

## Are there Andean bears in Panamá?

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**Abstract:** We present the results of a 2007 survey for Andean bears (*Tremarctos ornatus*) at Serranía de Pirre, Panamá. We surveyed game trails using methodology developed by the Andean Bear Program of the Wildlife Conservation Society. We searched a total of 14 km along 3 trails and found 4 trees with claw marks resembling Andean bear activity signs. No other bear activity signs were found. The type and encounter rate of activity signs found at Serranía de Pirre indicate either a very sporadic and brief presence of Andean bears in the area or the absence of Andean bears and the misidentification of the claw marks as bear signs. We conclude that there is no resident population of Andean bears at the Serranía de Pirre and probably at the adjacent southernmost Serranía de Jingurudo. The only other mountain range biogeographically related with the Andes with reports of Andean bear presence in Panamá is the northernmost Serranía del Darién. Serranía del Darién should be surveyed to confirm the status of Andean bears in Panamá.

**Key words:** Andean bear, Cerro Pirre, Colombia, Darién, distribution, Panamá, presence, *Tremarctos ornatus*

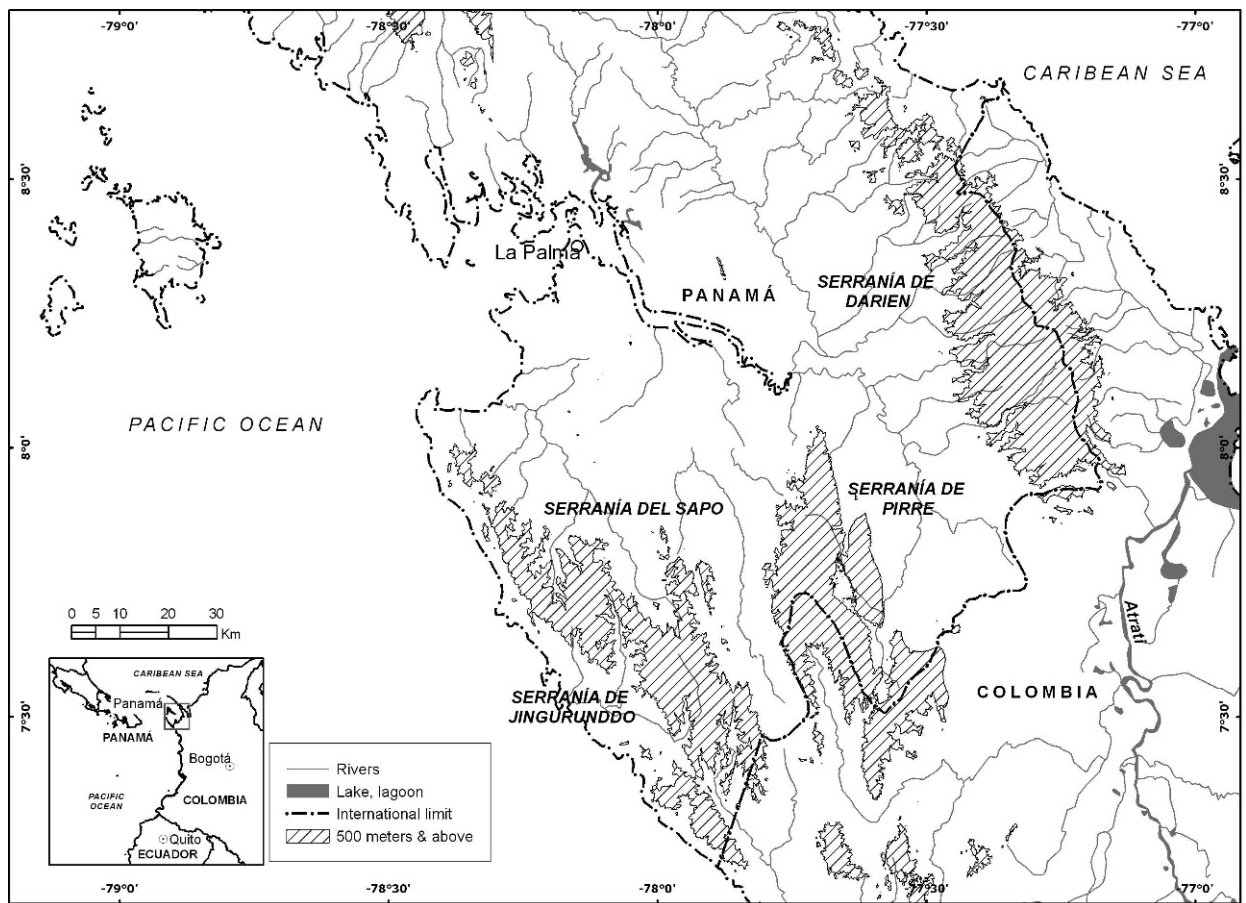
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The northern and southern boundaries of the Andean bear's (*Tremarctos ornatus*) distribution have been the subject of much debate. To the south, Andean bear presence has been confirmed in southern Bolivia and has been speculated to extend to northwestern Argentina (Vargas and Azurduy 2006). Andean bears have been presumed to be extirpated in Argentina (Brown and Rumiz 1989), but there have been reports of the species presence in the northernmost forest of the Argentinean yungas (Del Moral and Bracho 2005).

