



**HABITAT RESTORATION
AND ABUNDANCE ESTIMATION OF THE
ENDEMIC SPECIES DAHL'S TOAD HEADED
TURTLE (*Mesoclemmys dahli*)**



©German Forero/WCS

***Second Interim Report to the People's Trust for Endangered Species
October 2014***

Contact:

Germán Forero-Medina
Science Director
Colombia Program
Wildlife Conservation Society
Carrera 25 #4-39
Cali, Colombia
(+57-2) 6831103
gforero@wcs.org

Wildlife Conservation Society — Colombia Program

PROJECT STAFF

Ruben Palacio, Biologist

Associate Researcher

Luis Eduardo Rojas, Biologist

Associate Researcher

John F. Gaitan, Zootechnician

Associate Researcher

German Forero-Medina, Ph.D.

Science Director

Padu Franco, M.Sc.

Director

1. Introduction

The aim of this project is to produce biological information about Dahl's Toad-Headed Turtle and to implement conservation actions with local stakeholders. This turtle is a poorly known endemic species, considered endangered because of its restricted distribution and the decline on the quality of its habitat, the tropical dry forest, which has been subjected to increasing destruction, fragmentation and alteration for human activities. Besides, the species is not formally protected across its narrow range. During the first phase of this project, we identified a population in an unstudied region of Colombia where it was believed to occur, and estimated its abundance and population structure. We have been monitoring this population for over five years. Additionally, we studied its habitat requirements and movement patterns using VHF Radio telemetry.

For the next two years the project has two main objectives. The first is to develop a model for restoration of riparian vegetation along the streams in one of the few known populations of the species. We hope to develop a restoration model based on community-organized nurseries, and implement a mechanism to evaluate its success on habitat quality improvement and recovery of the species. The second main objective is to confirm the presence of the species in some of the localities predicted by niche models, and evaluate its relative abundance at such localities to improve our understanding of its global abundance, determine threats to remaining populations and identify good areas for conservation of viable populations by protected areas.

This is the second interim report, which summarizes the activities conducted from June to October of 2014. Activities during this period consist of the second planting of the treelings produced in the nursery that we repaired (see first interim report), and sampling at locations across the species range to estimate abundance of the species.

1. Habitat Restoration Activities



Figure 1. The improved nursery at its current state, with treelings ready to plant.

During October, we conducted the second planting of treelings, this time the plant material was coming from the local nursery that we previously repaired, adjusted and reactivated (Figure 1). The volunteer students in charge, with the coordination of their teachers, took proper care of the nursery and the plants, mainly watering the seedlings during the intense summer of July 2014. We are grateful to the volunteers who are highly motivated and understand the importance of taking care of Dahl's toad headed turtle (*Mesoclemmys dahlii*) and its habitat.

Table 1. Species planted and their number of individuals

Family	Species	Common name	Individuals planted	Initial height (cm)
Anacardiaceae	<i>Anacardium excelsum</i>	Caracolí	274	55
Anacardiaceae	<i>Astronium graveolens</i>	Gusanero	28	69.5
Arecaceae	<i>Oenocarpus minor</i>	Maquenque	3	11
Arecaceae	<i>Elaeis oleifera</i>	Ñolí o corozo	44	13
Arecaceae	<i>Astrocaryum malibo</i>	Palma estera	20	10
Esterculiaceae	<i>Sterculia apetala</i>	Piñón	2	41
Bignoniaceae	<i>Tabebuia rosea</i>	Roble	311	72
Apocinaceae	<i>Aspidosperma spruceanum</i>	Tomasuco	5	53
Lauraceae	<i>Nectandra cuspidata</i>	Laurel amarillo	8	57
Lauraceae	<i>Nectandra turbacensis</i>	Laurel prieto	21	55
Sapindaceae	<i>Melicoccus bijugatus</i>	Mamón	3	41
Fabaceae	<i>Jacaranda caucana</i>	Gualanday	165	73.5
Fabaceae	<i>Inga sp.</i>	Guamo	2	37
Moraceae	<i>Ficus sp.</i>	Higuerón	1	150
Total			887	

Activities - The second planting was a highly technical endeavor that was properly supervised by our team, as we were dealing with species with particular requirements. This, a knowledge of the ecology of each species was necessary. Each species requires different shadow levels and it is important to plant them at different distances from the stream to optimize their development. We planted 887 individuals from 14 different species (Table 1), their initial height was recorded for further monitoring, using a sample of 30 individuals per species. Species with less than 30 individuals were assessed through a complete inventory.

