI, 32–298) individuals (Forero-Medina et al. 2011). The densities, based on the estimated number of individuals in Cesar, ranged from 16 turtles / ha in April to 170 turtles / ha in June. These values are lower than those recorded for other populations of *M. dahli* in Colombia and other South American chellids.

Apparently the species is more abundant in Córdoba than in Cesar, possibly because the last locality is found on the periphery of the geographic distribution (Forero-Medina et al. 2012b). In the department of Sucre it was estimated that 59% of the jagüeyes have this species as a regular inhabitant (Sampedro-Marín et al. 2012).



Recent genetic studies of *M. dahli* (Gallego-García unpublished) have found that the population is highly fragmented into small subpopulations with low levels of gene flow. This isolation has led to related individuals to reproduce and consequently the species has high levels of inbreeding. The effective population sizes are lower than recommended to ensure that inbreeding depression does not occur in the near future. This aspect may

indicate that this species is at greater risk of extinction than previously thought.

1.7. Use

Adult individuals are occasionally consumed in some locations in the departments of Bolívar and Cesar. The same happens in Sucre, where due to the deterioration of the populations of *Trachemys callirostris*, other chelonians such as carranchina are beginning to be used as an alternative food (substitution effect) (De La Ossa and Vogt 2010). However, intensive use of the species by communities has not been recorded.



1.8. Threats

Its habitat has a high degree of transformation by human activities: loss of vegetation cover, burning, pollution water chemistry, urbanization, agriculture and livestock (Medem 1966, De La Ossa-Velasquez 1998, Castaño-Mora and Medem 2002, Rueda-Almonacid et al. 2007). The tropical dry forest biome of the Caribbean, its typical habitat, has been subject to continuous deforestation and fragmentation caused by activities such as ranching (Ideam et al. 2007). This biome is one of the most transformed and at the same time least protected by the country's system of protected areas (Forero-Medina and Joppa 2010). Rangel-Ch. (Pers. Comm.) Calculated that the flat northern Caribbean, where *M. dahli* is found, may have lost more than 80%

of its original coverage. The riparian vegetation of the bodies of water it inhabits suffers intense deforestation or has been totally razed (Rueda-Almonacid et al. 2004, Forero-Medina et al. 2011), which causes overheating and drying out of the wells or lagoons that before they lasted most of the dry season, with unknown consequences for the species. The species was originally discovered in the department of Sucre, in swamps located in what is now the city of Sincelejo and which are currently completely urbanized, although it subsists in the countryside. The farmers of this department who usually cultivate fish in jagüeyes, eliminate the carranchinas to guarantee the success of such crops.

The burning of weeds as a technique for preparing the soil for cultivation is also the cause of the death of numerous chelonians, especially during the nesting season. Rueda-Almonacid et al. (2004) found that a quarter of the individuals found had burn injuries. Finally, the trampling of cattle also causes mortality (Sampedro-Marín et al. 2012). Additionally, in some places in Córdoba it is caught as bycatch (Rueda-Almonacid et al. 2004), the indigenous, They actively seek them out or the settlers retain those they can find to exchange them for the indigenous people for pancoger products, especially cassava (*Manihot esculenta*) (Castaño-Mora et al. 2005).

1.9. Existing conservation measures

None.

1.10. Conservation opportunities

In Córdoba and Cesar, actions have been carried out to restore the riparian vegetation of the streams inhabited by the species (Rueda-Almonacid et al. 2007, Forero-Medina,

unpublished data). Proposed Research and Conservation Measures Carry out ecological restoration activities in the different localities where populations are known. In the same way protect areas contiguous to bodies of water, since these areas are continuously used by the species (Rueda-Almonacid et al. 2004, Forero-Medina et al. 2011). It is necessary to develop mechanisms to prevent individuals from dying during burns of anthropic origin.

It is recommended to designate a protected area of regional or local order for the conservation of the species, since it is endemic to Colombia and a priority species for conservation (Forero-Medina et al. 2015). Finally, detailed studies are required on their reproductive ecology, the effects of human activities on their populations, and their long-term viability. Additionally, populations must be monitored. Vargas-Ramírez et al. (2012) found a low genetic divergence between *M. dahli* and *M. zuliae*, which is why more genetic studies must be carried out to deepen the issue and define its relationship with other South American chellid species.



1.11. Justification

Carrachina is an Endangered species since it has a reduced area of presence (4,137 km², Forero-Medina et al. 2014). The ecosystems it inhabits have been transformed, reduced and degraded in a remarkable way by 80%. This has caused a population reduction and even the

disappearance of the species in some localities, fragmenting the population. Additionally, it has a low gene flow and high levels of inbreeding.

2. POPULATION SITUATION OF THE CARRANCHINA TURTLE

The tropical dry forest of the Colombian Caribbean is the habitat of the carranchina turtle (*Mesoclemmys dahli*), an endemic species of Colombia that is in danger of extinction. The degradation and destruction of these forests is the main cause that this species, so little studied, is on the verge of disappearance.



For this reason, scientists from the National University of Colombia, the University of the Andes, Worldlife Conservation Society (WCS) Colombia and the Turtle Survival Alliance carried out a genetic study that has revealed the true conservation status of this species.

The investigation entitled Genetic evidence of fragmented populations and inbreeding in the endemic 'carranchina' turtle in Colombia has made it possible to make important findings about this species that inhabits one of the most degraded areas of the country, explains

biologist Natalia Gallego García, co-author of the research.

2.1. Disappearing forests

The destruction of the tropical dry forest of the Colombian Caribbean endangers the survival of the carranchina turtle. Photo: Germán Forero / WCS Colombia. © Germán Forero / WCS Colombia. The serious fragmentation problem suffered by the tropical dry forests in Colombia and in particular in the Colombian Caribbean, the habitat of these turtles, has become the most serious obstacle to their survival. The tropical dry forests of Colombia have been severely transformed and fragmented by human activities, mainly by grazing and agriculture, indicates the research published in Conservation Genetics.

“The carranchina turtle is much more threatened than previously thought, and if measures are not taken in this regard, the species will soon be lost. If it disappears from the Colombian Caribbean, then it becomes extinct all over the planet because it does not exist anywhere else in the world”, explains Gallego.

It inhabits streams and ponds, especially those with a high percentage of vegetation cover on their banks. However, this vegetation has been subjected to intense deforestation, and in some places, completely eradicated, the article explains.



According to the research, the level of fragmentation of the habitat leads to the fractionation of the population, a situation that is exacerbated in the case of this species due to its difficulty of movement that prevents it from moving to other areas of the landscape.

The most significant finding has been to discover that the species is fragmented into small groups of very few individuals. As a result, it is beginning to lose genetic diversity and increase inbreeding - reproduction with close relatives - to very dangerous levels.

The small number of individuals in these groups, which are also isolated and with very little capacity for movement, increases their risk of extinction.

