

# Biological Research

## Co-occurrence of Andean Bear and Mountain Tapir at Papallacta Region, Cayambe-Coca National Park, Ecuador: A Brief Description

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In November 2010, 3 Ecuadorian NGOs began a mountain tapir conservation program in the Cayambe-Coca National Park. At that time 5 individuals were tagged with satellite collars to obtain preliminary data of their home ranges, population density and health status (Castellanos, 2013). When the monitoring phase ended in June 2012, data revealed that some of the collared mountain tapirs (*Tapirus pinchaque*) had been attacked by Andean bears. Consequently, it was decided to expand the existing tapir research project by incorporating a study of the Andean bear within the same time frame in order to explore the ecological interactions of these charismatic mammals. The main objective of this simultaneous co-occurrence study is to create a joint species distribution model and in turn generate a predictive map highlighting the threats faced by both populations.

The study area is located in the Rio Papallacta watershed in the Cayambe Coca National Park, on the eastern slopes of the Ecuadorian Andes (0°18'8.60"S, 78° 8'36.38"W). Within this region is the internationally important Ñucanchi Turubamba Wetland System, classified as a RAMSAR site due to its biological, cultural and hydrological importance. The site is of glacial origin, being formed at the time of the last ice age, and encompasses both upper montane forest and paramo habitats (Sierra, 1999), ranging from 3,500 to 4,000 masl. The Ñucanchi Turubamba is a unique aggregate of ecosystems, and is home to a wide diversity of species, many of which are endangered including the oncilla (*Leopardus tigrinus*), and the pudu (*Pudu mephistophiles*) among others. The area is bisected by the busy Inter Oceanica highway that connects the Ecuadorian Andes to the Amazon region, and a network of minor dirt tracks mainly used by the Municipal Potable Water Company of Quito, sport fishermen and tourists visiting the Papallacta, Baños, Loreto and Mogotes lagoons, and trails encircling the Sucus and Paracocha.

Since February 2013, 3 more mountain tapirs have been fitted with satellite collars and tapir population data continues to be collected. On December 2, 2013, a female Andean bear, we named Delia, became the first of her species to be fitted with an Iridium/GPS satellite collar in paramo habitat. Previously, we have fitted satellite and GPS collars to bears that spend the majority of their time under the thick canopy of the cloud forest which has severely obstructed satellite/GPS signals, leading to lost data. Due to the open nature of the paramo and the lack of obstructions to signal emissions, we hope that Delia will be the first of many bears we collar in the study region that will provide us with comprehensive home range, habitat use and movement pattern data. This data in turn will be used in concurrence with simultaneous tapir data in order to study interspecific interactions and co-occurrence patterns.

On February 15, 2014, whilst conducting a tracking survey with my assistant Felipe Fernández, and 2 students, Gabriela Viteri and Julie Callebut, we noted that Delia was not alone. We observed 2 bears following her in the distance. To avoid disturbing them, Felipe quickly snapped some photos and it became apparent that indeed 2 further male bears were also pursuing her. None of the male bears actually went on to engage with Delia or with each other, though it was a fascinating encounter to witness 5 adult Andean bears, 4 males and 1 female, in such close proximity! Was this event an indicator of mating season or simply a procession of bears in the study area? The sighting poses many questions that stimulate my investigatory sense. I recall the anecdotal report of a local farmer, Rafael Santillan, who once related to me that he had seen something similar in the cloud forests of Intag, Imbabura Province, in the northwest of the country, where 5 large bears were pursuing a female, and he compared it to male dogs following a bitch in estrus.



A female mountain tapir with severe wounds on her back, characteristic signs of an Andean bear attack.



(left) Delia wearing her Iridium/GPS satellite collar. (right) Male Andean bear on the same rock face as Delia.

In the hope of gaining more clues into the social gathering behavior of Andean bears, which has never been reported on such a scale, we returned to the site the next day and saw Delia on top of an outcropping of rock with a single large bear standing a short distance from her. We can presume that Delia was in estrus and must now wait 7 or 8 months to know if she in fact conceived and successfully carries cubs to birth. Fortunately, Delia is collared with a satellite collar and it is my hope she will soon lead me to her maternity den, providing yet more clues to the reproductive behavior of Andean bears.

In the Intag study region, cubs of about 3 or 4 months of age are frequently seen with their mother during the maize season (between March and July) on a level that seems more than purely coincidental (Castellanos, 2010). We believe that the occurrence and timing of Andean bear courtship behavior has a direct link with the spatial seasonality of wild fruit and domestic crop maturity in different geographical regions within the bears' range.

In the Papallacta study region, Andean bear females with young cubs have also been observed between August and September. Interestingly, there is no correlation between these dates and the predicted birth of Delia's cubs following a normal gestation should copulation have been successful. Perhaps in this study area there are 2 estrus cycles for female Andean bears or no defined periods of estrus. Perhaps this variation in parturition period can be explained by embryonic diapause prolonging the gestation period as a reproductive strategy. Clearly, more research is required to clarify the breeding season and reproductive behaviors of Andean bear populations in different regions of Ecuador.

## Literature Cited

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