We hired local workforce since September 26 to prepare the land near the stream for the planting and to perform the necessary tasks to have everything arranged before the volunteers arrived. We had to cut down aggressive grasses, make the holes for the plants, and bring the individuals a day before to the stream, so the volunteers could plant in the first hours of the morning, avoiding the intense heat that arises at about 10 am. We were lucky, as the weather conditions on both days of the plantings were optimal for both the plants and the volunteers.



Figure 2. Volunteer team that helped us with the plantings, a close-up of a student leader and a plant of tolú (*Pachira quinata*) growing to start converting the fence into a living fence.

On October 3, we planted the treelings with volunteers from SENA institution who are currently studying environmental management and are associated with CORPOCESAR, the regional environmental authority. We worked with them specially to plant our two key species for the restoration of Dahl's toad headed turtle hábitat: ñoli palm (*Elaeis oleifera*) and caracolí (*Anacardium excelsum*) both planted in the nearest parts of the stream where they naturally grow. On October 4, we continued the work with volunteer students of the institution “Cerveleón Padilla Lascarro”, a local school, and two accompanying teachers, finishing the planting with success.

A protocol for long-term monitoring of the restoration process – One of the most important activities was the development of a working document (in spanish) for the monitoring of the restoration process. Our activities in the field involved the geo-referencing and mapping of all the restoration area and the original vegetation cover represented by trees. We also took reference pictures with their coordinates and pictures of the most important treelings in the area to help the volunteer team in their identification. The protocol describes all the steps, materials and logistical activities to perform the monitoring in an integral way, not only to describe changes in the vegetation but also to assess if the indicators of success (attributes of a restored ecosystem) as well as the objectives of the Project.



Figure 3. A working monitoring protocol to assess the restoration of Dahl's Toad Headed Turtle (*Mesoclemmys dahlii*). Resource in Spanish.

2. Abundance of *M. dahli* in other localities

During June to October 2014 we visited localities in the departments of Córdoba, Sucre and Bolívar to search for populations of the species and identify sites for mark-recapture. We sampled these localities using baited traps and nets, the latter resulting in the most effective method for capturing individuals of the species. We confirmed the presence of the species in eight localities, but only two of them had a significant number of captures (Ceiba Pareja and Sahagún), and appear as good candidates for abundance estimation (Figure 4). Confirmation of the presence of the species in Bolívar is a highlight as there were very few records from this state in the literature.

