






## Article

# Oso, Osito ¿A Qué Venís? Andean Bear Conflict, Conservation, and Campesinos in the Colombian Páramos

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**Abstract:** This article proposes a historical, multispecies, and ontological approach to human–wildlife conflict (HWC) in the Colombian páramos. Focusing on the páramos surrounding the capital city of Bogotá, we reconstruct the historically changing relationship between cattle-farming *campesino* communities and the Andean bear, *Tremarctos ornatus*. Using ethnographic and historical research methods, we conceptualise this relationship as embedded in localised landscapes and multispecies assemblages, in which scientists, conservation practitioners, water infrastructures, public environmental agencies, and cows participate as well. This article demonstrates that insufficient attention to the practices and relationships of historically marginalised humans and non-humans in the management of HWCs contributes to new dynamics of exclusion and friction, and can reduce the effectiveness of conservation programmes. We conclude that opening up conservation to the interests and knowledges of local communities is imperative in moving towards more historically informed, pluralistic and effective conservation strategies.

**Keywords:** human–wildlife conflicts; Andean bear; conservation; *campesinos*; cattle; páramo; Colombia; multispecies; ontology; history

## 1. Introduction

Adorning the logo of the Colombian National Parks agency, the Andean bear (*Tremarctos ornatus*) is the only bear species in South America and has become the symbol and object of academic, governmental, and civil conservation agendas. Labeled as a vulnerable species on the Red List of Threatened Species of the International Union for the Conservation of Nature (IUCN), this species roams between 200 and 4750 m.a.s.l. across the Andean mountains covering Northern Argentina to Venezuela, inhabiting Andean forests and treeless highlands known as ‘puna’, ‘jalca’, and ‘páramo’ [1,2]. There is no exact figure for the number of individuals existing in the wild, but it is believed that this may range between 2500 and 10,000 individuals [1]. Endemic to the tropical Andes, the Andean bear is also known as the ‘spectacled’ bear because of the light colouring on its dark face, which makes it look as though it is wearing glasses.

Since the late 1990s, the reduction and degradation of the Andean bear’s habitat in Colombia has resulted in new and more frequently reported encounters between bears and humans, including during activities relating to livelihoods and infrastructure projects [3–5].

Several of these encounters have occurred in and around protected areas that overlap with the bear's and human 'habitats', such as the National Natural Park of Chingaza. The Park, comprising extensive areas of Andean forest and páramo, a tropical montane ecosystem above the tree line that is characteristic for the northern Andes [6–8], is considered of particular importance for the conservation of the Andean bear. Since the Chingaza Park's foundation in 1977, the páramo area of Chingaza is managed by the National Natural Parks agency, in coordination with the Bogotá Water Company (Empresa de Acueducto y Alcantarillado de Bogotá—EAAB, hereafter the Water Company), a public institution in charge of the Colombian capital's water infrastructure, including dams and reservoirs situated within the Chingaza Park. Today, more than 70% of the water consumed by the inhabitants of Bogotá (more than 5 million people) comes from this páramo.

In March 2017, the death of an Andean bear close to Chingaza Park made national headlines in Colombia. The bear had been hunted the year before by a local '*campesino*' (the rural working class). Public authorities pronounced the bear a victim of a conflict, leading to the criminalisation of the campesino who shot the bear. The campesino was labeled "the first Colombian to be convicted of an environmental crime in the country" [9] and was sentenced to five years of house arrest and a fine of 2.5 times the current monthly minimum wage. "This conviction is a clear message to all those who attack wildlife. Animals are not really alone", stated the director of the Bio-Andina Foundation in Cundinamarca [9]. While public authorities and environmentalists responded both in dismay, local campesinos in the region insisted that bears do kill and eat their livestock, affecting one of their main subsistence strategies.

