

# Health status survey of wild populations of the Andean tapir (*Tapirus pinchaque*) and the red dwarf brocket (*Mazama rufina*) in the massif of Mamapacha (Boyacá, Colombia)

## Partial Report

By Javier Adolfo Sarria Perea, *DVM MSc* and Diana Vargas Munar, *Animal Scientist MSc*.

The Mamapacha massif is an isolated fragment of 27,512 hectares of cloud forest and paramo, located in the department of Boyacá in the north of the Colombian Eastern Cordillera.

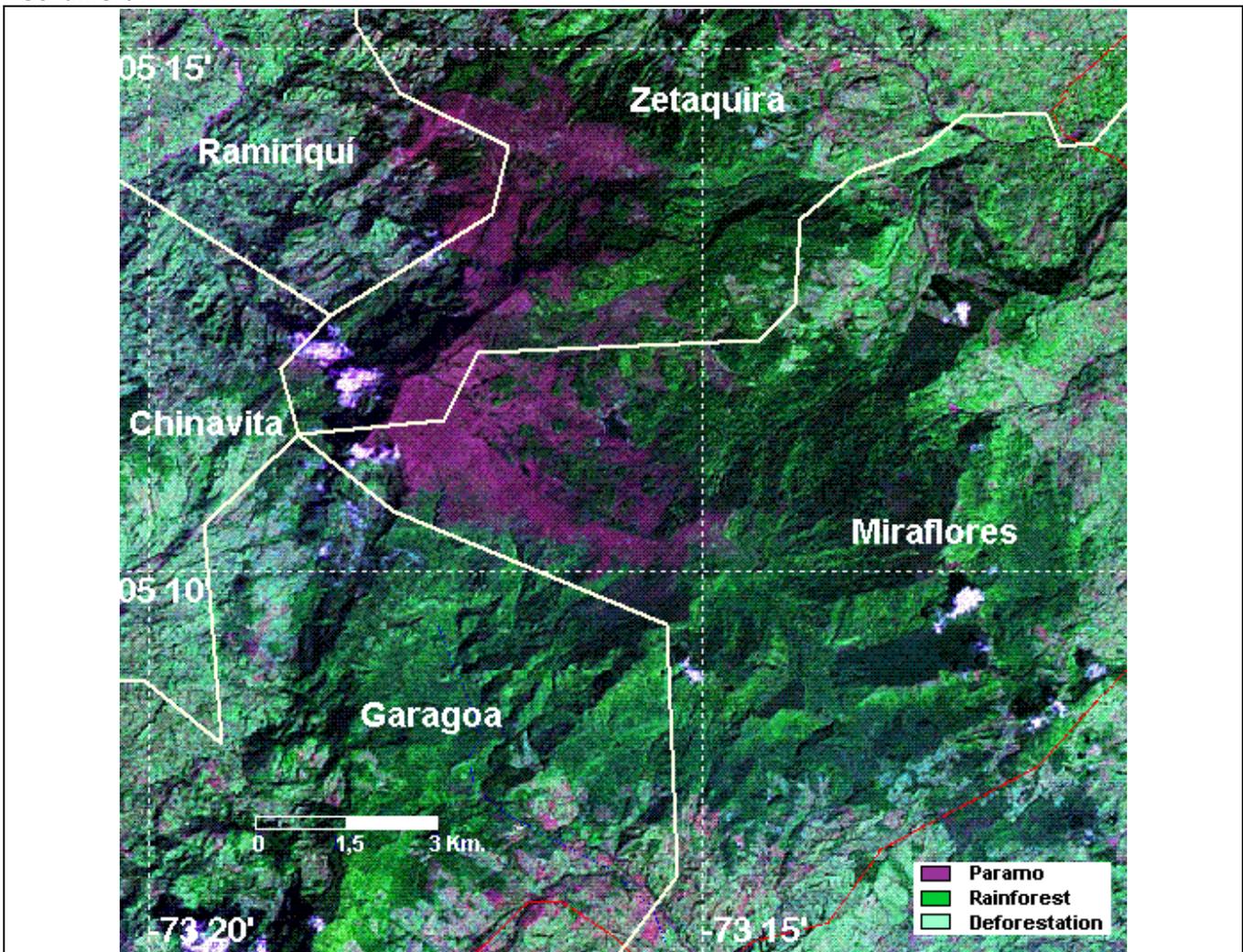


Figure 1. Map designed in the program TrackMaker, ® with satellite images obtained from the Website MapMart®.