Mobility is very important for any species, since migrants carry with them new genes that residents do not have, thus increasing their genetic diversity, if this does not happen, the species becomes more vulnerable to changes in the environment and possible disappearance.

As for the serious problem that occurs with small and isolated populations by inbreeding, that is, reproducing with close relatives, it increases the probability of acquiring defective genes or mutations, which lead to rare

diseases, sterility or even death. Consequently, populations with a high level of inbreeding are much more likely to go extinct.

"In the case of this species of turtle, the levels of inbreeding that we find are so high that they resemble those of a cross between half-siblings, uncle-niece, grandfather-granddaughter or any combination with a second degree of consanguinity," he explains. the biologist.

2.2. Loss of genetic diversity

The species also faces another problem called 'genetic drift', that is, another way of losing genetic diversity, which is explained by the random transmission of genes from parents to offspring.

As it is a random process, it may happen that in this transmission some genes are no longer inherited to the next generation, therefore, a certain gene disappears forever. The increase in adult mortality due to cattle trampling, pasture fires, overheating and drying of some of the water sources that previously persisted during the dry season, and the loss of nesting and estivation sites are other problems it faces. this species.

3. THREATS

3.1. Domestic animals

The beaches near the populated centers are rarely used by the turtles for nesting, because the anthropic activity is very high; However, some turtles spawn sporadically on beaches near small hamlets, where clutches lost by domestic animals such as dogs and pigs have been recorded. The animals not only affect the eggs, but also disturb the females at night when they lay eggs.

3.2. Nest looting

Turtle eggs are highly sought after throughout the entire basin. Although in the Sinú almost no riverine leaves by In the early mornings with the aim of looking for clutches, every time they pass by a beach and find the trail of a female in the sand, they collect her eggs. This activity is so widespread that in the river basin there is no beach exempt from this threat.

3.3. Alteration of the river flow

A threat to the survival of turtle eggs in Sinú is the frequent and unforeseen flooding of the beaches, caused by the generation of energy from the Urrá hydroelectric plant. Before the construction of the hydroelectric plant, the flow regime of the Sinú River corresponded to a dry period from mid to late December, to mid to late April, and to a period of abundant flows during the remaining months. These regimes of precipitation determined the outcrop of the beaches, initiating the positions. Starting in 2000, when the hydroelectric plant entered service, the seasonality of the river was subject to the power production of the plant and not to the rain regime.

According to the regulations of the electricity sector, the plant could only operate with one or four units during the first ten years of operation. This situation limited the operation, since only very low or very high discharges could be generated, making it difficult to

reproduction of the natural hydrological trends of the dry and rainy period that existed before the construction of the dam. The sudden changes in the flow caused the flooding of the nesting beaches, drowning the clutches that were in incubation and preventing the females from finding optimal places for the laying of the eggs.

3.4. Sand extraction from rivers

The extraction of sand from the beaches and the river bed has become one of the most common tasks of the inhabitants of the banks of the Sinú. Although this activity is regulated by the Mining Code (Law 685 of 2001), it is evident that in the department it is not controlled and that many sandboxes do not have environmental licenses. Sandboxes find and damage multiple clutches with their shovels while digging; in the most extreme cases, the trucks that come to fetch the material go down to the beaches, compacting the sand and crushing the clutches in their wake. In some sectors, especially in the Sinú environment, this activity is carried out at night and at dawn, disturbing the posture.



3.5. River pollution

Another threat that threatens the quality of the turtle's habitat is the contamination of water due to the uncontrolled use of pesticides, herbicides and fertilizers to maintain crops. Added to this are the organic and inorganic wastes thrown into the river by riparians throughout the basin. Although unknown the effect of pollutants on turtles may be directly or indirectly affected.

3.6. Livestock and extensive agricultural activities

Livestock is an activity that puts the survival of river turtle eggs at risk. In most of the farms, ports have been built so that livestock can approach the river to drink water. The inconvenience of this fact is that when the water level drops, the cattle have to cross the beaches to get closer to the river, crushing eggs as they go and compacting the sand, which prevents the correct hatching of the neonates that manage to survive. On the other hand, in the Sinú river basin, cattle ranching and extensive agriculture are the main causes of the loss of gallery forest and the drying up of wetlands. The felling of the forest not only affects the availability of food for the turtles, but also reduces the number of fallen trees that are used as sunning and refuge sites for these species.



3.7. Illegal trafficking and poaching

Some experienced turtle hunters go out to catch these species, year after year, along the Sinú River basin. Others carry out this work occasionally or accompany experts. Fishing tasks and the technique of catching used vary according to the individual, but only the experienced ones use devices such as hooks, traps or gillnets to catch them in the water. The inexperienced walk the beaches they find in their path when they go out at night in their canoe to fish, catching females and collecting eggs. This practice is increasingly common due to the advantage of capturing turtles in the

time spent fishing and the fact that no special hunting skills are required. The number of turtles that a hunter you can catch in one day is limited to both successful fishing and transportation. Due to their large size, it is difficult to camouflage them, since a sack does not fit more than three or four large individuals.

Although on a very good day a hunter can catch up to ten turtles, they rarely do so because they have no way to get them home. Despite these drawbacks, only in the basin

downstream of the river, an average extraction of two hundred animals per year has been estimated (Gallego-García, 2009). The hunting destination for trade and local consumption of hunted turtles is for sale or family consumption, depending on economic or food needs; Its demand increases on the eve of Holy Week, since in Córdoba they have a tradition of consuming turtles on holy days. The price of a copy ranges between ten thousand and thirty thousand pesos, depending on its size and demand.

Adult females are the most expensive and desirable due to their large size and the eggs they can carry inside (Gallego-García, 2009), unfortunately they are also the easiest to capture, since they are the only ones that come ashore when they go to oviposit.

All this, added to the fact that the hunting season coincides with the reproductive season of the turtle, means that directed hunting is biased towards adult females, which is possibly altering the structure of the population. Opportunistic hunting has become widespread because the turtles go up to the riverbanks to spawn more frequently, due to the irregularity of the river levels and the absence of beaches. On their journey, some of them wander too far from the banks and few

Sometimes they find their way back to the river, as they are captured. Although this behavior protects the broods from the floods, it exposes the females to be more easily captured. Almost no female found wandering the banks is returned to the river.

4. PROGRAM FOR THE SUSTAINABLE CONSERVATION OF THE DAHL'S TOAD-HEADED TURTLE (*Mesoclemmys dahli*), IN COLOMBIAN.

4.1. Background

For 60 years, the riverside of river Sinú was the scene of clashes between FARC guerrillas and paramilitary groups that disputed drug trafficking routes (GTTC, 2017). This public order situation prevented conservation activities to prevent the imminent regional extinction of the Carranchina turtle (*Mesoclemmys dahli*) in this area. Thanks to the 2017 peace treaty, this is the right time to deploy conservation actions to prevent the definitive extinction of this species. Despite the fact that Colombia has a legal framework that protects the Carranchina turtle (*Mesoclemmys dahli*), it is the second country with the highest catch level in the world with catches >600 (Humber et al. 2014). The lack of interest from governments and the absence of conservation activities prevents the monitoring of areas with a wide threat of looting of eggs or poaching of our turtle. The COVID-19 pandemic has eliminated all Carranchina turtle conservation efforts made in recent years. Illegal trafficking of eggs, meat and shell crafts have increased in the project area.

