

**COMMUNITY CONSERVATION PLAN FOR THE
CONSERVATION OF THE SPECTACLED BEAR
(Tremarctos ornatus), IN THE MOUNTAIN OF THE
ANDES IN SOUTH AMERICA**



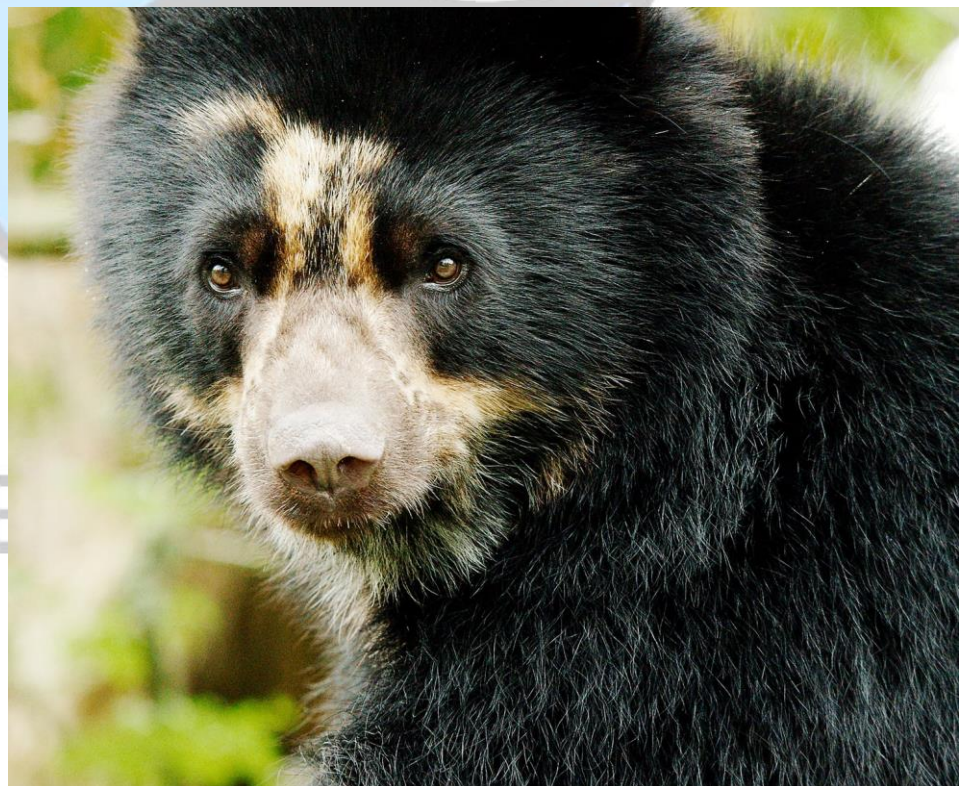
BOSQUE COLOMBIANO

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RESUMEN

The objective of this plan is the sustainable conservation of the Spectacled Bear (*Tremarctos ornatus*) populations in the Amazon Andean mountains in Colombia, in the Kamsá indigenous territory. This species is clinging to survival due to systematic elimination by 3 anthropogenic threats: Poaching and illegal trafficking; destruction of habitats and climate change. Through this strategy, we will strengthen the conservation capacities of the Kamsá indigenous community, cohabiting with this species and the main agent of elimination, due to lack of environmental education. We propose 4 strategies: 1. Education: train 1,500 young Kamsá indigenous people in mammalian conservation in the Colombian Andes. 2. Conservation: creation of a 64Km² safety area in priority habitats and ecological corridors of the bear. 3. Sustainability: Create a regional indigenous office whose corporate purpose is the conservation of the Spectacled Bear, led by young indigenous environmentalists, trained from the project. 4. Communication: inform 10,000 people about activities and results, to encourage investment in conservation in the Kamsá indigenous territory.

Keywords: conservation, Spectacled Bear, Kamsá indigenous people, Andean mountains, Amazon.



1. OBJECTIVES

1.1. General

Formulation of a Conservation Plan for the Andean Bear (*Tremarctos ornatus*) in Kamsá indigenous territory that defines the actions prioritized temporally and geographically in its jurisdiction, including the areas where the populations of other administrative jurisdictions of neighboring environmental authorities interact with their own; based on the analysis of habitat fragmentation, the current and potential distribution of the species, the design of protected areas of the Corporation, the analysis of needs and opportunities, as well as the local and regional dynamics that currently influence the conservation of the species.



