

## Original research

# Andean tapir (*Tapirus pinchaque*) social groups and calf dispersal patterns in Ecuador

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## ABSTRACT

The social behaviors of individual Andean tapirs Ecuador were studied over 12 years. The results suggest that mountain tapir are more social than previously understood, with family groups that include subadult calves which may disperse gradually over several years. A more comprehensive understanding of the behaviors, reproductive strategies, and key habitats of endangered mountain tapir could help with the development of effective conservation strategies for this species.

**Key words.-** Andean tapir, social behavior

## RESUMEN

Se estudio el comportamiento social del tapir Andino en Ecuador durante 12 años. Los resultados sugieren que esta especie es más social de lo que se creía anteriormente, con grupos familiares que incluyen crías subadultas que pueden dispersarse gradualmente durante varios años. Una comprensión más integral de los comportamientos, las estrategias reproductivas y los hábitats clave del tapir Andino podría ayudar en el desarrollo de estrategias de conservación efectivas para esta especie.

**Palabras Clave.-** Tapir Andino, comportamiento social

## INTRODUCTION

Andean tapir (*Tapirus pinchaque*), also known as Mountain tapir, is an Appendix 1 CITES species and has been classified as Endangered by the IUCN Red List (2016). Current estimates suggest there are fewer than 2,500 Andean tapirs remaining (Downer, 1996; Lizcano *et al.*, 2016). Because of ongoing habitat loss, human-wildlife conflict, and climate change, mountain tapir populations in Ecuador are projected to further decrease by 19-44% by 2050 (Ortega-Andrade 2015).

Declining Andean tapir populations could impact the overall health of key ecosystems. Andean tapirs are often called “gardeners of the forest” because they are essential for seed dispersal and maintenance of forest diversity. They live in the highland plateau (Paramo) and cloud forests, at elevations between 1,400-4,500 meter above sea level. These habitats are also important sources of fresh water for people in Ecuador.

Field observations from 12 years of research in Andean tapir habitats in Ecuador were compiled for this rare and elusive species. A more detailed understanding of the social behaviors and reproductive strategies of Andean tapirs could help understand which habitats are most important for the survival of this endangered species.

## METHODS

Between 2010 and 2022, the Andean Bear Foundation team and collaborators observed Andean tapir in multiple habitats in Ecuador. Additionally, some Andean tapirs were anesthetized and fitted with Iridium / GPS collars in the paramo of the Cayambe Coca National Park, such that individuals could be monitored long-term. All field anesthesia and collar placements were done with an experienced field team, with appropriate permits from Ministerio del Ambiente, Agua y Transición Ecológica del Ecuador (MAATE).

## RESULTS

Long-term field observations of multiple Andean tapir indicate social behaviors that have not previously been reported for this species. This includes calves that stay with their mother or foster for at least two years, and social groupings of tapir ranging from three to eight individuals.

### Case 1: Adult female “Panchita”

In 2010, an adult Andean tapir female, nicknamed “Panchita,” was anesthetized and fitted with an Iridium/GPS collar in the Cayambe Coca National Park. She was recaptured four more times over the years to replace her collar as batteries wore out. Based on GPS data, this female’s home range was ~500 ha (Castellanos 2013).

In the 11 years since she was first fitted with a collar, this female had five calves. Two of her calves were killed by Andean bears (*Tremarctos ornatus*). One surviving calf was observed with its mother for more than two years. In February 2019,

“Panchita” was observed with two other tapirs; one with completely black and the other was a smaller subadult with incipient streaks of white fur, estimated to be ~18 months old.

### Case 2: Orphan male “Santiago”

In 2019, an approximately six-month-old male Andean tapir calf, nicknamed “Santiago,” approached a cow of the Nuñez Fuentes Family farm in the Llanganates National Park. The cow allowed the tapir calf to nurse, perhaps in part because of her past experiences fostering orphaned calves from the cow herd. The tapir calf remained with this cow and nursed from her for the next 22 months. The tapir calf occasionally attempted to nurse from other cows but was usually unsuccessful.

As of September 2021, the orphan calf had grown considerably but was still regularly sleeping in the stable beside his foster mother (cow). Video surveillance revealed that the calf continued to nurse both at night and during early morning hours. When the tapir calf was approximately two years old, he was anesthetized and fitted with an Iridium / GPS + camera collar to track his movements as he starts to wander away from the village.

### Case 3: Orphan female “Esperanza”

In 1994, from one to two-month-old female calf, nicknamed “Esperanza,” was found orphaned in Sangay National Park (Castellanos, 1994). This calf was then bottle-fed in Pasocha Wildlife Refuge (PWR) by park rangers until she was approximately 24 months old. The tapir calf was initially fed pasteurized cow milk but developed diarrhea. Once the milk formula was replaced with equal parts pasteurized cow milk and water, the diarrhea was resolved.