Our organization, Fuverde, has created a technical table with the WWF, IUCN/SSC

Tortoise and Freshwater Turtle Specialist Group, representatives of the Zenú indigenous communities (riverside inhabitants) and Corpomagalena (state entity) for the conservation of the Carranchina turtle. During, we have implemented the study: 'POPULATION DIAGNOSIS AND ANALYSIS OF THREATS OF THE CARRANCHINA TURTLE (*Mesoclemmys dahli*), IN COLOMBIA' (see full at: <https://corpofuverde.org/population-diagnosis-and-analysis-of-threats-of-the-carranchina-turtle-mesoclemmys-dahli-in-colombia/>), where we investigate the conservation status, identify threats and draw up a comprehensive and community strategy to protect the species based on international cooperation. This project arises from this strategy and guarantees the mitigation of threats to sustainable conservation. There is no record of Carranchina turtle conservation projects at the project site. Our initiative is the first step for the sustainable conservation of this species in the riverside of river Sinú, in Colombia.

According to the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group, the Zenú indigenous territory is the place where conservation efforts should focus to recover the Carranchina turtle from extinction (FORERO-MEDINA, 2013). If the Carranchina turtle disappears from the Zenú indigenous territory, in Colombia, it becomes extinct throughout the planet because it does not exist anywhere else in the world.

Colombia has a legal framework that prohibits poaching, illegal trafficking and illegal fishing of the Carranchina turtle (LAW 356 OF 1997, Ministry of the Environment), however, the government does not have infrastructure to track the sources of illegal trafficking or illegal fishing boats. This project seeks to strengthen

the conservation capacities of the Zenú indigenous communities, to facilitate the application of the law and prevent the continued elimination of this species.



2.2.4. Threats

This project addresses 3 threats:

(i) Illegal traffic: The Carranchina turtle is widely trafficked illegally from the project site. An estimated 105 specimens are poached by criminal structures. These groups work on three levels:

a. Poachers: These people, generally indigenous Zenú, catch with directed fishing for Carranchina turtles and eggs, in nesting, mating and foraging areas. They then keep some live specimens (called fresh meat) in Wooded riverbank of the Sinú River, inside wooden cages for food and respiration, ready for sale.

b. Intermediaries: National partners of poachers. They use trafficking networks to transport the meat, eggs and shell, to the end customer. Intermediaries simply buy stored turtles from local indigenous fishermen who hide them in Wooded riverbank of the Sinú

River streams. Because turtles need to breathe, poachers keep them in locally built rectangular fish cages made of floating drums and wood, with nets suspended in between, or tied / chained directly to the coral in shallow water. The riverside and resources required to survey this vast area are prohibitive for local enforcement agencies and are logistically complex.

c. End customer: national and international people. They buy the meat and eggs. The shells are sold to regional micro-entrepreneurs to make handicrafts (bracelets, necklaces, anklets). They buy them increase in the Easter season. The traditional and religious prohibition against eating red meat increases the demand, during the Holy Week festivities.



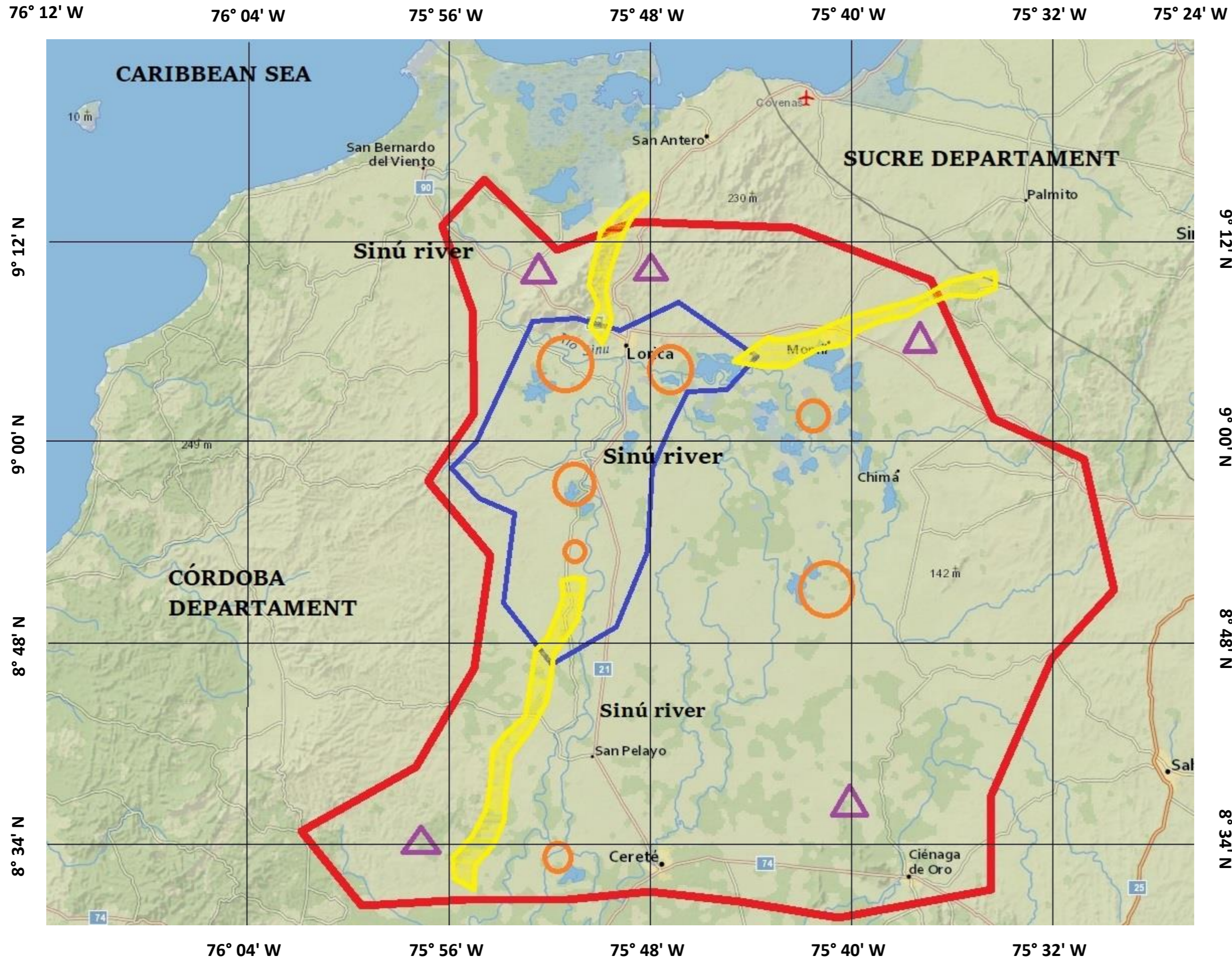
(ii) Illegal, unreported and unregulated fishing: Non-poachers use unsustainable fishing techniques (trawl nets, static nets, concave hooks). Carranchina turtles are often caught accidentally while fishing, and fishermen are eager to decapitate the turtle to retrieve the fishing hook or the fishing net.