1.2. Specific

(i) Contribute elements from the potential habitat and current distribution of the species for a better design of a Regional System of Protected Areas that allows guaranteeing the representativeness and connectivity of habitats of importance for the conservation of Bear in the distribution area.

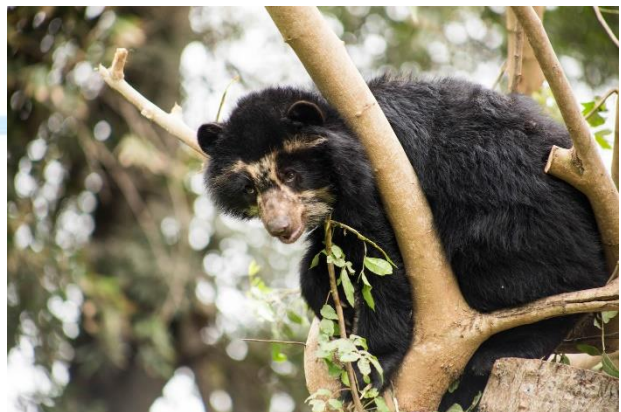
(ii) Propose the establishment of management actions that allow the maintenance of viable populations of this

species, as well as its ecological and evolutionary processes.

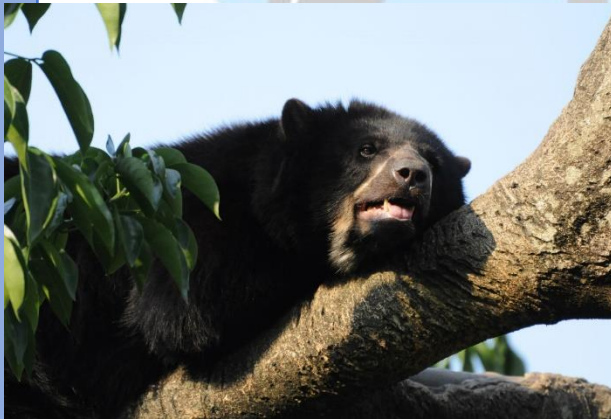
(iii) Incorporate the information generated and available for the elaboration of the Conservation Plans for the Andean Bear (*Tremarctos ornatus*) in the habitats and of other high-Andean carnivores of great size in the area.

(iv) Incorporate the most recent recommendations issued by the IUCN concerning the species.

This document was proposed as an instrument of construction and participatory management in which peasant communities were involved for its development, in particular those that share territory with the species, since they are the ones who face the greatest challenges for its conservation and that of the associated ecosystems. These communities exert pressure on the species that on different occasions lead to conflict, and it is they who must commit to participatory management alternatives that really achieve realistic and consensual conservation goals. This plan orients part of its actions towards the variables that affect the permanence of bear populations in the different territories where it is currently reported in the department of Amazonas.



The document is based on the analysis of the areas where the individuals of a population located in areas of administrative jurisdictions of neighboring environmental authorities, interact with others that are presumably within the Andean territories, forming a sub-nucleus that uses several territories interchangeably. administrative; in the same way, it is based on the current and potential distribution of the species, the analysis of habitat fragmentation and the design of protected areas of the Corporation. Taking into account also the needs and opportunities, as well as the local and regional dynamics that currently influence the conservation of the species.