To the north the Andes divide into 2 branches. The northernmost limit of the Andean bear distribution over the eastern branch of the Andes is well known, reaching the Portuguesa Mountains in Venezuela (Mondolfi 1989, Goldstein 1992). In the western branch the range boundary is less clear. Many authors confine the distribution of the Andean bear to the Chocó region of Colombia (Rodríguez et al. 2003), while others report it to reach as far as the Colombian Darién at Los Katios National Park, at the headwaters of the Peyre River (sighting report by S. Zuluaga, Universidad Nacional de Colombia, Bogotá, Colombia, 1983; J.V. Rodríguez, Conservation International, Bogotá, Colombia, personal communications, 2007) and other areas along the border with Panamá (Peyton 1999, Minambiente 2001). Particularly interesting is the possible presence reported at the Serranía del Darién in Panamá (Hershkovitz 1957) based on specimens that were collected at the localities of David and Bahía de Caledonia.

### Study area

The Darién area in Panamá has 3 distinct mountain ranges: Serranía de Darién, Serranía de Pirre, and Serranía de Jingurudo (Fig. 1). Serranía de Darién, the northernmost mountain range, is separated from the other ranges by the valley of the Tuira River. Serranía de Darién is not geologically part of the Andes, but it shares many animal and plant species with the western branch of the Andes in Colombia. The Serranía de Jingurudo and Serranía de Pirre are geologically and biogeographically part of the western branch of the Andes (Garibaldi et al. 2000). Serranía de Jingurudo and Serranía de Pirre reach elevations of 1700 m and are connected to the western Chocó Mountain Range in Colombia through the forested Atrato River basin at altitudes between 200 and 400 m (Fig. 1). In the past, such low elevation forested areas as those in the Atrato were considered as dispersal barriers to Andean bears (Peyton 1999). However, we recently documented Andean bear presence in forested areas as low as 300 m at the watersheds of the Uribante and Caparo rivers in Venezuela (Goldstein 2006) and at 500 m at the Serranía de Kutuku in Ecuador (Zapata-Rios et al. 2006). Thus, the low lying forests between the Chocó



Cartography by Geog. Alejandra Sampson

**Fig. 1.** The Darién area of Panamá and its 3 distinct mountain ranges: Serranía de Darién, Serranía de Pirre, and Serranía de Jingurudo.

and Darién areas are not necessarily a barrier for Andean bear movement and dispersal.

The vegetation at the highest elevations of the Serranía de Pirre at the Panamá–Colombian border can be described as cloud forest (Stadmüller 1987), supporting a high biomass of palms as well as terrestrial and epiphytic bromeliads (Garibaldi et al. 2000), important Andean bear foods (Goldstein 1992, Peyton 1999).

## Methods

We visited the Serranía de Pirre in January 2007 to survey the area using the techniques developed by Northern Andes Andean Bear Program of the Wildlife Conservation Society. The area of the Serranía de Pirre above 500 m is about 80 km<sup>2</sup>. We identified 2 long ridges, both reaching Cerro Pirre

Peak at 1600 m above sea level at the Panamá–Colombia border. We surveyed selected mountain ridges in the area of interest for game trails (i.e., trails that animals use often enough to leave a clearly marked path and a great concentration of signs; Goldstein 2006). Andean bear trails along mountain ridges are common throughout the species' range (Peyton 1984, Goldstein 2006, Rios-Uzeda et al. 2006). Trails showing bear activity signs are mainly found along the longest and least steep mountain ridges that cover the greatest altitudinal gradient in an area. Thus, surveys using the game trail methodology should include the longest, most gradually ascending ridges. Typically, 4–6 adjacent ridges with a total of 12–16 km of trails should be surveyed (2–3 km of trail per ridge).