Three years later, the death of another bear within the same national park never caught the attention of the national press. An environmental blog reported that the bear and her cubs had approached a power transformer at an electrical station of the Bogota Water Company, attracted by the smell of the cadaver of an electrocuted opossum, leading to the electrocution of the sow [10]. While the bear died in different circumstances to the events in 2017, the reaction on the blog demonstrates that environmentalists were equally shocked by loss of a bear's life due to human projects. A different response came from the public institutions involved, which provided contradictory accounts, with the director of Chingaza National Park concluding that "it was an undesirable situation, but it was an accidental situation" [11]. Public authorities explained that the bear had become the victim of an unfortunate accident, and implemented a number of infrastructural improvements to create a perimeter around the power transformer to prevent it from happening again. In their reactions, they emphasised the contribution of bears' presence to biodiversity in terms of bioindicators that demonstrate, amongst other things, an increase of the Andean bear population. While no reaction by local campesinos is recorded, the environmental blog explicitly questions the public authorities' response, backing an anonymous source who emphasised "the clear difference the National Park makes—if this had been a campesino who killed the bear; they would have called the media and made a national scandal" [10]. Although these two situations imply the death of a bear as a result of an interaction with humans and their technologies, stakeholders did not evaluate these situations in the same way. Without judging the evaluations of different stakeholders, we instead consider the implications of framing these deaths either as a conflict or as an accident, for the wider legitimacy and effectiveness of conservation policies.

We open this article by asking how different situational contexts lead to what conservation institutions and biologists label as a human–wildlife conflict (HWC), and how different stakeholders define and evaluate these conflicts. This inquiry is partially triggered by empirical observations of contrasting evaluations of HWCs by environmental authorities, campesinos, environmentalists, and the popular media in the páramos surrounding Bogotá, Colombia. The need for a critical and more holistic approach towards defining and managing HWCs has been stressed both in the conservation literature and by practitioners involved in studying and mediating these kinds of conflicts [12,13]. This concern has been accompanied by a call for greater involvement of the social sciences in order to under-

stand the motivation and preferences guiding the behaviour of the stakeholders involved in HWC [12]. Insights into how such conflict situations affect multiple stakeholders in divergent ways suggests that HWC should also be framed as human-human conflict, in order to take into consideration the conflicting agendas and necessary compromises among stakeholder groups when proposing mitigation strategies [12,14]. Accordingly, there is a growing recognition of the need to take into account various social, spatial, and economic factors and not just ecological ones, in order to account for multiple stakeholder interests. Interdisciplinary research is crucial in enabling us to consider such conflicts, first, not only as the result of the encounter of different epistemologies, or “different and complexly interested perspectives on, or ways of knowing, the world” but also as an encounter of different ontologies, that is, a “conflict involving different assumptions about what exists” [15] (p. 13), [16] (p. 547). Second, we consider such conflicts not as the encounter of two actors or groups of stakeholders (human and non-human), but as part of a multispecies set of relations or “assemblage” [17–20], rather than as isolated entities.

Drawing on recent anthropological, critical geographical, and science and technology studies (STS), we propose an approach that combines and integrates these two understandings of HWC. We particularly draw from research on the political ontology of conservation conflicts [15,21] and insights from multispecies studies [17,18]. First, political ontology serves to interrogate the power and conflict dynamics in the enactment of a particular version of the world and its—negotiated, and often contested—coexistence with other versions [15] (p. 11). Second, multispecies ethnography and history have appropriated the term ‘multispecies’—imported from conservation ecology into the social sciences and humanities—to address the reciprocal responses between humans, animals, plants, and other life forms, and the historical changes in these relationships. In this article, we adopt this broader definition of ‘multispecies’, including humans. Embedded within a complex matrix of relationships or multispecies entanglements, human–wildlife interactions must be understood in connection to particular policies, places, institutions, and their historical trajectories [22–24]. Both theoretical perspectives contribute to a paradigm shift that is already underway in conservation practices, highlighting how conventional conservation has been informed by a modernist, humanist or Cartesian ontology based on the separation between the human and nature that is pure and can be preserved, and how this view has in some cases overlooked the possibility of other ontological entanglements, or socio-natures [21] (p. 501) [25–27]. Applying these perspectives to situated human–wildlife interactions enables us to consider alternative forms of human practices and knowledge production in relation to wildlife, as demonstrated by recent anthropological research on the entanglements between humans and wild cats in Asia [28–30].