2. METHODOLOGY

2.1. Study area

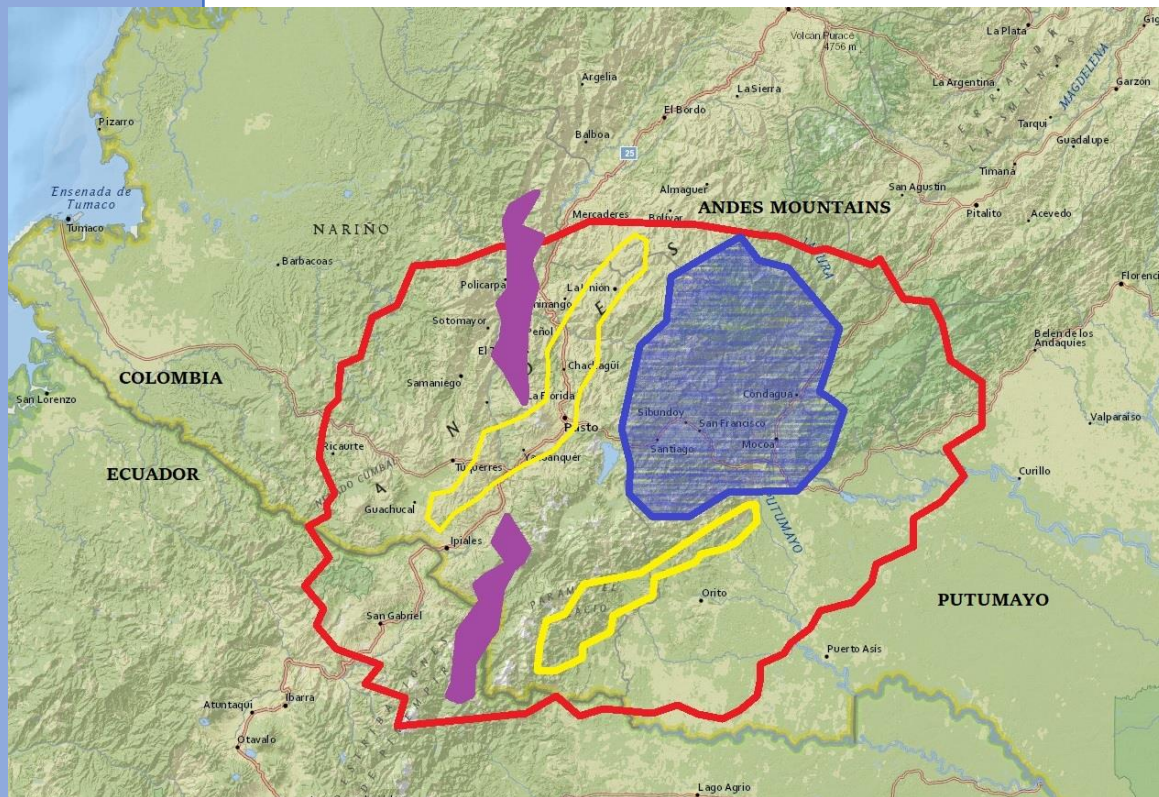
The range of action of an Andean bear according to Castellanos (2011) in fragmented landscapes of Colombia, can be 59 km² for males and 15 km² for females, data that vary according to climatic conditions and discrete variations in the habitat. With this premise and taking into account the movements of individuals






previously observed in the field, which involve neighboring departments and different municipalities, the border territories of the departments and administrative jurisdictions of other Corporations were included in the different analyzes (map).



Taking as a minimum elevation 2700 meters of elevation, for the definition of habitat available and potentially used by Andean bear, this is established as the limit for the different analyzes carried out. Based on these considerations, the study area includes the Kamsá indigenous territory and the 25 adjoining municipalities, since it is considered that for this species with large habitat requirements, the areas reported with its presence are complemented in use by neighboring territories, which are part from different jurisdictions of environmental authorities, Corpoguvavo, Cormacarena and CAM, which is why the action and conservation plan emphasizes the importance of inter-institutional and inter-sector agreement for the management of the species.

The foregoing is reflected in the conservation plan encouraging the implementation of actions and inter-administrative and intersectoral coordination.




CONVENTIONS	
	Kamsá indigenous lands
	Focus of illegal traffic
	illegal traffic of wildlife
	Zone of poachers
	Prioritized habitats

SCALE

1cm = 50Km

GEOGRAPHIC COORDINATES:
 -Latitude: 1° 9' 26.41232 " N
 -Length: 77° 4' 47.87857" W



3. BIOLOGY ANDEAN BEAR

(*Tremarctos ornatus*)

3.1. Taxonomic status

Class: Mammalia
 Order: Carnivorous
 Family: Ursidae
 Subfamily: Tremarctinae
 Genus: Tremarctos
 Species: *Tremarctos ornatus*
 Taxonomic authority F. Cuvier 1825

3.2. General characteristics

The Andean, frontino or spectacled bear is distinguished by its long, thick black fur, with yellowish-white spots around the eyes, on the snout and chest. Each individual presents their own characteristic spots,

which can be interpreted as their fingerprint. It is a plantigrade with non-retractable claws and generally has diurnal habits. Presents sexual dimorphism, males are larger than females; raised on the two hind legs they can reach a height between 1.50 - 2.10 m and weigh up to 180 kg, while the female is always smaller than the male, weighing between 80-90 kg. The species has some unique characteristics among bears (Ewer, 1973), including a deep depression in the body of the mandible immediately anterior to the masseteric fossa (Pocock, 1917), which houses a pocket-shaped posterior extension of the oral vestibule (Davis, 1955). A considerable decrease in the mass of the superficial masseter muscle and an increase in the mass of the zygomatic-

mandibular muscle (Davis, 1955). It is the only species where the presence of an entepicondylar foramen in the humerus is invariable (Davis, 1964; Kurten, 1966). On the plantar surface (Pocock, 1914) and on the baculum (Mondolfi, 1983) it also shows some unusual characteristics among bears. The diploid chromosome number is $2n = 52$, while in the other current bears it is $2n = 74$ (Mondolfi, 1983).