When “Esperanza” was two years old, she was a normal size for her age and lived free in the PWR cloud forest. When she was approximately two years old, this tapir died of rabies after being bitten by a domestic dog that had that disease in that region.

### Case 4: Orphan male “Leo”

In 2011, an approximately two months old male Andean tapir calf, nicknamed “Leo,” was rescued in Los Cedros, Quijos Alto, Antisana Ecological Reserve. The calf was cared for and raised in captivity on a farm (Gómez et al., 2013). This calf was bottle fed with cow milk cow by farmers until he was approximately 30-months-old. After being released, he development an extraordinarily aggressive behavior towards humans. When he was four years old (April 2015), the tapir was euthanized by an MAATE veterinarian because of multiple episodes of aggression towards humans (Castellanos y Gomez 2015).

### Larger Social Groups

In 2011, eight Andean tapir was observed walking together on the shores of the Brunner lagoon, along the Cerro Hermoso, in the Llanganates National Park.

In 2015, three tapir of different ages were observed grazing together. Both the 2011 and 2015 tapir herds were seen by a team from the Asociación Paramos Jaramillo

del Cantón Píllaro, Tungurahua Province (personal communication, Juan Medina Dueñas).

In March 2015, a similar group of three tapir was photographed by a camera trap in the cloud forest of the Sabia Esperanza Nature Reserve (Fig. 1).



**Figure 1.** A group of three Andean tapir of different ages walking as a group in the cloud forest of the Sabia Esperanza Natural Reserve. Photo Credit: Marcelo Ramirez.

## DISCUSSION

Based on field observations and long-term monitoring, Andean tapir may spend more time in social groups and calves may remain with their mothers for longer than previously understood. These observations suggest that the Andean tapir are not a strictly solitary species, unlike what has been previously suggested by Eisenberg *et al.* (1990). Similar observations have been reported in another large mammal of the Andes; the spectacled bear which had been considered a solitary species (Jackson *et al.* 2017).

As female “Panchita” had five calves in 11 years and tapir gestation last 13-14 months, this suggests that mountain tapir can enter post-partum estrus soon after parturition. This is similar to the post-partum estrus of domestic horses (*Equus caballus*), where lactating females can become pregnant 12 days after foaling (Pineda 2013).

Unlike previous observations that suggest Andean tapir calves leave their mothers at around one year of age, field observations now suggest some calves may stay with their mother for at least two years. This is based on the behaviors of at least one of “Panchita’s” calves and the observation that orphans “Santiago” and “Esperanza” stayed in their foster situation for more than two years. Again, this supports the observation that mountain tapir may have more complex social relationships than previously understood.

It is currently unknown whether orphaned mountain tapir will successfully return to the wild after fostering. The desensitization of hand-raised tapir could impact their avoidance behaviors and might have been a factor in one tapir contracting rabies from a feral dog and a male tapir showing major aggression to humans after his fostering. Successfully fostering and re-introductions have been described for multiple lowland tapirs (*Tapirus terrestris*), especially females, that move away during the mating season and occasionally later return with their calf. For example, a lowland tapir "Omaca" has returned to the Tiputini biological station of the Pontificia Universidad Católica del Ecuador annually for the past 12 years. Sometimes this female has been accompanied by a calf (pers. comm, Miguel Rodríguez). Similarly, in the Bamenó region, Yasuní National Park, the Waorani community has lived with four lowland tapirs that have then returned to the wild upon reaching sexual maturity (pers. comm. Pentí Baihua). The success of mountain tapir reintroductions warrants further study.

The successful cross-fostering of an orphan Andean tapir calf by a domestic cow has not been previously reported. While humans often try to hand-raise wildlife as pets, and other cross-species adoptions have been reported including felines adopting herbivores, whales adopting dolphins, and dogs adopting sheep (Cronin 2014), this does not always meet the nutritional, social, or behavioral needs of the orphaned animal. In the case of tapir calf "Santiago," short-term this fostering situation did seem to meet most of his needs. However, this desensitization and close contact with humans and livestock could pose challenges long-term to the survival of wild tapir including an increased risk of poaching, attacks from feral dogs, and the potential transmission of infectious diseases from domestic livestock or humans.

## CONCLUSION

Andean tapir calves stay with their mothers at least two years. The Andean tapir is not a strictly solitary species, groups between 3-9 individuals can sometimes be found eating or walking together.

### **Conflicts of interest:**

The authors declare that there is no conflict of interest in the development of this research

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