In this article, we take these insights from multispecies ethnography and political ontology to the páramo, a term imported from the Iberian Peninsula to refer to the barren areas between the forest and the snowline of the northern Andean mountains. Rich in biodiversity and endemism, these wet and cold zones are defined as a strategic ecosystem for its role in water regulation and carbon storage [31–33]. A political ontology perspective allows us to appreciate that páramo landscapes do not only exist as a rich source of drinking water for humans through conservation and engineering practices. They also, and simultaneously, exist as the dwelling place and source of livelihoods for campesino families through long-standing farming, cultivation and livestock practices, or as an animal habitat, which includes bears. Studies drawing on multispecies ethnography and history [15,18,28,29] highlight that the interactions between campesinos and Andean bears in the páramo are not a zero-sum game. Rather they are set within a historically co-constituted páramo landscape that is also shaped by the practices of environmental and conservation institutions, cattle ranching, and agriculture, as well as scientific research.

Building on these insights, we conceptualise HWC as the result of the encounter of different versions of the páramo, enacted through situated practices and within multispecies entanglements, and mediated by asymmetrical power relations. By attending to the multiple entanglements, practices of inhabiting the páramo, and ultimately, ontologies at

play when a situation is discursively framed and discussed as an HWC, we interrogate the role of prevailing power relations in defining, evaluating, and responding to HWC through concrete interventions. Our research questions are: (1) When scientists, conservation agencies and territorial authorities define a particular situation as a human-bear conflict, what is brought into opposition, besides bears and humans?; (2) How can a historical, political ontology, and multispecies perspective and practice contribute to future Andean bear conservation strategies in páramo landscapes?

In order to address these broad questions, we collected and examined empirical evidence on Andean bear—campesino interactions in the páramos around Bogotá, and in Chingaza in particular. A careful analysis of historical and ethnographic sources, mainly gathered through interviews, allowed us to identify three key issues that required further inquiry, which we address through the following sub-questions:

- How has the Andean bear historically related to campesino practices in the páramos around Bogotá?
- Why did conservation practices develop in the paramos around Bogota, and especially in Chingaza, and how did they affect campesinos and bears?
- What are the outcomes of these conservation practices on the relation between campesinos and environmental authorities regarding the Andean bear in the paramos surrounding Bogota?

Answering these questions in the specific context of human and bear interactions in the Colombian páramos will allow us to consider conservation practices in a more plural, nuanced and non-hierarchical way. The remainder of the article is structured as follows. First, we present our methodology and introduce the study site, followed by the results of our historical-ethnographic research, which is organised in line with the three sub-questions of the case study. We start by analysing the historical context of Andean bear-campesino interactions in the páramos around Bogotá, understanding páramo landscapes as multispecies assemblages. Next, we discuss the reorganisation of the páramo landscape in Chingaza since the 1960s, and how new infrastructures to facilitate urban water provision and natural conservation contributed to new dynamics of exclusion and friction. We then highlight how these dynamics have materialised in tensions between the state, bear conservation projects, and campesinos inhabiting the páramo. We conclude with a discussion of these empirical results in light of the two main research questions.

## 2. Materials and Methods

The used methods are underpinned by an interdisciplinary approach that integrates anthropology, history, human geography, ecology, and biology. Through ethnographic and historical research methods, we collected and analysed data on the scientific research, cultural representations, and public policies regarding historical and contemporary human–bear interactions in the national parks and rural communities in the páramos around Bogotá.

Between November 2019 and March 2021, we conducted 30 semi-structured interviews and nondirected conversations, each between one to two hours, via teleconferencing software programmes or phone. We held interviews and conversations with eight biologists who specialise in Andean bear research in Colombia, and particularly in our research area, eight local community researchers and practitioners who live or operate in the rural communities of Chingaza páramo and of Sumapaz (another páramo near Bogotá), and three managers of public and private environmental institutions. We attended four meetings with staff of the National Parks agency, including staff from the national parks of Chingaza and Sumapaz. The Andean bear specialists interviewed were identified on the basis of a screening of recent publications and projects regarding the Andean bear in Colombia. The local community researchers, community leaders, practitioners, and officials of public and private institutions, were identified through snowball sampling by consulting partner organisations and researchers with extensive field experience in the communities comprising the study site, either in Sumapaz or in Chingaza. We also

attended eight scientific and public events on the conservation of the Andean bear in Colombia and Andean South America.