3.3. GEOGRAPHICAL DISTRIBUTION

According to the IUCN (2012), the Andean Bear is an endemic species of the tropical Andes. The northern limit of its range of distribution is the Darien forests on the border between Colombia and Panama, where its presence has not yet been fully verified: In Colombia it is found in the three mountain ranges into which the Andes are divided when entering the country, the Serranía de Perijá and the mountains of Oca, northern limit, whose peaks mark the limit with Venezuela, where it is also reported for the El Tama Massif and the Mérida Mountain Range up to the Portuguesa mountain range, being the eastern limit of its distribution (Figure 5). For Eisenberg (1989), the genus *Tremarctos* once ranged from southern California to the southeastern United States and throughout Central America.

Since the Pleistocene it exists only as a relict in South America and is confined to pre-montane and montane habitats in the Andes and adjacent hills. The current boundaries extend from Panama through Peru to Bolivia and possibly northern

Argentina. According to the elevation range, the Andean bear predominantly inhabits the humid forests of the Andes with annual rainfall greater than 1,000 mm (areas with high humidity), it is also found in paramos and semi-arid areas whose rainfall is close to 25 mm .

It prefers to live in the montane flats than Figure 5 Distribution of the Andean bear. Taken from IUCN 2012. www.redlist.org Historically, the species inhabited regions such as the Apure and Guyana forests in Venezuela, as well as those of Perijá and Mérida, between 251 and 1672 meters in elevation. (Codazzi, 1860). It also occupied the great heights of the mountain range, even the moors, both in Venezuela and in Colombia.



According to Hershkovitz (1957) it is distributed on the Pacific slopes of the Andes in the west to the slopes of the Amazon and the Orinoco in the east and from the Caribbean and the drainage of Lake Maracaibo in the north to the south of Peru and southwest from Bolivia. Additionally, it noted its presence in the Serranía de La Macarena. They range from 500 to 3,800 m although it reaches altitudes of 4,750 m and on the western slope of the

central Andes of Peru (Lambayeque Department) it descends to the desert and dry forests where it feeds on cacti and sapote (*Capparis* spp.) . The current distribution of the Andean bear in the department of Amazonas is restricted to the municipalities of Cabrera, Guatavita, Manta, Machetá, Fómeque, Gachalá, Gachetá, Ubalá, Gama, Guasca and Junín according to the latest records reported by Corpoguavio (2009) and by CAR (2009) within the framework of the specific technical cooperation agreement No. 950 of 2009 signed between Conservation International and the Regional Autonomous Corporation of Amazonas.



Presumably that given the considerable extension of moorlands and high Andean forests that the department possesses, its distribution and presence may have been broader in the not too distant past. For this plan of action and conservation of the Andean Bear, the state and distribution of the natural and intervened covers were assessed, taking as a minimum elevation elevation 2700 m.

3.4. Habitat

The Andean bear has a predilection for humid areas with abundant arboreal

vegetation at high elevations, such as rain forests in the high mountains, the so-called cloud forests, with precipitations greater than 1000 mm. It covers an elevation range that oscillates between 300 - 3800 m. Likewise, it lives in humid areas in the mountains where small shrubs, herbaceous plants and arrosetada vegetation typical of the moors predominate.

Currently the habitat used by the species is restricted to the highlands, a consequence of the displacement caused by the expansion of the agricultural frontier and the pressure exerted by the inhabitants of these areas, a situation that dates back to the beginning of the massive colonization of the Andean foothills to the present.