The massif has been affected by cattle ranching during decades, and infectious diseases such as Vesicular Stomatitis and Brucella have been recently diagnosed, which may imply a serious risk factor for the native ungulates. Recent studies reported the presence of the red dwarf brocket and the Andean tapir in this area, which may imply the northernmost distribution for the tapir, together with the endangered status of both species in the massif, because of the effects of the isolation and human pressure.



Figure 2. Andean rainforest (Photo by Javier Sarria)



Figure 3. Andean rainforest (Photo by Javier Sarria)



Figure 4. The Cienegano River, receives hundreds of lesser streams from the mountains (Photo by Javier Sarria)



Figure 5. Andean rainforest transformed into grasslands (Photo by Javier Sarria)

## GOALS

The goals of the present project are to evaluate the health status of the red dwarf brocket (*Mazama rufina*), for the comparison with that of the cattle and sheep in the area, in order to detect possible health risk factors; and to confirm the presence of the Andean tapir in the Mamapacha massif.

## OUR COLLABORATORS

For the field phase of the project, we have counted with the kindly assistance of the ecologist Craig C. Downer MSc PhD candidate, an expert in Andean tapir ecology, who has helped us in the evaluation of the area and the elaboration of the plant inventory. We also have been count with the generous collaboration of Mr. Eduardo Fernández, Félix Fernández and their families. They are local inhabitants who gently brought us accommodation and assistance in the field expeditions.

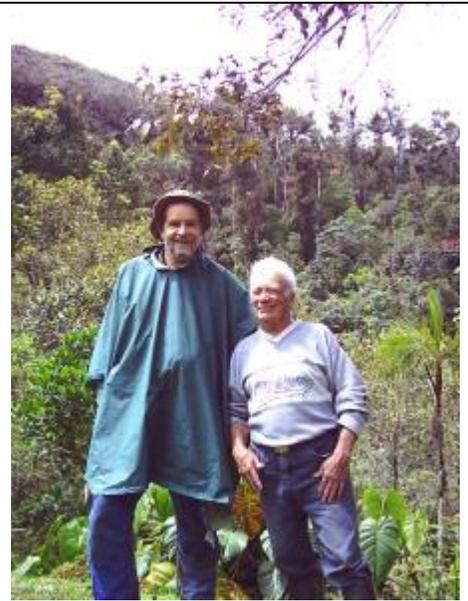


Figure 6. Our collaborators: Craig Downer (left) and Eduardo Fernández (right). (Photo by Diana Vargas M.)

## ACKNOWLEDGEMENTS

This research has been generously supported by The Rufford Maurice Laing Foundation, Idea Wild and Missis Japzy Perea. This project was authorized by the Colombian Regional Environmental Authority Corpochivor, through the Resolution No. 01037 of November 23, 2004. We also want to thanks MapMart® for the providence of the free satellite images of the region of study

## METHODOLOGY

During the period between August 2005 and March 2006, we developed the following activities:

- We inspected 880 hectares of Andean forest and 300 hectares of paramo in the southwestern margin of the massif, in the locality of Garagoa, for physical evidence of tapirs and brockets, including tracks and trails, faeces, fur, browsing sign, rubbing posts or rocks, wallowing areas, mineral procurement seeps, etc.
- We did a preliminary inventory of the flora as well as an evaluation of the geography for this area and construct maps of the area in the computer, using the program TrackMaker® and satellital images obtained in the MapMart® website.



Figure 7. Javier recording a track waypoint (Photo by Diana Vargas M.)