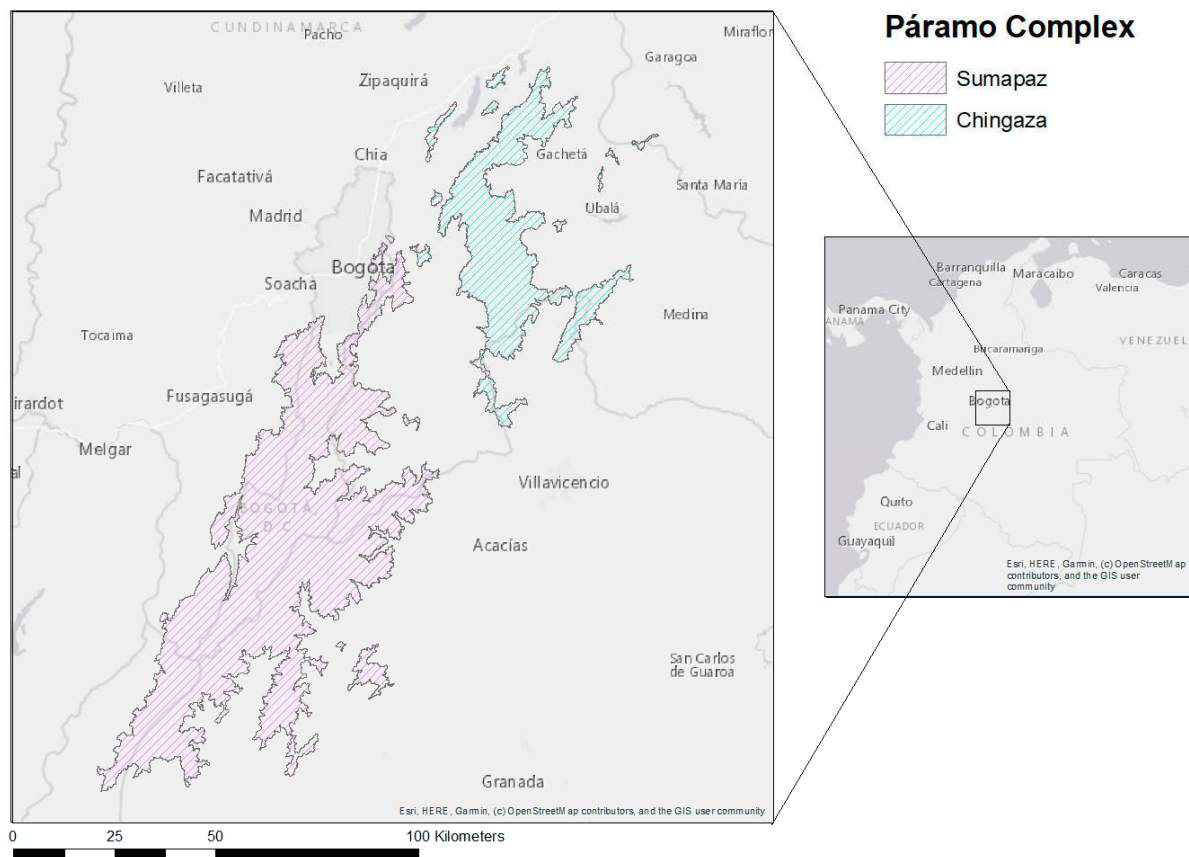
The interviews were audio or video recorded, and at the same time, we took notes in a shared field diary. As a result, we have a digital repository where the information we analyzed is stored. The data were tabulated according to their origin, type, and content and subjected to an analysis by emerging categories. We proceeded in the same way with the archival information, giving a broader temporal perspective to the preliminary results. This allowed us to elaborate a general account of the historical trajectory of bear–human relations in the páramos around Bogotá, especially in Chingaza. The data were analyzed through grounded theory [34], ethnographic conceptualisation [35–37], and historical analysis [38–40], and reported below as a narrative. As all interviewees stressed the critical role of water infrastructures and the Park in the history of bears and people in Chingaza, this issue became central in our results. We organise the corresponding section of this article following the general blocks that emerged from our analysis: the páramo as an assemblage, conservation, and its relationship with water infrastructures, and finally, the disagreements between campesinos, scientists, and environmental authorities framed in an ontological approach. An important caveat: our interviewees do not separate the conflict in human–human, human–landscape, and human–bear terms. Neither do we try to elaborate this separation in our analysis or in the presentation of results, using concepts such as assemblage or contact zone (see below) to insist on this relational character of the páramo and the conflict. Throughout the article, the names of the interviewees have been changed in order to protect their identity.