The department of Amazonas has lost a large amount of its Andean and high Andean forests, even so in the areas where the species was registered, this type of forest located between 2,350 and 2,500 m, has a multilayered structure with canopies of 15 to 30 m In which species such as *Clusia multiflora*, *Ocotea sericea*, *Persea* sp, *Bejaria resinosa*, *Symplocos rigidissima* and *Palicourea* sp., *Nectandra* sp, *Agnus acuminata*, *Myrica pubescens*, *Juglans neotropica*, belonging to the families of the Lauraceae, Rubiaceae Compositae, Melastomataceae can be found , Euphorbiaceae, Ericaceae, Myrsinaceae, Guttiferae, Melastomataceae and Aquifoliaceae in which individuals of the genera *Faramea*, *Cusareas*, *Palicourea*, *Hedyosmun*, *Brunellia*, *Clusia*, *Weinmannia* and *Bilia* among others, many of which are part of the diet of the bear.

The páramo and the sub paramo constitute areas well represented in the habitats used by the bear, located basically in the humid slopes of the mountain range with typical species such as the Puyas, the ericaceae cordon and other shrub species that provide an important offer to the diet frugivorous of this species.

3.5. Genetic diversity

Unlike other bears in which practically identical karyotypes composed of 74 chromosomes occur, the Andean bear has a diploid number of 52 chromosomes. The chromosomal rearrangement that occurred in the Andean bear was independent of the chromosomal rearrangement that is also found in the giant panda bear (*Ailuropoda melanoleuca*). "From this it has been deduced that the separation of *Tremarctos* from the basal line constituted by *Ursus* would have occurred about 12 million years ago.



Therefore, *Tremarctos ornatus* constitutes a unique genetic and phylogenetic line. This makes its biological preservation necessary at all costs "Ruiz Garcia (2001). Corpoguvavio (2011) in a study carried out on hair samples reports a low nucleotide diversity (0.0091 + 0.0021), denoting that the studied Andean bear population has

medium or low genetic diversity values with respect to other neotropical mammals, a characteristic situation of the bear andino as has already been reported in other studies (Ruiz-García, 2003; Ruiz-García et al., 2003, 2005). Therefore, these values do not denote any danger of imminent loss of genetic variability in this population compared to that of the rest of the population of Colombia or South America.

The results show that the Andean bear is a very recent species in chronological terms in the history of South America and that the accumulated genetic differentiation in each population is very restricted. According to the aforementioned studies, a clear phylogeographic structure is not seen and their intrapopulation divergence is small, reflecting a scarce genetic divergence between these animals because they had a very recent common origin. It can then be concluded that the analyzed population does not differ from other Andean bear populations and its conservation should be similar to that of other populations recorded in Colombia. Corpoguvavio (2011).

3.6. Conservation status and threats

The Andean bear is classified in the species category "Vulnerable" to extinction since 1982 (IUCN 2012) and has been located in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), since 1977. This category is given because the species has suffered a reduction in its entire area of distribution, as well as in its population number in recent years. The

causes are related to the expansion of the agricultural frontier and the development of infrastructure. Hunting for retaliation due to conflicts with peasants and attacks on livestock or farming areas, as well as “sport” hunting have had an impact on population decline (IUCN 2012). The reduction and fragmentation of the wild remnants of vegetation, generates that the Andean bear populations are distributed in relatively isolated patches of habitat, many of which are not of an adequate size to maintain viable populations in the long term. Criteria applied by the IUCN, the eight species of bears that are found in the five continents, in more than 65 countries, are located in some category of threat.



Consequently, the plan for its conservation and management is promoted (IUCN 1998); in which it is proposed that because they have an area of wide distribution, they are umbrella species and their conservation must include large areas of ecosystems to preserve ecosystem services, especially water for the sustainability of human populations. This situation has been being reviewed since 1996 by this same international agency. Likewise, since August 31, 1981, when Colombia ratified the International Agreement on Trade in

Endangered Species of Wild Fauna and Flora - CITES, through Law 17 of that year, the species has been included in Appendix I whose terms specify that its trade or that of its parties is prohibited under the terms of the Convention. Since the VI conference of the International Bear Association (IBA) in 1983, when the Frontin Bear Specialist Group (GEOF) was formed, as part of the IUCN group of bear specialists, multiple actions have been deployed in favor of the conservation of the species.