Figure 8. Diana analyzing tracks (Photo by Javier Sarria)



Figure 9. Javier downloading data from the GPS for drawing the maps (Photo by Diana Vargas M.)

- We interviewed several long-time inhabitants of the area who have frequented the remoter wilderness forest and páramo areas in order to ascertain whether they had observed the Andean tapir and brockets.
- Finally, we developed some analyses of blood and faeces from cattle, sheep and three brockets kept in captivity. We also analyzed the chromosomes of one brocket.



Figure 10. Diana downloading and editing images in the computer (Photo by Javier Sarria)



Figure 11. Javier analyzing samples in the mobile laboratory (Photo by Diana Vargas M.)

## PARTIAL RESULTS

- ***Flora inventory suitable for Tapirs***

Almost sixty species of plants were identified. From these at least six taxonomic groups constitute known major food sources for the Andean tapir in other regions. To wit: in the páramo, the genera *Lupinus* and *Gynoxys* as well as favoured genera in the family Ericaceae were found in great abundance.

In the Andean cloud forest here occurring, an abundance of the genera *Oreopanax*, *Alchemilla*, and *Neurolepis*, as well as favoured genera in the family Ericaceae were likewise encountered. Many other species known to be consumed by the Andean tapir were also observed but in lesser quantity.



Figure 12. *Gynoxis buxifolia* (Photo by Javier Sarria)



Figure 13. *Lupinus* spp. (Photo by Javier Sarria)



Figure 14. *Neurolepis* spp. (Photo by Javier Sarria)

• **Physical evidence of Brockets**

Evidence of brockets was found in the Andean forest and paramo: tracks and browsing evidences were frequent in areas of undisturbed forest, secondary forest and even in areas transformed into grasslands where cattle graze, but were absent in those areas highly perturbed by humans or dogs. We found evidences that brockets frequented mineral water sources inside the forest. The plants browsed by the brockets in the forest were "mortiño" (*Vaccinum*), "diente de león", *Adiantum*, the fern *Campyloneurum* and one species of Euforbeacea.



Figure 15. A brocket track in an intervened area (Photo by Javier Sarria)



Figure 16. Euforbiacea browsed by brockets (Photo by Diana Vargas M.)

Figure 17. *Vaccinum* (mortiño) browsed by brockets (Photo by Javier Sarria)

Figure 18. We found evidence that brockets frequented fonts of mineralized waters inside the forest (Photo by Diana Vargas M.)



Figure 19. A transformed area occupied by cattle that is frequented by brockets. (Photo by Diana Vargas M.)

- **Interviews with local people**



Figure 20. A local inhabitant showing the leg of a brocket predated by a wild carnivore.

A local long-time inhabitant of the Mamapacha area affirmed having seen a large, dark, furry animal “similar to a bear but with a prolonged snout forming a trunk”, in the páramo zone during the dry season in March and again in May of 2005. It should be noted that the inhabitants here are not familiar with the Andean tapir and do not even recognize its common names, such as “danta de montaña” (Spanish). For this reason, they may confuse it with the spectacled bear (*Tremarctos ornatus*). The same person collected one leg of a brocket, probably predated by a bear or cougar; he reported that brockets are frequent in the paramo and the undisturbed Andean rainforest.