### *Study Site*

The study site is located in the eastern mountain range of Colombia, focusing on the protected areas and buffer zones of the national parks of Chingaza and Sumapaz, situated east and south, respectively, from the Colombian capital of Bogotá (see Figure 1). The Chingaza National Natural Park covers an area of 76,600 ha ranging from 800 to 4020 masl, of which 33% is classified as páramo, 15% high Andean forest and 47% Andean forest [41]. Its buffer zone extends over 144,500 ha, including approximately 3660 farms distributed over 83 communities (veredas) in 11 municipalities that belong to the departments of Cundinamarca and Meta. The city of Bogotá is situated in the park’s indirect influence zone (the area expected to experience indirect social and environmental impacts of the Park), at approximately 50 km from the protected area. The National Park overlaps with the páramo complex of Chingaza, which extends over a fragmented area of 110,000 ha across the jurisdictions of 28 communities, of which 21 are situated in Cundinamarca.

The National Natural Park of Sumapaz covers an area of 221,749 ha, with a range from 700 to 4375 masl [42]. This protected area is composed of 60% of paramo, 33% of high Andean Forest, and 5% of sub-Andean Forest. The national park comprises approximately 43% of the páramo complex of Sumapaz—Cruz Verde, which forms the largest páramo complex worldwide (with a total extension of 333,420 ha). The park extends over the jurisdiction of 14 municipalities across the departments of Cundinamarca, Meta, and Huila, as well as two districts of the capital of Bogotá. Within the influence zone of this park, local communities have established Campesino Reserve Zones (Zonas de Reserva Campesina, ZRC), a territorial unit recognised under Colombian legislation to contribute to sustainable and integrated rural development governance. As of today (2021), the Colombian government recognises the ZRC of Cabrera (province of Sumapaz), although the ZRC of Sumapaz (district of Localidad 20 de Sumapaz, capital district of Bogotá) has not yet been officially established due to legal and administrative delays. Chingaza and Sumapaz are integrated in the Strategic Ecosystem Corridor of the Central Region of the Eastern Cordillera. The parks are managed by national park agency staff, in coordination with the Ministry of the Environment, the National Environmental Licensing Authority (ANLA), the Bogotá Water Company, the national army, Regional Autonomous Corporations (CAR), departmental, municipal and district authorities, the Sindicato de

Trabajadores Agrícolas de Sumapaz—Sintrapaz (exclusively in Sumapaz), and community organisations such as the local aqueduct boards and the Community Action Boards (Juntas de Acción Comunal). The national parks and CARs usually subcontract local inhabitants as temporary park rangers (guardaparques), while the Administrative and Special Planning Region of the Central Region (RAP-E) has initiated a programme to support voluntary páramo rangers (guardapáramos). The management of water infrastructures in both regions enables Chingaza to provide up to 75% of the drinking water consumed in Bogotá, while Sumapaz provides 3% to 5% [43] (p. 25).



**Figure 1.** Map highlighting the areas of the páramo, Chingaza (light blue hashed area) and Sumapaz (purple hashed area), that are the focus of our case study.