Illegal fishing is aimed at juveniles and adults due to the beauty of their colorful shell, which is sold for later use in making handicrafts and other decorative products; Colombia is the unique place where there is the largest trade in Carranchina crafts without the control of the competent entities.

(iii) Destruction of habitats: Destruction of wetlands (streams, lakes, lagoons) for agricultural activities and illegal mining. In its fluvial habitat, the ingestion of plastic and the deterioration of the Wooded riverbank of the Sinú River streams, due to high rates of sedimentation, eutrophication and poor practices in water sports such as snorkeling and recreational diving, are other high-impact threats. As for all turtle species, global warming is a threat, not only due to the loss of riverside for nesting, the increase in embryonic death caused by alterations in hydrological regimes, but also due to the increase in incubation temperatures., on which the sexual proportions depend primary (Ihlow et al. 2012).

The changes in levels of the Sinú river due to the URRA 1 hydroelectric plant; domestic animals and the extraction of sand from rivers for the construction industry are other threats of anthropic origin that kill the turtle population.

This project is aimed at the protection of the Carranchina turtle on the riverbank of the Sinú River, in northern Colombia. However, it will benefit other critically endangered freshwater turtle species will benefit: Magdalena River Turtle (*Podocnemis lewyana*), listed in International priority species* for the USFWS Tortoise and Freshwater Turtle Conservation Fund; Hicotea (*Trachemys callirostris*); **Morrococoy (*Chelonoidis carbonarius*); because they share the same habitats.**



ETHNO-PROGRAM FOR THE SUSTAINABLE CONSERVATION OF THE DAHL'S TOAD-HEADED TURTLE (*mesoclemmys dahli*), IN COLOMBIAN.

CONVENTIONS

| | |
|---------------------------------------|-------------------------------------|
| █ | Project area |
| █ | Proposed protected natural area |
| ○ | Carranchina turtle populations |
| ▬ | Illegal trafficking wildlife routes |
| ▴ | Zenú indigenous cities |

SCALE

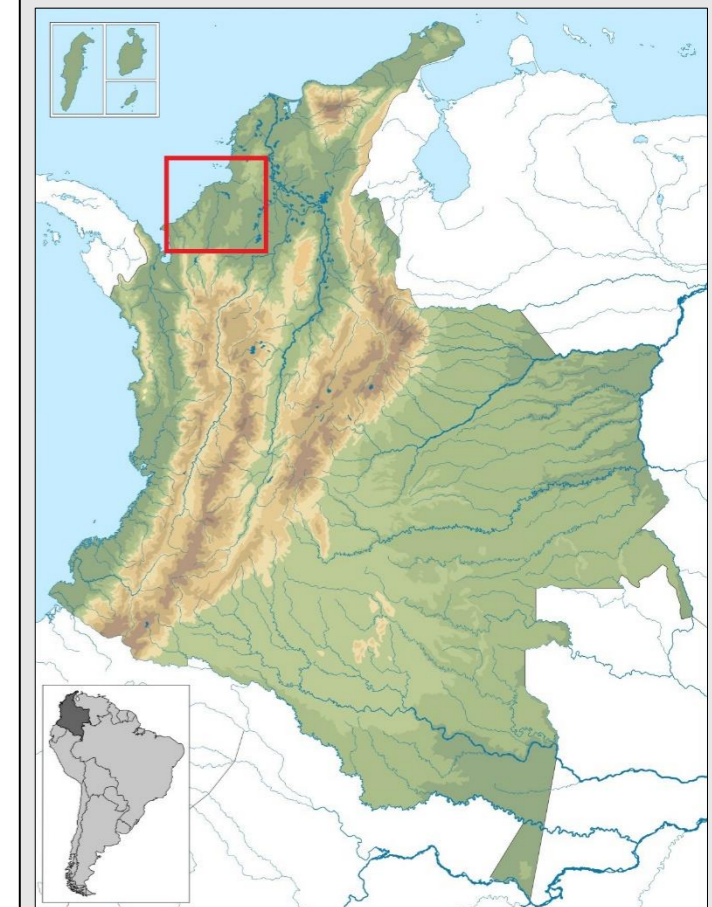


GEOGRAPHICAL POSITION:

1. Country: Colombia
2. Departments: Sucre and Córdoba
3. 1,800Km² in the Zenú indigenous territory, on the banks of the Sinú river.
4. Geographic coordinates: 8 ° 34 "N and 76 ° 04" W, with 9 ° 12 "N and 75 ° 32" W.

SOURCE:

- BOSQUE COLOMBIANO ORG, 2020.
- IMAP: biodiversity map of Colombia, 2018.



The result of this project is the mitigation of the threats described. Given that the threats described are systemic (cultural and traditional) and systematically affect (criminal structures and groups of fishermen), we propose activities with 4 components: educational, conservation, sustainability and communication.

| Activities | Outcomes |
|---|--|
| Educational: training, awareness and socialization of the project. | Increase in the conservation capacities of the natural guardians of Carranchina turtles in the Colombian Caribbean: Zenú indigenous people, co-inhabiting this species. |
| Conservation: marine protected area, recovery and restoration of habitats. Monitoring of areas with threat of illegal traffic | Decrease in illegal hunting, consumption and trafficking; use of sustainable fishing techniques. Reforestation of beaches. Cleaning plastics along the target shoreline. |
| Sustainability: Creation of a regional office (corporation) for the conservation of the Carranchina turtle in the Colombian Caribbean, with financing methodology. | Continuation of conservation actions, once the project is finished. Habitat restoration and establishment of a protected area for the species are measures required for its long-term persistence (FORERO-MEDINA, 2013) . |
| Communication: use of digital media for the dissemination of project results. | Stimulate the implementation of other conservation projects in the area. |

This Project is based on the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group conservation guidelines; **USFWS Tortoise and Freshwater Turtle Conservation Fund guidelines**, and the conservation objectives of the Colombian government. Since the beneficiary population is indigenous Zenú, these communities were invited to the formulation and eventual implementation of the project; therefore, our activities do not violate the rights of autonomy and free development of the peoples, of the UN. This project is inclusive because it is aimed at the Zenú indigenous communities; in turn, it has a gender focus because it will strengthen the role of indigenous women in the direction and operation of conservation actions in the area.