- **Analysis of maps and trackpoints**

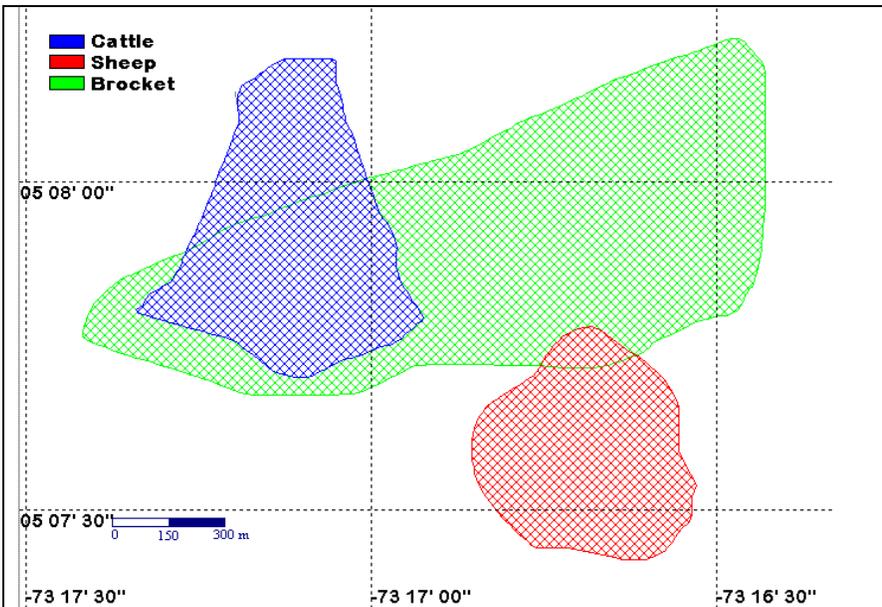


Figure 21. The figure above shows the distribution polygons of the cattle, sheep and free-ranging brockets, in a transformed area with secondary rainforest. There is overlapping between cattle and brockets, However, the frequency of brocket's tracks is low

Distribution of brockets

The partial analysis of the brocket's distribution and habitat use shows the probable plasticity of the species and their resistance to the forest transformation and the presence of the cattle, which seems to be not competitive, because they apparently not consume the same resources. However, this condition may imply a risk factor for the mutual transmission of diseases.

Presence of Andean tapirs

Although the area of study presented an excellent habitat for Andean tapirs, we were unable to confirm the presence of mountain tapirs. However, there is appropriate habitat in the Mamapacha wilderness for Andean tapir and does by no means eliminate the possibility that

Andean tapirs (however reduced in population) still find a secret and relatively safe place to dwell somewhere in the relatively large and wild region of Mamapacha.