Given that the Andean bear and related human-bear encounters are registered especially in the Chingaza region, the collected data relate mainly to this national park and surrounding communities. Most of the data is derived from the protected areas and communities with a major proportion of páramo land and/or which are connected or oriented to the city of Bogotá, including the water infrastructure of the Chingaza System, and communities situated in the eastern Rio Negro basin, the municipality of Fómeque (of which 52% is included in the National Park), as well as the communities of La Calera (6%), Guasca (10%), and Choachí (5%), department of Cundinamarca. With regards to the Sumapaz region, data were collected within the Localidad 20 de Sumapaz, an entirely rural district that has been incorporated into the capital district of Bogotá. These are all rural communities with households occupying the higher mountain areas and mainly relying on small-scale agricultural activities, such as cattle ranching for the production of milk and meat, and potato cultivation. The way in which these households and inhabitants relate to the landscape of the eastern mountain range relies on inherited and resignified prehispanic cultures of the muisca and sutagaos people, and to the historical re-appropriation of the socio-economic category of ‘campesino’ as a political-cultural identity. In the context of

the armed conflict in Colombia, rural communities in both regions have suffered from violence and forced displacement [44]. This situation has affected the Sumapaz region in particular, which became home to the FARC headquarters in the 1980s and was later afflicted by successive waves of intensified violence with the operation of the national army and paramilitary forces in the 1990s and early 2000s [45].

### 3. Results

#### 3.1. *The Páramo as Assemblage: Humans, Bears, and Cows*

Human presence in the páramo zones around Bogotá dates to ca. 9000 years ago [46–48], but remained temporary until the late 19th century, when campesinos started to permanently settle higher up the mountains. Latin American commodity booms and a correlated urban expansion triggered the expansion of the haciendas in the lower mountain areas of Sumapaz and Chingaza. Encouraged by the promise of ‘free’ land, expanding urban demands for food, particularly potatoes, and wood, and in many cases fleeing from violent dispossession and political conflict, campesinos started to colonise lands in higher areas [49] (p. 20), [50] (p. 151). As the haciendas started to monopolise rural labour and land in and around páramo zones of Chingaza and Sumapaz, campesinos were caught up in complex agreements and disputes with landowners [49] (pp. 63–65), [50] (pp. 149–154), [51] (pp. 87–88). As a result, the processes of settling in the páramos of Colombia were contested and diverse.

Since the settlement of these communities in high altitude ecosystems, the Andean bear has had a tangible impact on the way campesinos inhabit the páramo, and the other way around. Through our research, we traced cultural practices and knowledge that have been transmitted intergenerationally. Historical accounts of bear hunting as a common campesino practice [52–56], knowledge about how to use bear fat for medicinal purposes [52,54], and stories in which the bear can become human [52,54,57] give evidence about the historical co-production of life in the páramo between bears and campesinos. These practices and knowledges reflect both continuities in pre-Columbian cultures and dramatic changes in the organisation of Andean landscapes. Postcolonial political and market pressures have encouraged campesinos to adopt new production practices that have resulted in an increasing overlap between livestock and agricultural areas and Andean bear habitats. This has substantially altered campesinos’ understanding of, and relation with bears, without completely breaking with Andean indigenous cosmivision and iconography in which the bear figures as a deity, a symbol of fertility and power, and mediator between different worlds [58] (pp. 28, 70).

Importantly, many of the practices we registered highlight the importance of other páramo inhabitants in this co-production of life in the páramo, such as the children’s playground game that gave this article its title. The bear game has been played for more than 60 years by boys and girls from the areas surrounding the Chingaza páramo [52,53]. In our research, we have not encountered traces of this game in the Sumapaz region. In this circle game, one of the participants is blindfolded and becomes the ‘bear’. A dialogue then begins between this child and the rest of the players.

*“Bear, little bear, where do you come from? [Children say]*

*From the highest mountain [says the bear]*

*What are you coming for? [The children ask again]*

*For a cow [answers the bear]*

*What color? [The children ask again]*

*[the bear must choose a color]”*

At that moment, all the children, now cows, try to escape. The bear removes the blindfold and chases the children with a garment of the color of its choice. The cow that is caught turns into a bear, the bear into a cow, and the game starts again. The game plays

with the possibility of being a bear or a cow, while children have fun becoming one or the other according to the game's circumstances.