We subscribe integrative and multilateral activities, to link at least 120 conservationists from the riverside of Colombian provinces on the banks of the Sinú River and its surroundings: Córdoba, Sucre and Antioquia., places whose Sinú river riverside, and optimize actions to combat illegal trafficking and fishing illegal Carranchina turtle. To do this, we propose the creation of an interactive web platform of experts for the creation of an international community of conservationists and turtle conservation organizations from regional provinces. In this space, we will share experiences, techniques, studies, monitoring and profiles to facilitate agreements between entities of banks of the Sinú River.



2.3. PROJECT GOALS, OBJECTIVES, ACTIVITIES AND METHODS:

***All activities will be carried out taking into account the protection measures for COVID-19: social distancing, use of face masks and use of alcohol for contact with equipment and supplies.

GOAL: Increase the conservation status of the Carranchina turtle, through the population increase of 66%, mitigating threats and protecting their habitats, on the banks of the Sinú River, in Colombia.

OBJECTIVE 1: Strengthen the conservation capacities of the Zenú indigenous communities, through the training of 1,000 indigenous people, in the conservation of freshwater turtles, in the 6 months of the project.

| ACTIVITIES (A) | MÉTODOS |
|--|---|
| A1.1. 50 master trainings, directed at 1,000 indigenous Zenú (50% women; 18-35 years old), in freshwater turtle conservation. | -Creation of personalized study plan in the Zenú culture, inclusive and with a gender focus. Socio-constructivist method of learning. Mandatory the participation of at least 500 women. 50 training days of 3 hours; It will be offered refreshments, school kit and attendance certificate, validated by the University of Magdalena. - Drafting of management manual for Carranchina turtle in protected natural areas. Topics: Conservation of freshwater turtles and management of natural areas with turtle habitats. |
| A1.2 Socialization of the project in 5 Zenú indigenous educational institutions. | Use of personalized multimedia content (images, videos, animations) to sensitize the educational community of the project site: 2,500 beneficiaries, including students, teachers, parents and teaching administrators. |
| A1.3. Creation of a regional office for the conservation of Carranchina turtles. | Legalization of the regional office, in the form of a corporation (non-profit entity), in the Chamber of Commerce. Selection of the 10 most outstanding indigenous people from the training sessions to be part of the assembly of founders of the regional office. Agreement with the regional office of the IUCN, WWF, Corpomagdalena, Universidad de Magdalena and Fuverde. Functions: continuity of the conservation actions contained in this project, once it is finished. Management of fishing logs for 250 fishermen in the region. |
| A1.4. Development of multimedia content for educational and informative purposes. | -Development of 100 images, 25 videos and 5 pedagogical and personalized animations. -Personalization of multimedia content with habitats, biodiversity and landscapes of the Sinú river. |
| A1.5. Preparation of a Carranchina turtle conservation management protocol. | Document design with standardized procedures for activities implemented in this project: handling of stranded specimens, nesting riverside, incubation of eggs, release of turtles. Customized, easy to understand and royalty-free document for free circulation with turtle conservation reasons. |
| A1.6. Web platform for the multilateral conservation of the Carranchina turtle. | Creation of a web platform that links conservation entities for the protection of Carranchina turtle throughout the region. Regional experts on Carranchina turtle will be linked to stakeholders interested in the conservation of turtle. |
| A1.7. 10 'door-to-door' training sessions to sensitize and train fishermen in the project area | Personalized talks to sensitize the fishing and tourist population about the fight against unsustainable fishing techniques (fishermen) and avoid buying river turtle eggs, meat and handicrafts. The 1,000 indigenous people trained in the previous activity will carry out these sensitizations. In this way, we hope to cover about 8,000 people, including fishermen, tourists, and riverside dwellers. |

OBJECTIVE 2: Mitigate at least 80% poaching and illegal trafficking; and UII fishing of Carranchina turtles, at the project site, in the 12 months of the project.

| ACTIVITIES (A) | MÉTODOS |
|--|--|
| A2.1: Creation and operation of 32 km² as protected natural areas, in previously prioritized habitats. | -Emission of administrative decree by Zenú headquarters, with delimitation of natural protected area (with 32Km ² protected and 13Km ² with buffer zones), type II, according to IUCN criteria. -Registration of new protected area in IUCN and Ministry of Environment of Colombia. The protected area is in prioritized habitats with ecological corridors mapped during 2020 (CUELLO F., 2020). -Ecotourism and forest tourism will be promoted in the Zenú territory. This natural protected area will not be purchased. It will be declared freely and autonomously by the administrative councils Zenú. |
| A2.2. Issuance and enforcement of 80 norms for the management, handling | Implementation of anti-illegal trafficking, anti-habitat destruction and anti-unsustainable fishing regulations: 2 Space-time closures seasons (1-May to 31-July, mating season; 1-Dic to 31- March, nesting season), fishing limit quota / per vessel / per species; Fishing record through electronic |