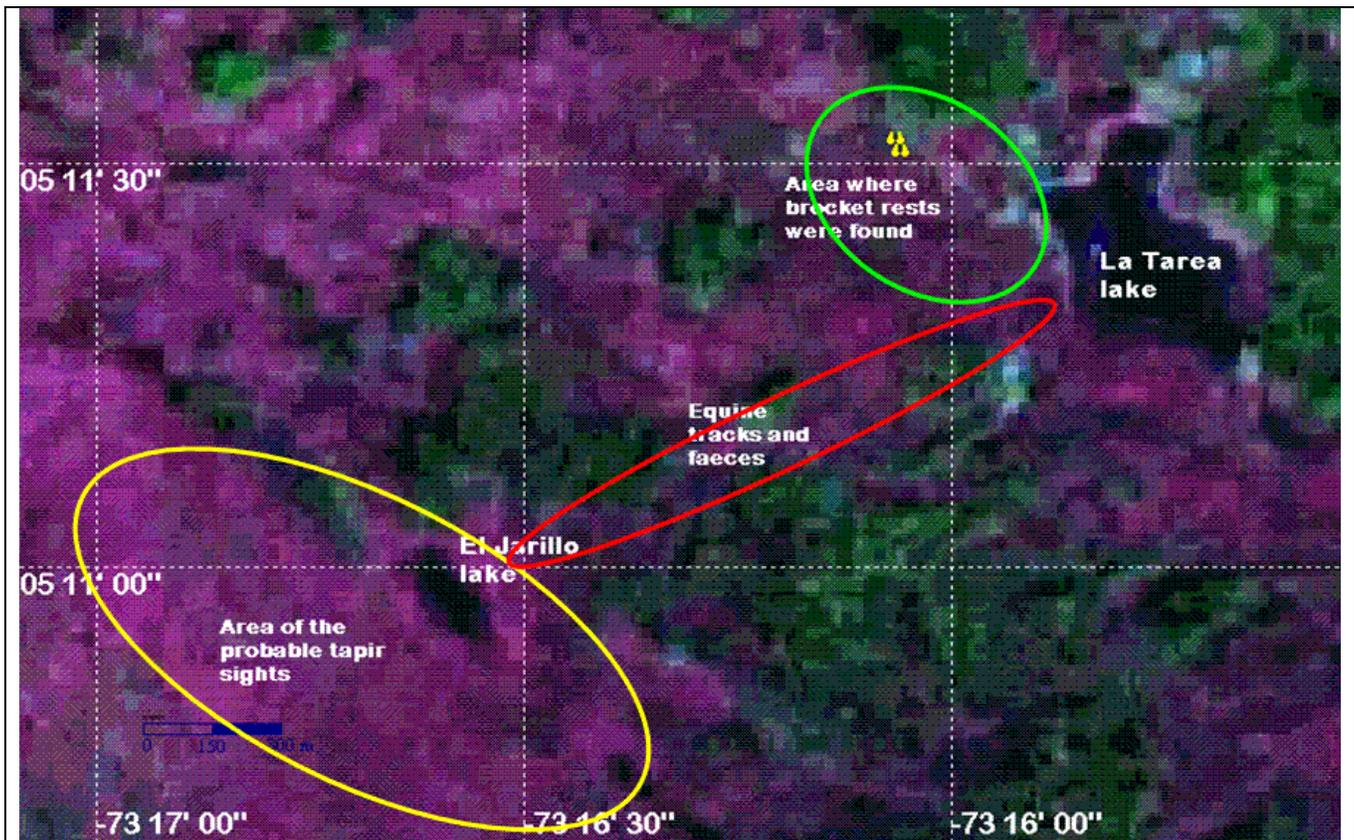


Figure 22. The map shows the region where tapir was probably sighted by the witness, and the area where the rests of the brocket were found. The local inhabitants used horses in the area, which may imply a health risk for tapirs. The area corresponds to the paramo, and has an altitude between 3100 to 3300 meters. (Elaborated in the program TrackMaker®, with satellite images obtained from the Website MapMart®).

- **Sanitary evaluation**

We analyzed a pool of faeces from the cattle and sheep. We also analyzed blood samples from cattle, sheep and three brockets kept in captivity. Hematologic values were under normal parameters, and mild to moderate infestations with *Coccidia* (Apicomplexa) and Strongylid worms (Nematoda: Ancylostomatidae) were detected both in cattle and sheep. A faecal sample from an unknown herbivore (probably a free-living brocket) was found with a highly infestation of strongylid larvae. One sheep died in November because a severe infestation with strongylids. Serum samples were also collected and will be screened for Vesicular Stomatitis, Brucella, Tuberculosis and Food and Mouth Disease, all of them are diseases previously detected in the area.



Figure 23. Male brocket (*Mazama gouazoubira*) kept in captivity (Photo by Javier Sarria)



Figure 24. Female brocket (*Mazama rufina*) kept in captivity (Photo by Javier Sarria)



Figure 25. Coccidian cyst from cattle (Photo by Javier Sarria)



Figure 26. Strongylid egg from sheep (Photo by Javier Sarria)



Figure 27. Strongylid larva from a sample of unknown origin (Photo by Javier Sarria)

- **Chromosomal analysis**

In order to standardize the field cytogenetic technique for brockets in the Mamapacha massif, we obtained chromosomes from a captive male brocket deer *Mazama gouazoubira*, which presented a chromosomal complement  $2N= 69$ , XY:RF composed by 66 acrocentric plus one metacentric autosomes, a large X acrocentric and a small Y metacentric. The animal was heterozygotic for one Robertsonian fusion (RF) between two small acrocentrics.

## **FUTURE PLANS**

The project is still ongoing, and as a future step in the research, we will make several expeditions in the eastern side of the reserve, in the locality of Miraflores, for physical evidence of Andean tapir and brockets. Because its higher extension of well preserved cloud rainforest and paramo, we expect to have higher chances of confirmation of the tapir in the dry season, and to find a high density of brockets. We will collect faecal samples in the field, and also try to capture some free living brockets, in order to collect samples for analysis. Additionally, we will amplify the sampling of domestic ungulates surrounding the area.