The frequency of encounter of bear signs depend on the abundance and activities of the bears. Some



## Discussion

Contrary to the trend in all other areas with confirmed Andean bear presence, at Serranía de Pirre, only one type of bear sign (claw marks) was found. Compared to other bear signs, marked trees can remain many years unaltered. At Serranía de Pirre, we found no other type of bear signs to confirm recent or actual presence of bears in the area. Further, the frequency of encounter of signs/km of trail was lower (0.3 sign/km) than the lowest frequency of bear activity signs (2 sign/km) encountered at any other study site with a similar sampling regime and effort (Goldstein 2006).

We propose 2 possible explanations for our findings. First, the claw marks at Serranía de Pirre are indeed Andean bear marks, supporting the claims of Andean bear presence in Panamá (Hershkovitz 1957, Emmons and Feer 1987, Eisenberg 1989). The type and low rate of bear signs found indicate that the presence of Andean bears at Serranía de Pirre was limited to sporadic visits from non-resident Andean bears. The hypothesis of a sporadic presence of Andean bears in the area is weakly supported by the speculative findings of Garibaldi et al. (2000). They interviewed residents in the lowlands of the Darién National Park, who reported sighting a big, black mammal with white markings around the eyes. The biogeographic relation of the Serranía de Pirre with other areas of the Colombian Darién suggest that bears could move into the area if they are present in the Colombian part of the Serranía de Pirre or nearby areas (Minambiente 2001), which has not been confirmed. The only nearby confirmed Andean bear population in the northwest of Colombia is at Paramillo National Park (H. Restrepo, Consultant for the Colombian National Park System, Bogotá, Colombia, personal communication, 2007), >100 km from either the Serranía de Pirre or Serranía de Darién, over the lowlands and swamps of the Atrato River basin.

Alternatively, the observed claw marks were not from Andean bears but belong to other species. Sign such as claw marks of other species could be mistaken as being from Andean bears even by expert observers (Emmons and Feer 1987). The absence of Andean bears at the Serranía de Pirre is supported by anecdotal and historical information. Serranía de Pirre was the site of Las Minas del Espíritu Santo de Cana, established in 1665, and one of the biggest gold mining operations in the New World. The mine was operated first by the Spanish settlers, then by a British company, and by a Canadian company as

late as the 1970s. During British management, the mine settlement had up to 10,000 inhabitants. Most of the meat consumed by inhabitants was bushmeat killed by hunters on the company payroll, even up to the closure of the mine in the late 1970s. Written documentation about the mine operation and history makes no mention of the presence of bears. Further, settlers 40 km away in the town of Boca de Cupe were seasoned hunters who arrived in the 1970s from the upper Murindo river basin in the Colombian Choco; they were familiar with the Andean bear and its activity signs, particularly bromeliad and palm feeding remains. After decades of living and hunting at the Serranía de Pirre, none of the settlers reported a single sighting of bear sign, much less the sighting of a bear.

Whether or not the claw marks found at Serranía de Pirre are evidence of past Andean bear activity, we conclude that there is no resident population of Andean bears at Serranía de Pirre, or even a recent presence of individual bears. Serranía de Jingurudo and Serranía de Pirre are part of the same mountain range, only separated by the upper basin of the Balsas River. We believe the absence of Andean bears at Serranía de Pirre likely indicates their absence at Serranía de Jingurudo as well.

The other mountain range at the Panamá–Colombia border is the Serranía de Darién, an isolated range, geologically different from the Andes and separated from the Serranía de Pirre by the lowland areas of the Darién and from the mountainous areas of Colombia by the middle and lower Atrato River basin. Hershkovitz (1957) and Eisenberg (1989) reported the possible evidence of Andean bear presence at Serranía de Darién based on specimens collected by third parties and anecdotal reports. There have also been sightings of Andean bears just across the border in Colombia in the upper Peyé River at the Katios National Park (Jorgenson 1984; S. Zuluaga, Universidad Nacional de Colombia, Bogotá, Colombia, 1983; J.V. Rodriguez, Conservation International, Bogotá, Colombia, personal communications, 2007). We think the Serranía de Darién should be explored using the survey techniques we used to collect further information on the status of the Andean bear in Panamá.

Our survey not only answered the question of the presence of the Andean bear in a particular area in Panamá, but also instructed local researchers on game trail survey techniques. The game trail methodology used at the Serranía de Pirre is a rapid

and effective tool for surveying areas for the presence of Andean bears. Knowledge of the distribution of the Andean bear is fundamental for evaluating the status of the species and the development of conservation measures such as the declaration of new conservation areas or the implementation of other management measures (Rodríguez et al. 2003).