This is reflected in efforts such as the publication in 1999 of the Action Plan for the Conservation of the World's Bears by the IUCN. For November 2000, the workshop on Formulation of an Ecoregional Strategy for the Conservation of the Andean Bear was convened, in order to update and prioritize the IUCN Andean Bear Action Plan. WWF (2003). The following year in the same month, a seminar was held in Chinavita (Boyacá - Colombia) with the objective of gathering the inputs for the elaboration of the National Program for the Conservation and Recovery of the Andean Bear in Colombia. In November 2001, the National Program for the Conservation in Colombia of the Andean Bear (*Tremarctos ornatus*) promulgated by the Ministry of the Environment. Efforts are also made to unify methodologies for gathering information in the field; thus, in 2002, the Course-Workshop "Field Methodology for Data Collection of Andean Bear (*Tremarctos ornatus*)" was developed in Mérida Venezuela, with the support of WWF Colombia and WCS Venezuela. This same year, EcoCiencia and The Nature Conservancy (TNC) organized a workshop

on studies of wildlife habitat in Ecuador, there the bases are set for the analysis of distribution and state of fragmentation of bear populations in the Ecoregion, an input key to the design of an action plan in the Andes del Norte Eco Regional Complex. In November of the same year, a workshop was held for the structuring of the Ecoregional Strategy for the Conservation of the Andean bear (*Tremarctos ornatus*) in the Northern Andes, which was published in 2003.



From there other countries such as Venezuela (1994 already formulated) Ecuador (2010 published) and Peru (2010 in process) among others formulate their respective National Conservation Plans for the Andean Bear. In the country they are various the regional Autonomous Corporations that give way to the realization of the National Plan at the level of their respective jurisdictions. The efforts made by CAM, CRC, Corpoguavio and Corpoguajira, among others in this regard, stand out. Likewise, the support for different undergraduate theses has allowed to have a knowledge of the use of habitat and different food items in different ecosystems present in the jurisdictions of these environmental authorities. In the last two or

three years, efforts have been aimed at having an understanding of the problems that arose in the interactions of the bear and the cattle, a situation that has led the Ministry of the sector to include in its agenda the need to develop instruments of an administrative nature that allow the joint search for the management of the different situations originated in these negative interactions.

4. ACTION AND CONSERVATION PLAN OF THE ANDEAN BEAR (*Tremarctos ornatus*)

Starting from the premise that there is no scientific study that allows supporting with data that the population of bears in the department of Amazonas and in particular in the jurisdiction of the CAR has decreased in the last decade, it can be affirmed based on the gradual disappearance of natural covers and persistent isolated hunting events, that there is high pressure on wild populations in the department. As already pointed out in previous pages, the expansion of the agricultural frontier is one of the causes that has contributed to the fall of the Andean bear population in the country, especially in this section of the eastern mountain range due to loss and fragmentation of its habitat.

The practice of inadequate agricultural management systems, where the indiscriminate opening of small scattered pastures in the middle of the natural matrix, is the mechanism that favors the conditions for the emergence of the bear-cattle conflict, by establishing pastures for foraging in used or nearby areas. to places

frequented by this species. Although bear hunting as a daily practice has apparently decreased for various reasons, including those related to public order, these types of events are still present, originated in the search for protection against attacks on livestock or retaliation as a mechanism. of "prevention" when predation events occur This increasing fragmentation of high mountain ecosystems, Andean forests and páramos supports the hypothesis that the gene flow between isolated sub-populations of bears is minimal or non-existent, being so, and therefore This is an argument that would confirm that the Andean bear in the department of Amazonas, particularly in the territories under the jurisdiction of the CAR, is a highly threatened species.

The progressive isolation of the different groups or sub-nuclei of the Andean bear population of the eastern mountain range as a consequence of this fragmentation process has been restricted to three sectors in Amazonas; one in the northeastern region of the department (Chingaza moorland complex) in Municipalities of the jurisdiction of Corpoguavio plus Guatavita, Mchetá and Manta corresponding to the jurisdiction of the CAR. Another in the municipalities of Choachí, Chipaque, Gutierrez, Une, and a third sector in the municipalities of the southeast (Complejo de paramos de Sumapaz), Cabrera, Venecia, San Bernardo, Arbeláez, all of them with recent records of the presence of bears. Although the studies carried out are not enough to specify the size of the population in these three sectors, for the third in the northeastern region a minimum

