

## **Reinforcement of Andean Bear (*Tremarctos ornatus*) populations in the Alto Choco Reserve and neighboring areas, northern Ecuador.**

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### **INTRODUCTION**

The Andean Bear (*Tremarctos ornatus*) is the only bear in South America. The species is included in the Appendix I of the CITES and to be listed as Endangered by the Red Book of Mammals of Ecuador (Cuesta & Suarez, 2001). Habitat loss and fragmentation caused by human intervention and hunting due to human – bear conflicts are its main threats.

To minimize the damage caused by this isolation, and to reinforce Andean bear populations in northeastern Ecuador, three juvenile bears were rehabilitated and released in the Maquipucuna Biological Reserve (MBR) in 1995 (under the auspices of the World Society for the Protection of Animals -WSPA). The experiences gained during this study resulted in the decision to rehabilitate and release four Andean Bears of different ages in the cloud forest of the Alto Choco Reserve (ACR) and neighboring areas.

The objective of this study is to determine whether Andean Bears are able to survive in the wild and if success is age dependent. This project also aims to increase knowledge on the species ecology. and to improve the current reintroduction processes used for this species.

### **METHODOLOGY**

This study was carried out in the ACR, located in the Intag region of Imbabura Province, on the western slopes of the volcano Cotacachi, in the Choco bioregion. The study area covers altitudes ranging from 2000 to 4000 m.a.s.l and contains three vegetation types: cloud forest, upper montane forest and paramo. Daily temperatures oscillate between 9 and 23° centigrade. The ACR and its neighboring areas (approximately 80 km<sup>2</sup>) form part of the buffer zone of the Cotacachi – Cayapas Biological Reserve (approx. 2,044 km<sup>2</sup>).

Four bears were selected for the study: three males (born in the wild) and one female (of unknown origin). The bears were named 'Boggie' (adult male), 'Martin' (sub adult male), 'Juguetón' (yearling male) and Yana (sub adult female). The rehabilitation process began at the end of 1999. The bears were released after six months of rehabilitation and tagged with radio collars. The rehabilitation process was a modified and improved version of Castellanos (1998) conducted in the MBR. In order to aid in the rehabilitation of the bears we studied the diet and behavior of wild bears in the region. For this, we collected and identified feces, tracks and the direct observation of wild bears. In the current study, released bears were not directly observed as part of the effort to break their dependence on humans.

## RESULTS

The male bears were observed masturbating in different ways during the rehabilitation process, namely rapid and insistent licking of various parts of the body. In particular, 'Boggie' licked the inside of his elbow, 'Juguetón' his penis and, 'Martin' the palm of his right hand.

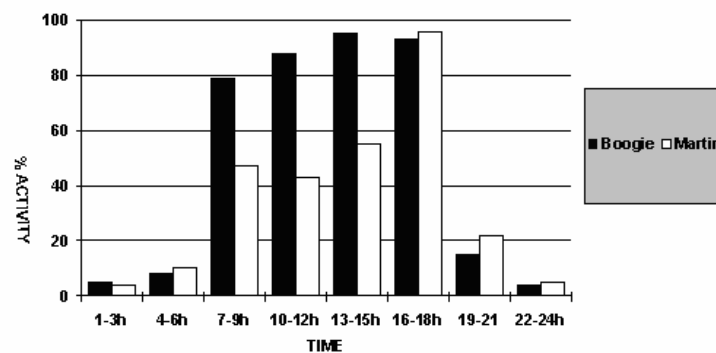
'Juguetón' was found dead one month after release (reason unknown). Similarly, 'Boggie' died three months after release. His death was presumably due to tick fever, caused by the hemoparasite *Babesia* species. This diagnosis was based on organic anomalies found in the dead body. However, a histopathological examination indicated that the cause of death was pneumonia.

In the months following the bears release, 'Martin' and 'Juguetón' were observed searching around the campsite near the release area. The bears were subsequently frightened off using dogs. This succeeded in discouraging 'Juguetón' from remaining in the area, but not 'Martin'; which was caught stealing food from the campsite days later. We used pepper spray to frighten him off, but we were unable to deter him. As a result, 'Martin' was trapped and transported to the high Andean forest (between 3200m and 3500 masl). Days later, 'Martin' entered a farm to look for food and was recaptured. In an attempt to keep 'Martin' away from human settlements, we tried a 'soft release' keeping 'Martin' in the forest but supplying food for 8 months. Finally, 'Martin' entered a nearby village and was injured by the farmers. He was subsequently taken to a small island (60 ha) situated in the Cuicocha Lagoon, Imbabura Province where he was fed daily. 'Martin' remained here for 17 months, but escaped twice from the island during this period, each time swimming approximately 300 meters. After his final escape, we were unable to locate him and it was assumed that he was killed by hunters in the local area.

We suspected that 'Yana' was pregnant and decided to try a 'soft release', but she didn't return to her food, contrary of what we had expected. She remained in the ABR for 3 months until she was injured by loggers using a machete. She was recaptured and released in the SierrAzul Reserve, Napo Province (northeastern region of Ecuador) where she remains to date.

The actinogram (Figure 1) was based on 835 records of activity and inactivity. The percentages of activity show that the 2 released bears were more active during the day, with activity visibly decreasing at night. The period of least activity was evident between 22H00 and 06H00.

**Figure 1.** Percentages of activity of two Andean bear in the Alto Choco reserve in neighboring areas



It was not possible to calculate the size of the home range of the released bears due to a lack of data.

## DISCUSSION

The oral masturbation reported for the Andean Bears was also recorded in our specimens using different zones on the body for stimulation (Zequera, 1989; Castellanos, 1998). This type of behavior is thought to be frequent in male captive bears.

Tick fever could be indicating that introduced parasites are also contributing to the species extinction; more information should be generated on this matter.

Andean Bear reintroductions by Castellanos (1998) in the RBM showed a large amount of activity during the day and only limited nocturnal activity. In this study, the bears were more active during the day and almost inactive at night. This small difference in nocturnal activity may be due to the fact that the nights in the ACR are colder than the RBM. It is likely that the bears need to remain relatively inactive and curled up during the night to maintain body heat and save energy. The low percentages of daytime activity shown by 'Martin' during the 'soft release' were due to the fact that he spent a lot of time around his feeding area resting and waiting to be fed.

The 'soft release' method must be carefully planned and managed, as Andean Bears are very intelligent animals that quickly get used to 'easy food'. Breaking this dependence proved to be difficult, but the method is still considered a good strategy for bear management in private forests.

### **CONCLUSION**

The present studies and other similar studies had much success in the rehabilitation of the specimens, but in some cases could not manage to break the imprinting and subsequent dependence of the bears on humans. The origin of this problem is due mainly to the fact that the release areas were near human settlements. To avoid these circumstances, future reinforcement efforts will concentrate on releasing animals in extensively protected natural areas, where human bear conflicts will not occur. As happened with Andean bears relocated into Sangay National Park by Castellanos (1998). In this way, we can decide whether or not we should continue with the efforts to reinforce bear populations in Ecuador.

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