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## Literature cited

- BROWN, A., AND D. RUMIZ. 1989. Habitat and distribution of the spectacled bear in the southern limit of its range. Pages 93–103 in M. Rosenthal, editor. Proceedings of the First International Symposium of the Spectacled Bear. Lincoln Park Zoo, Chicago, Illinois, USA.
- DEL MORAL, J.F., AND A.E. BRACHO. 2005. Evidence of Andean bear in northern Argentina. *International Bear News* 14:31–32.
- EISEMBERG, J.F. 1989. Mammals of the Neotropics. The Northern Neotropics: Panama, Colombia, Venezuela, Guyana, Suriname, French Guyana. The University of Chicago, Chicago, Illinois, USA.
- EMMONS, L., AND F. FEER. 1997. Neotropical rainforest mammals: A field guide. The University of Chicago, Chicago, Illinois, USA.
- GARIBALDI, C., M. AROSEMENA, H. GARCÉS, P. GARCÉS, J. GARCÍA, V. MARTÍNEZ, A. RODRÍGUEZ, N. TORRES, AND C. VERGARA. 2000. Informe Final del Proyecto de Evaluación de la Biodiversidad en los Bosques del Parque Nacional Darien. Proyecto ICAB-BIODAR-IEN-ANAM-PNUD-GEF. Instituto de Ciencias Ambientales y Biodiversidad, Universidad de Panamá, Panamá City, Panamá. (In Spanish.)
- GOLDSTEIN, I. 1992. Distribución, presencia y conservación del Oso Frontino en Venezuela. *Biollania* 9:171–182. (In Spanish.)
- . 2006. Programa de Investigación y Conservación del Oso Andino de Wildlife Conservation Society Andes del Norte. Portal Informativo sobre el Programa de Investigación y Conservación del Oso Andino de WCS Andes del Norte. Volumen 2, Números 1–3, Mérida, Parque Tecnológico Universidad de los Andes, publicación seriada trimestral de libre acceso en <http://web1.ula.ve/portales/wcsfrontino>. (In Spanish.)
- HERSHKOVITZ, P. 1957. On the possible occurrence of the spectacled bear, *Tremarctos ornatus*, in Panamá. *Saugetierkunde Mitteilunge* 5:122–123.
- JORGENSEN, J.P. 1984. Colombia. Spectacled Bear Specialist Group Newsletter 7:13.
- MINAMBIENTE. 2001. Programa Nacional para la Conservación y Recuperación del Oso Andino (*Tremarctos ornatus*), especie amenazada de los ecosistemas andinos colombianos. Imprenta Nacional, Bogotá, Colombia. (In Spanish.)
- MONDOLFI, E. 1989. Notes on the distribution, habitat, food habits, status and conservation of the spectacled bear (*Tremarctos ornatus*) in Venezuela. *Mammalia* 53:525–544.
- PEYTON, B. 1984. Spectacled bear habitat use in the Historical sanctuary of Machu Picchu and adjacent areas. Thesis, University of Montana, Missoula, Montana, USA.
- . 1999. Spectacled Bear Conservation Action Plan. Pages 157–198 in C. Servheen, S. Herrero, and B. Peyton, compilers, editors. Bears, status survey and conservation plan. IUCN/SSC Bear and Polar Bear Specialist Groups. IUCN, Gland, Switzerland, Cambridge, UK.
- RIOS-UZEDA, B., H. GOMEZ, AND R.B. WALLACE. 2006. Habitat preferences of the Andean bear (*Tremarctos ornatus*) in the Bolivian Andes. *Journal of Zoology* 268:271–278.
- RODRÍGUEZ, D., F. CUESTA, I. GOLDSTEIN, A.E. BRACHO, L.G. NARANJO, AND O.L. HERNANDEZ. 2003. Estrategia Ecorregional para la Conservación del Oso Andino en los Andes del Norte. WWF Colombia, Fundación Wii, Ecociencia, and Wildlife Conservation Society. (In Spanish.)
- STADMÜLLER, T. 1987. Los Bosques Nublados del Trópico Húmedo. Universidad de las Naciones Unidas y Centro Agronómico Tropical de Investigación y Enseñanza, Turrialba, Costa Rica. (In Spanish.)
- VARGAS, R.R., AND C. AZURDUY. 2006. Nuevos registros de distribución del oso andino (*Tremarctos ornatus*) en el Departamento de Tarija, el registro mas austral en Bolivia. *Mastozoológica Neotropical* 13:137–142. (In Spanish.)
- ZAPATA-RIOS, G., E. ARAGUILLIN, AND J. JORGENSEN. 2006. Caracterización de la comunidad de mamíferos no voladores en las estribaciones orientales de la Cordillera del Kutuku, Amazonia Ecuatoriana. *Mastozoológica Neotropical* 13(2):227–238. (In Spanish.)

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