| | |
|--|---|
| and use of the dredged natural protected area. | logs to monitor fishing at the project site. Areas with fixed restrictions on the exercise of fishing, in seagrass beds where there is foraging activity by Carranchina turtles. |
| A2.3. Exchange of spinel hooks for sustainable fishing kits to fishermen from the project site, previously trained. | Delivery of 250 sustainable fishing kits to fishermen at the project site: Change of spinel hooks, drag meshes and static meshes, for circular hooks, ropes, floats, ropes, sinkers, longlines and pots. |
| A2.4. Monitoring of 17Km2 of nesting, mating and foraging riverside with a high threat of poaching and illegal trafficking. | Voluntary participation Use of compulsory social service for ranger recruitment. Vigilance rounds of 8 hours of travel through 17km2 of riverside on Sinú river. Delivery of uniform and communication equipment. prioritized riverside with great threat of hunting, consumption and illegal trafficking. Use of two drones, communication equipment, reception monitor, 5 wildlife monitoring cameras and daily walking days to monitor the riverside. Agreement with the environmental police to give notice of sources of illegal traffic for their subsequent dismantling. |
| A.2.5. Adaptation and enforcement of a first aid office to Carranchina turtles embedded in the project site. | Provision of plastic removal from turtle bodies. Collection and incubation of eggs laid on the nesting riverside. Use of artificial incubation pens for eggs. Release of baby turtles on the riverside of the Sinú river. |
| A2.6. Application for registration in Appendix I of CITES, to the Carranchina turtle, as a victim of illegal trafficking. | Formal request sponsored by the University of Magdalena for the registration and recognition of the Carranchina turtle as a victim of illegal trafficking and the respective inscription in Appendix I of CITES. Sending study, evidence and format. |
| OBJECTIVE 3: Restore 12Km2 net of nesting riverside, mating areas and foraging zones, of Carranchina turtles, to mitigate the habitat destruction, in the 12 months of the project. | |
| ACTIVITIES (A) | MÉTODOS |
| A3.1. Planting 5,000 fast-growing, native species trees on target riverside. | Use of seeds of fast-growing trees of the region. Use of 1 community nurseries for seedlings in early growth phases; use of solid waste from the community for composting (fertilizer). |
| A3.2. 100 signage on forests with warning notices, prohibitions and information fences; and installation of 50 garbage cans. | -Installation of warning and information warnings about presence of freshwater turtle. -Training in situ on the management of the presence of freshwater turtle. -Installation of waste sorting container kits to promote recycling. -12 days of garbage collection. |
| OBJETIVE 4: Stimulate conservation in the Zenú indigenous territory by informing at least 25,000 people about the activities and results of the project. | |
| ACTIVITIES (A) | MÉTODOS |
| A4.1. Opening, publications and updates of social networks, website of the project. | -Opening and filling accounts in social networks: Facebook, YouTube, Instagram and Twitter. - Web page of the program. Publication of activity reports. -Publication of campaigns, activities, interviews and results of the program. The target community will be: ecotourists, tourists, outdoor enthusiasts, conservationists and personnel related to the conservation of biodiversity. |
| A4.2. Preparation of a video-documentary of the program. | Editing of a compilation of interviews and videos of activities, with narration for the production of a video-documentary of the project. Low-cost activity with great promotional and outreach impact. Broadcast on social networks, website, regional channels and movie theaters as a preamble to movies. |
| A4.3. Celebration of 2 fairs: opening and closing of the project. | -Assignment of a regional conservation day for the freshwater turtles, and annual fair celebration. -Celebration of the opening fair and closing fair of the program. -Invitation to stakeholders of biodiversity conservation in the region: social entities, universities, state entities. |
| A4.4. Project case study: comprehensive Carranchina turtle conservation strategy on the Sinú river of Colombia. | Scientific article of the project, peer-reviewed for publication in environmental journals. Strategy aimed at the scientific and conservation community of the world. Agreement with the University of Magdalena for the writing. |
| A4.5. Implementation of 5 digital campaigns, with lobbying and social | Use of digital media strategy with social marketing techniques for the implementation of 5 paid campaigns through YouTube, Facebook, Twitter and Instagram, to promote the rejection of poaching and Carranchina turtle traffic. |

marketing techniques, to discourage the purchase / sale of products from the Carranchina turtle.

2.4. PROJECT TIMETABLE

| ACTIVITIES (A) Tentative start date: March 15, 2022; Tentative completion date: March 14, 2023 | Project period of performance (POP) by months | | | | | | | | | | | | Post project | | |
|--|---|---|---|---|---|---|---|---|---|----|----|----|--------------|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| Administrative activity: Notification and socialization of the project with local stakeholders. | X | | | | | | | | | | | | | | |
| Administrative activity: Project preparation; purchase, hiring, contacts, agreements. | X | | | | | | | | | | | | | | |
| A1.1. 50 master trainings, directed at 1,000 indigenous Zenú (50% women; 18-35 years old). | X | X | X | X | | | | | | | | | | | |
| A1.2. Socialization of the project in 5 Zenú indigenous educational institutions. | | | X | X | | | | | | | | | | | |
| A1.3. Creation of a regional office for the conservation of Carranchina turtles. | | | | | | | | | | | X | X | X | X | X |
| A1.4. Development of multimedia content for educational and informative purposes. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| A1.5. Preparation of a Carranchina turtle conservation management protocol. | | | X | X | X | | | | | | | | | | |
| A1.6. Web platform for the multilateral conservation of the Carranchina turtle. | | | X | X | X | X | X | X | X | X | X | X | X | X | X |
| A1.7. 10 'door-to-door' training sessions to sensitize and train fishermen in the project area | | | X | X | X | | | | | | | | | | |
| A2.1. Creation and operation of 32 km ² as protected natural areas and 13 buffers zone. | | | | | X | X | | | | | | | | | |
| A2.2. Issuance and enforcement of 80 norms for the management, in natural protected area. | | | | | | X | X | X | X | X | X | X | X | X | X |
| A2.3. Exchange of spinel hooks for sustainable fishing kits to 250 fishermen. | | | | | X | X | X | | | | | | | | |
| Administrative activity: Submit midterm financial and technical report to USFWS. | | | | | | | X | | | | | | | | |
| A2.4. Monitoring of 17Km ² of nesting, mating and foraging riverside. | | | X | X | X | X | X | X | X | X | X | X | X | X | X |
| A.2.5. Adaptation and enforcement of a first aid office to Carranchina turtles embedded. | | | | | | | X | X | X | X | X | X | X | X | X |
| A2.6. Application for registration in Appendix I of CITES, to the Carranchina turtle. | | | | | | | | | | X | X | X | X | X | X |
| A3.1. Planting 5,000 fast-growing, native species trees on target riverside . | | | | | X | X | X | X | X | X | X | X | X | X | X |
| A3.2. 100 signage on forests with warning notices; and installation of 50 garbage cans. | | | X | X | X | | | | | | | | | | |
| A4.1. Opening, publications and updates of social networks, website of the project. | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| A4.2. Preparation of a video-documentary of the program. | | | | | | | | | | X | X | X | | | |
| A4.3. Celebration of 2 fairs: opening and closing of the project. | X | | | | | | | | | | | X | | | |
| A4.4. Project case study: comprehensive Carranchina turtle conservation strategy. | X | X | X | X | X | X | X | X | X | X | X | X | | | |
| A4.5. Implementation of 5 digital campaigns, with lobbying and social marketing techniques. | X | | X | | X | | X | | X | | | | | | |
| Administrative activity: Community surveys | X | | | | | | | | | | | X | | | |
| Administrative activity: Submit final financial and technical report to USFWS | | | | | | | | | | | | | X | X | X |

*****Note:** This schedule was designed based on the dates of nesting, foraging and mating seasons at the project site. Carranchina turtles can resuscitate two to three times per season, with a two-week interval between poses. In the Sinú river, the season runs from May to July, with two nesting peaks in December and March (SAMPEDRO-MARÍN, 2012).