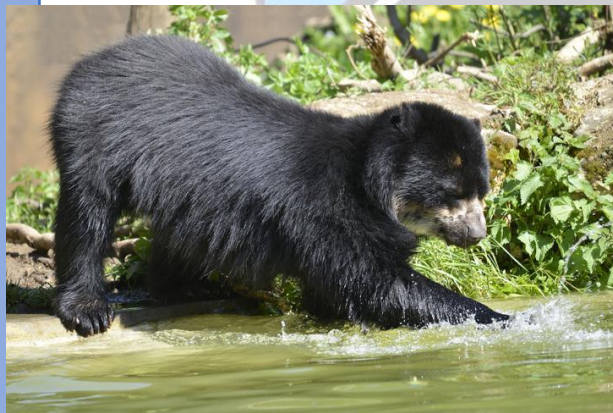
number of between 12 and 18 individuals can be estimated, according to the results of the population genetics studies. complemented with the records obtained with camera traps between 2011 and this year. The fragmentation analyzes presented in the previous pages reflect the situation of the natural covers and their connectivity possibilities, defining the strategies to be followed that would make it possible to reconstruct some important elements for the recovery of the connections of at least the large fragments of páramo or Andean forests. in different degrees of isolation, which requires a highly participatory process and political will.



This process must convene the agreement between the population and local, regional and national, private and public planners and decision-makers, as well as large and small agricultural producers, all around a commitment to administrative coherence in the exercise of environmental authority and application of environmental regulations in the uses of the territory. The formulation of the present conservation of the Andean bear (*Tremarctos ornatus*), must involve all actors with different levels of responsibility; likewise, work towards obtaining the necessary resources for its implementation and defining the actions that will be carried

out. Six strategic lines are defined below, oriented towards the organization of actions to conserve the species. Based on the problems described and taking up the goals set both in the National Program for the Conservation of the species and as defined by the Regional Eco Strategy, this plan is set as goals:

- Reduction of the rate of habitat loss
- Increase of connectivity between subpopulations and habitat sectors;
- Reduction in bear mortality induced by the bear-livestock conflict.
- Articulation of ex situ conservation programs with wild bear populations.



- Improve the exchange and genetic flow between the different groups and individuals that make up the bear populations in the area administered by BOSQUE COLOMBIANO.

- Manage the joint conservation of ecosystems and populations in administrative border areas with other departments and environmental authorities. To achieve the proposed objectives, it is proposed to develop six lines of action:

1. In situ conservation
2. Ex situ conservation
3. Sustainable management
4. Bear conflict - human communities
5. Environmental education
6. Institutional strengthening.

Line of Action 1. In situ Conservation Objective

1 - Maintain landscape units that contain viable populations of Andean bear in the long term based on biological and genetic information at the local and regional level obtained from a standardized monitoring program that feeds a geographic information system that serves as a tool for taking decisions based on the prioritization of areas under biological, socioeconomic and conservation opportunities criteria.

4.1. General objective

Guarantee the permanence over time of the Andean bear population in the area administered by BOSQUE COLOMBIANO.

4.2. Specific objectives

- Increase and protect the habitat available for the Andean bear populations present in the area administered by BOSQUE COLOMBIANO.

Goal	Activities
<p>Goal 1.1 - Methodology for the monitoring of populations and their habitats at regional and local scales adopted and in application.</p>	<p>Activity 1.1.1 - Apply the protocol for the characterization, availability and quality of the habitat of the Andean bear in areas with records</p>

	Activity 1.1.2 - Develop a protocol that allows population estimates, habitat use and landscape analysis to be made at an appropriate scale for the species.
Goal 1.2 - Define in the CAR jurisdiction and its borders the areas that allow maintaining viable populations of Andean bear and generate basic information on biology, ecology and genetics. of habitat, emphasizing supply, quality, quantity of used elements and their phenology.	Activity 1.2.1 - Identify and evaluate the viability of connectivity and administrative border areas with other environmental authorities within the areas selected by records or reports of the presence of the species. Activity 1.2.2 - Characterize areas with use. Activity 1.2.3 - Analyze the different areas with distribution records or reports, emphasizing threats, risks and vulnerability for the permanence of individuals and trends of these variables for each of these areas. Activity 1.2.4 - Identify fragmented and degraded areas to implement protocols for the restoration of ecosystems of importance for the Andean bear with presence records

Line of action 2. Ex situ conservation

Objective 2 - Advance and disseminate studies in captivity on the biology, physiology and ethology of the Andean bear with a view to identifying and characterizing the conditions of captivity for the bear that allows the development of recovery and welfare actions for populations or individuals, as well as the adequate articulation of the results obtained with the information and environmental education provided to the public.