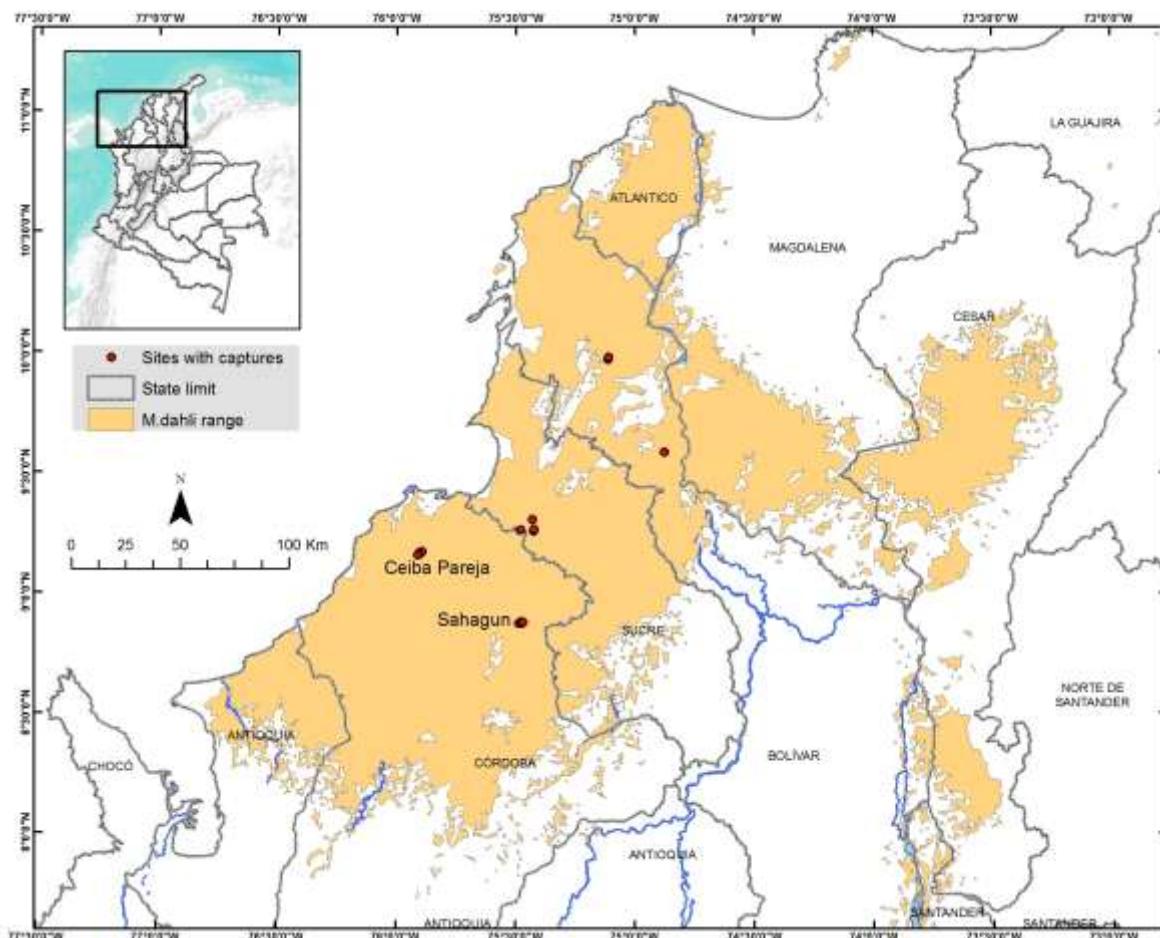


Figure 4. Visited sites where we could confirm the presence of *M. dahli*, indicating the two sites that appear as good candidates for mark-recapture studies for estimating abundance (Ceiba Pareja and Sahagún).

The next steps include:

- Visit new localities to search for *M. dahli* and re-visit the sites with most captures to estimate abundance.
- Monitor de planted treelings to ensure survival.
- Evaluate the success of the restoration activities for the riparian vegetation to produce a model that can be replicated.

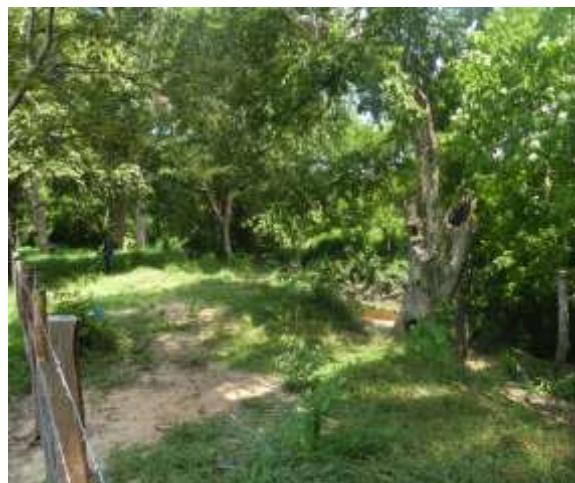
Annex 1. Reference pictures taken at the restoration site for further monitoring. Photo: Ruben Palacio.



Picture 1: 09° 17.517' Y W 073° 47.718'
47.635'



Picture 2: N 09° 17.432' W 073°



Picture 3: N 09° 17.434 W 073° 47.656'
47.637'



Picture 4: N 09° 17.404' W 073°



Picture 5: N 09° 17.445' y W 073° 47.654'

Annex 2. Treelings planted for the restoration of the turtle's habitat. Photos: Ruben Palacio



Caracolí
(*Anacardium excelsum*)



Ceiba roja
(*Hura crepitans*)



Iguamarillo
(*Pseudosamanea guachapele*)



Maquenque
(*Oenocarpus minor*)



Corozo o ñolí
(*Elaeis oleifera*)



Naranjuelo
(*Crateva tapia*)



Piñón
(*Sterculia apetala*)



Gusanero
(*Astronium graveolens*)



Laurel amarillo
(*Nectandra cuspidata*)



Laurel prieto
(*Nectandra turbacensis*)



Gualanday
(*Jacaranda caucana*)



Palma estera
(*Astrocaryum malibyo*)



Roble
(*Tabebuia*)



Tomasuco
(*Aspidosperma spruceanum*)



Maizcocho
(*Coccoloba acuminata*)



Achiote (*Bixa orellana*) y
Palma de vino (*Attalea butyracea*)

Annex 3. Pictures of individuals of *M. dahli* and its habitat in Bajo Limon, Sahagun (Córodoba). Photos: Luis E. Rojas



Annex 4. Pictures of individuals of *M. dahli* and its habitat in Sabanas del Potrero, Sincelejo, (Sucre). Photos: Luis E. Rojas