2.5. STAKEHOLDER COORDINATION/INVOLVEMENT:

*** We have letters of support available.

| STAKE HOLDERS | ROLE IN THE PROGRAM | PREVIOUS WORK / RELATIONSHIP THREATS | COMMUNICATION |
|--|--|--|--|
| Zenú indigenous community Local entities | <ul style="list-style-type: none"> -Population beneficiary of the program. -We are strategic allies, linked through cooperation agreement. -Knowledge of the territory to intervene. - 50 indigenous volunteers <p>*** In Colombia, indigenous communities are federal owners of their territories; therefore, for the declaration of marine protected areas it is only necessary to issue administrative decrees by the tribal councils. For this project, the Zenú indigenous communities have the political will to create a 32Km2 natural protected area and 13Km2 buffer zone, at the project site.</p> | <p>During 2020, we created a technical table and members representing these communities participated in the drafting of 'POPULATION DIAGNOSIS AND ANALYSIS OF THREATS OF THE CARRANCHINA TURTLE (<i>Mesoclemmys dahli</i>), IN COLOMBIA' (see in: https://corpofuverde.org/population-diagnosis-and-analysis-of-threats-of-the-carranchina-turtle-mesoclemmys-dahli-in-colombia/), and in the eventual implementation of this project.</p> <p>-Relationship Threats: * 250 of the fishermen at the project site who use UUI fishing techniques are Zenú indigenous peoples. * Poachers, the first link in the illegal trafficking chains, belong to these communities.</p> <p>The participation in the project of the Zenú indigenous communities is essential to mitigate the threats of illegal trafficking, illegal, unreported and unregulated fishing and the destruction of nesting riverside, due to the lack of environmental education.</p> | <p>The Zenú indigenous community will be informed through management reports of weekly activities; publication of activities and results in social networks and the program's website;</p> |
| IUCN Regional office for South America International entities | <ul style="list-style-type: none"> -Collaborator of the program. Contribution of human resources, infrastructure and travel expenses. Knowledge of the territory to intervene. -Experience in conservation and inter-institutional relationships with environmental entities. | <p>During 2020, we created a technical table and members representing this entity participated in the drafting of "POPULATION DIAGNOSIS AND ANALYSIS OF THREATS OF THE CARRANCHINA TURTLE (<i>Mesoclemmys dahli</i>), IN COLOMBIA" (see in: https://corpofuverde.org/population-diagnosis-and-analysis-of-threats-of-the-carranchina-turtle-mesoclemmys-dahli-in-colombia/), and in the eventual implementation of this project.</p> | <p>Presentation of monthly reports of management of joint activities, through email and monitoring.</p> |
| Corpomagdalena State entity | <ul style="list-style-type: none"> -Collaborator of the program: state counterpart of the program -Presentation of legal, environmental assistance and knowledge of the territory. Extensive experience in conservation issues and intervention of socio-environmental initiatives. - Link with cooperation agreement. | <p>During 2020, we created a technical table and members representing this entity participated in the drafting of "POPULATION DIAGNOSIS AND ANALYSIS OF THREATS OF THE CARRANCHINA TURTLE (<i>Mesoclemmys dahli</i>), IN COLOMBIA" (see in: https://corpofuverde.org/population-diagnosis-and-analysis-of-threats-of-the-carranchina-turtle-mesoclemmys-dahli-in-colombia/), and in the eventual implementation of this project.</p> | <p>Presentation of monthly reports of management of joint activities, through email and monitoring.</p> |
| University of Magdalena Regional educational entity | <ul style="list-style-type: none"> -Collaborator of the program. Educational entity of the region. -Presting high quality consultancies through the faculty of biology; human resource and infrastructure. -International cooperation impact studies on the state of conservation. | <p>During 2020, we created a technical table and members representing this entity participated in the drafting of "POPULATION DIAGNOSIS AND ANALYSIS OF THREATS OF THE CARRANCHINA TURTLE (<i>Mesoclemmys dahli</i>), IN COLOMBIA" (see in: https://corpofuverde.org/population-diagnosis-and-analysis-of-threats-of-the-carranchina-turtle-mesoclemmys-dahli-in-colombia/), and in the eventual implementation of this project.</p> | <p>Presentation of monthly reports of management of joint activities, through email and monitoring.</p> |

2.6. PROJECT MONITORING AND EVALUATION:

This Project will be evaluated and monitored through management indicators. To guarantee transparency in the measurements, the chosen indicators will be external and verifiable through public verification sources. On the other hand, the management indicators of this project will be based on guidelines according to the nature of the evaluation that will be measured, as shown below:

(i) Management indicators for the evaluation of the fight against poaching and illegal trafficking of Carranchina turtles, will be based on guidelines recommended by **USAID: MEASURING EFFORTS TO COMBAT WILDLIFE CRIME: A Toolkit for Improving Action and Accountability** (USAID, 2017).

(ii) Management indicators for the evaluation of the fight against illegal, unreported and unregulated Carranchina fishing, will be based on the **FAO guidelines: Food and Agriculture Organization of the United Nations** (FAO, 2018).

(iii) Management indicators to combat habitat destruction, that is, nesting riverside, foraging and mating shores, will be based on **IUCN guidelines** (IUCN TURTLE CONSERVATION COALITION, 2018).

| OBJECTIVE | INDICATORS | MONITORING METHOD | CURRENT | DESIRED |
|---|---|---|----------|---------------|
| O1: Strengthen the conservation capacities of the Zenú indigenous communities, through the training of 1,000 indigenous people, in the conservation of freshwater turtles, in the 6 months of the project. | Number of indigenous people trained in freshwater turtle conservation | Signed attendance record; photographic and video record of the trainings. | 0 | 1000 |
| | Number of fishermen trained in sustainable fishing. | Electronic logbook of fishermen's registry managed by regional office. | 0 | 600 |
| | Number of indigenous people who are linked to the regional freshwater turtle conservation office created. | Copy of the certificate of legal existence from the regional office. | 0 | 10 |
| | % Of indigenous population that recognize the importance of conserving freshwater turtles | Questionnaire survey | 10% | >60% |
| O2: Mitigate at least 80% poaching and illegal trafficking; and UUI fishing of Carranchina turtles, at the project site, in the 12 months of the project. | Number of reports of cases of illegal, unreported and unregulated fishing, and records at the project site. | Bimonthly bulletins of the Colombian environmental police. | 180/year | <36/year |
| | Number of fishers switching to sustainable fishing tools and methods. | Register of signatures of fishermen receiving sustainable fishing kits from this project. | 0 | 600 |
| | Number of Carranchina turtle catches by incidental and accidental fishing | CORPOMAGDALENA semi-annual management report (regional state environmental entity). | 98/year | <19/year |
| | Number of Km2 of natural protected area declared and operational. | Registration web link on the IUCN web platform | 0 | 45 (32+13) |
| | Number of pockets of illegal freshwater turtle trafficking dismantled during the project | Bimonthly bulletins of the Colombian environmental police. | 12 | 45 |
| | Number of baby turtles released after retrieval and incubation of eggs on nesting riverside. | Humboldt Environmental Observatory Biodiversity Report | 0 | >450 |
| | Number of km2 of nesting riverside, mating and foraging areas, monitored. | Monitoring log filled out and signed by ranger personnel. | 0 | 12Km2 |
| O3: Restore 12Km2 net of nesting riverside, mating | Number of trees planted during the project. | Humboldt Environmental Observatory Biodiversity Report | 0 | 5,000 |