Goal	Activities
Goal 2.1 - Environmental education programs and information specifically directed to the dissemination of the Andean bear in zoos that are under CAR jurisdiction, defined and under development.	Activity 2.1.2 - Design and publish informative didactic material about the Andean bear aimed at the visiting public of zoos aimed at generating positive feelings and attitudes towards the species. Activity 2.1.1 - Implement environmental education programs in zoos that increase feelings and positive attitudes of public opinion towards the species.
Goal 2.2 - Lines of research in captivity oriented to the knowledge of the physiology, nutrition, genetics and veterinary management of the Andean bear population in captivity in CAR	Activity 2.2.1 - Promote the development of studies of anatomy and physiology of the Andean bear. Activity 2.2.2 - Promote the unification of protocols for obtaining, handling and analysis of laboratory and nutrition samples in captivity.

jurisdiction, defined, implemented and accompanied by the corporation.	
<p>Goal 2.3 - Adequate captive spaces for the well-being of redesigned and adequate Andean Bear specimens in captivity or rehabilitation.</p>	<p>Activity 2.3.1 - Promote and develop in a unified way environmental enrichment protocol for captive bears.</p> <p>Activity 2.3.2 - Socialize information generated on diets and pertinent ethological and zootechnical management to ensure a good level and treatment in captivity for the species.</p> <p>Activity 2.3.3 - Formulate a medium-term strategy together with the administrators of centers for reception, rehabilitation of the species that allows the return to the wild of specimens in conditions for their reintroduction.</p>

Line of action 3. Sustainable management

Objective 3 - Define and implement a program for the sustainable management of agricultural systems in areas with Andean bear records in CAR jurisdiction, categorized as priorities for the conservation of the species, including a proposal for management plans and recovery of degraded areas, a scheme risk management and vulnerability of livestock to potential attacks, which favors a new interpretation of the species by rural communities.

Goal	Activities
<p>Goal 3.1 - Schemes of sustainable systems for conservation that allow the coexistence of the species and local economic development in the areas of confluence of the species and the productive activities formulated and implemented.</p>	<p>Activity 3.1.1 - Promote inter- and intra-institutional management and planning spaces that allow the agreement and harmonization of strategies and intervention plans in areas of importance for the conservation of the species.</p> <p>Activity 3.1.2 - Implement sustainable productive proposals, improving management techniques for introduced species, allowing the recovery of habitats of interest for the conservation of the species.</p>
<p>Goal 3.2 - Proposals for green markets, fair markets or other economic tools that allow an added value that strengthens the environmental and conservation services of the areas with presence of bear</p>	<p>Activity 3.2.1 - Formulate and develop pilot proposals that allow evaluating and evaluating the Payment for Environmental Services in areas associated with Andean bear habitat.</p>

populations in the jurisdiction of the CAR, formulated and under development as part of the program of the Corporation.

Activity 3.2.2 - Strengthen the proposals for productive chains, certification of agricultural products and green markets in important areas for the conservation of the Andean bear.

Line of action 4. Bear conflict - Human communities.

Objective 4 - Reduce the negative effect of the Bear - Human Communities conflict through its prevention, mitigation and management.

Goal	Activities
<p>Goal 4.1 - Research proposals related to the general problem of Andean bears in places of the jurisdiction that show a high level of bear-human community interactions formulated and in the process of being implemented.</p>	<p>Activity 4.1.1 - Identify areas with record and report of conflict bear-human communities and carry out the ecological characterization, availability of habitat, ranges of action and areas of distribution of population of bears in conflict zones.</p> <p>Activity 4.1.2 - Characterize the specific nature, extent, intensity and location of conflict situations, in accordance with the methodology established by the "National Board of Wildlife Conflict Management - Human Communities", led by the Ministry of the Environment and territorial development.</p> <p>Activity 4.1.3 - Identify and understand the different perceptions, values, needs and demands of the different actors in order to generate an effective long-term management that benefits both the different actors without affecting the remaining populations of bears.</p> <p>Activity 4.1.4 - Promote spaces for inter- and intra-institutional coordination at the local and regional level that allow the advancement of land acquisition programs in areas of high conflict, human-bear communities.</p>
<p>Goal 4.2 - Sustainable production systems that allow the survival of the species and local sustainable development, within the framework of the application of implemented landscape management tools for the conservation of biodiversity.</p>	<p>Activity 4.2.1 - Evaluate the anthropic impacts on biodiversity in the habitats used by Andean bears in the selected areas and coordinate actions with the communities involved that allow them to understand and reduce the effects of threats on the habitat and bear populations .</p> <p>Activity 4.2.2 - Define, implement and evaluate proposals for conservation incentives that ensure the survival of the Andean bear in conflict areas.</p>

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