| | | | | |
|---|---|--|---|--------|
| areas and foraging zones, of Carranchina turtles, to mitigate the habitat destruction, in the 12 months of the project. | Number of signs installed on nesting riverside and, mating and foraging areas. | Photographic record and purchase invoice. | 0 | 100 |
| | Number of green spots installed on town frequented by tourists. | Photographic record and purchase invoice. | 0 | 50 |
| | Number of tourists sensitized on the conservation of freshwater turtles. | Photographic and video record. | 0 | 1,000 |
| O4: Stimulate conservation in the Zenú indigenous territory by informing at least 25,000 people about the activities and results of the project. | Number of people informed about the activities and results of the project. | Social media interaction statistics center and website. | 0 | 25,000 |
| | Number of people who reject the purchase / sale of Carranchina turtle eggs, meat and crafts. | Virtual surveys through social networks. | 0 | 10,000 |
| | Number of entities interested in participating in the conservation of Carranchina turtles on the north of Colombia. | Copy of communications requesting an agreement with the newly created regional office. | 0 | 5 |
| | Number of people who see the project documentary | Copy of record of views in social networks. | 0 | 10,000 |
| | Number of people reached with the project's anti-illegal trafficking campaigns | Social media interaction statistics center and website. | 0 | 10,000 |

2.7. DESCRIPTION OF ENTITIES UNDERTAKING THE PROJECT

This project will be implemented by **FUVERDE FOUNDATION**, a non-profit Colombian environmental organization with 10 years of experience in conservation projects. Our work team is interdisciplinary and is made up of 6 people, as described below. We have a network of 50 volunteers from Zenú indigenous peoples; and last semester students from the Faculty of Life Sciences at the University of Magdalena.

We will receive cross-cutting logistical support from the Zenú indigenous administrative councils. In turn, we will receive specialized advice and technical assistance World Wildlife Fund, WWF; IUCN | South America regional office, Corpomagdalena (state entity) and the University of Magdalena (occasional and punctual advice. It does not represent a significant contribution in financial terms). However, this support is transversal to all activities; the only organization responsible for all project activities is the proponent: **FUVERDE FOUNDATION**. See attached, project manager curriculum vitae. Next, we describe our work team and the responsibilities in the activities:

| Project staff / Responsible activities |
|--|
| <p>Professional biologist, master in herpetology. 12 years of experience in reptile conservation. Role: project manager Responsible activities: Administrative activities; Notification and socialization of the project with local stakeholders; Project preparation; purchase, hiring, contacts, agreements; Submit midterm financial and technical report to USFWS; Community surveys; Submit final financial and technical report to USFWS A1.3. Creation of a regional office for the conservation of Carranchina turtles. A1.2 Socialization of the project in 5 Zenú indigenous educational institutions. A2.2. Issuance and enforcement of 80 norms for the management, handling and use of the dredged natural protected area. A3.2. Adaptation and enforcement of a first aid office to Carranchina turtles embedded in the project site.</p> |
| <p>forestry engineer with a master's degree in forest conservation. 8 years of experience in marine biodiversity conservation. Role: project coordinator A2.1: Creation and operations of 45 (32+13 km²) as protected natural areas, in previously prioritized habitats. A3.1. Monitoring of 12Km² of nesting, mating and foraging riverside with a high threat of poaching and illegal trafficking. A4.1. Planting 5,000 fast-growing, native species trees on target riverside. A4.2. 100 signage on forests with warning notices, prohibitions and information fences; and installation of 50 garbage cans.</p> |
| <p>Professional in psychology, master's degree in social development. 8 years of experience in intervention in communities. Role: Associate Project Psychologist</p> |

Responsible activities: A1.4. Development of multimedia content for educational and informative purposes of the program. **A1.1.** 50 master trainings, directed at 1,000 indigenous Zenú (50% women; 18-35 years old), in freshwater turtle conservation. **A2.4.** 10 'door-to-door' training sessions to sensitize and train 600 fishermen in the project area

Computer engineering professional. 5 years of experience in conservation project communications. **Role:** IT assistant to the project

Responsible activities: A5.1. Opening, publications and updates of social networks, website of the project. **A5.2.** Preparation of a video-documentary of the program. **A3.3.** Implementation of 5 digital campaigns, with lobbying and social marketing techniques, to discourage the illegal traffic.

2 early career biologists. 1 year of conservation experience **Role:** instructors / activity managers.

Responsible activities: A5.3. Celebration of 2 fairs: opening and closing of the project. **A2.3.** Exchange of spinel hooks for sustainable fishing kits to fishermen from the project site, previously trained. **A5.4.** Project case study: comprehensive Carranchina conservation strategy on the Sinú river of Colombia.

Network of 50 volunteers: Indigenous Zenú; and students from the Faculty of Life Sciences of the University of Magdalena (partner of the project).

Functions: field activities collaborators; reforestation, surveys, monitoring, data collection, community training.

The Fuverde Foundation offers endowment (denim uniform), employment certificate and per diem to volunteers. The students approve the activities in the project as compulsory professional practices.

1.8. SUSTAINABILITY

This Project has a systematic sustainability strategy:

| Sustainability activities | Financing of post-project activities |
|--|---|
| <ol style="list-style-type: none"> 1. Strengthening the conservation capacities of indigenous riverside communities: Zenú. This project will train 1,000 community environmental leaders with knowledge in Carranchina turtle conservation. 2. Creation of a natural protected area, type II, according to IUCN criteria, in previously prioritized areas. 3. Selection of the 10 most outstanding indigenous young people from the training sessions, for the creation of a regional Carranchina turtle conservation office. 4. Delivery of a personalized Carranchina conservation management protocol, with a description of the processes and activities contained in this project. 5. Creation of an office (environmental corporation) led by indigenous leaders, whose corporate purpose is the conservation of the Carranchina turtle. Its functions will be: <ol style="list-style-type: none"> (i) Monitoring of nesting riverside and foraging and mating areas of the target turtle. (ii) Reforestation of Carranchina habitats at the project site. (iii) Administration of the natural protected area declared by the project. (iv) Implementation of the activities contained in this initiative, upon completion of the project. | <p>To finance the operation and the proposed activities, we propose the following strategies:</p> <ol style="list-style-type: none"> (i) Digital campaigns 'adopt a Carranchina turtle': donors will receive personalized shipments (via WhatsApp and email) of videos and images of Carranchina on the project site. (ii) Sale of ecotourism packages on nesting, mating and foraging riverside, from a distance that does not hinder the turtles. (iii) Tickets and tourist guides in a natural protected area created. (iv) International grants. (v) Fuverde Foundation will donate the equipment, supplies and communication channels of the project, to the regional office, once the implementation of the project is finished, as seed capital. <p>Note: the proposed program for financing the regional Carranchina conservation office will be executed after the project ends.</p> |

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