This round game reveals not only the presence of bears as a constituent of the páramo landscape, but also the importance of cattle to the campesino in contributing to their livelihood and making the páramo habitable. Through this intimate campesino–cattle relationship, the bear emerges as a cattle hunter. Combining field observations of historical transformations in the landscape [59,60] with oral histories [52–56], we learn that this relationship is entangled with many other entities, including fire, grasses, microorganisms, potatoes, and weeds. These multispecies interactions have materialised through specific, although dynamic and historically changing activities, particularly since the late 19th century. The introduction of new livestock and grass species and changing land legislation drastically transformed the Colombian highlands [61] (p. 28). The oral histories and landscape observations we collected in the páramos of Sumapaz and Chingaza [52–54,57,59], attest to the importance of new activities such as the clearing of mountain vegetation for conversion into pasture, and complementary production strategies in shaping multispecies interactions within these modified landscapes.

As Camilo Cardona, a researcher and teacher at a rural school in Chingaza, describes, the systematic felling and burning of forest vegetation in Chingaza allowed herbaceous plants to colonise these cleared sections [51]. This is an anthropogenic transformation of the landscape known as the phenomenon of “pasturisation” (*potrerización*) [62]. As historical research in Chingaza and Sumapaz evidences, the hacienda expansion has been a driving force behind this phenomenon through feudal mechanisms, which in some areas remained in place into the 1980s [49] (p. 64), [51] (p. 93). The Haciendas provided their campesino workforce with plots of forested land that were to be returned ‘clean’ and cultivated or sown with kikuyu grass (*Pennisetum clandestinum*). Cuéllar illustrates this process with the transformation of a specific area, located on the slopes of the Caquinal mountains in the municipality of Fómeque. Property of the the hacienda Panóptico, this area was still entirely forested in 1916, but had converted completely into pasture by 1950 through felling, the sowing of introduced pasture grass species, quina extraction, and fires [51] (p. 92).

A similar process occurred in Sumapaz, where this clearing process went hand in hand with the cultivation of potatoes and livestock practices. Here, potatoes gradually displaced wheat cultivation, allowing potatoes and cattle to become the primary productive activities of the campesinos of Sumapaz, even to this day. Since that time, cows have become a form of insurance for the campesinos in the region. William Rodríguez, a zootechnician, artist and son of campesinos from Sumapaz, explains: “Those who grow potatoes become cattle ranchers simply because of monetary reasons. The campesino has realised that although the work on the land is hard, he can develop strategies to facilitate the work” [63]. This strategy starts with clearing the land, in order to cultivate potatoes. With the profit from potato cultivation, campesinos are able to buy cattle, which are left to graze the ‘weeds’ that grow on the potato plots after harvest. Within this cycle of deforestation, cultivation, and “pasturisation”, livestock functions as a form of savings that can be sold to reinvest in potato cultivation.

Besides this cycle involving clearing forest, cultivating potatoes and raising cattle, livelihood strategies were characterised by the way campesinos owned, occupied and governed their land and managed cows in extreme weather conditions, along with the adjudication of land to campesinos in the 1930s after a long struggle for land against the Hacienda Sumapaz [49]. William himself says that this decade is essential in the history of cattle ranching in the páramo, as campesino families divided up large areas in high altitude mountains. These families bought animals, particularly livestock, as a form of savings. This was an extensive practice, as it required extensive space per animal, but it was not very demanding in terms of time and energy, as the cattle were largely left alone. Fences were not used, and the care of the animals was often communal, including the practice of seasonal burning to produce fresh and nutritious shoots for the animals [50,51]. The cattle raised by these campesinos adapted to the altitude and the cold. These cows started to



be known as *chirudas* (frayed, worn, torn), due to the effect of the paramo on the animals' bodies [63].

In the second half of the 20th century, state-sponsored Green Revolution policies and development and credit agencies such as the Caja Agraria played an important role in intensifying these practices and related landscape transformations. In both Chingaza and Sumapaz, we recorded testimonies that give account of how access to credit and technologies conditioned campesinos to clear more land in order to increase the area of pastures, resulting in large amounts of cattle grazing within the páramo in the 1990s [54,64].

The accounts of several inhabitants of the páramos surrounding the city of Bogotá give evidence of a history in which campesinos, potatoes, forests, and pastures, amongst others, have transformed multispecies landscapes through their affective relationships with each other. These accounts indicate how the bear participates in the campesino páramo and how campesinos have increasingly dwelled in the habitats of these animals for more than a century and a half. We rely on Haraway's proposed notion of "contact zone" [65] to consider the asymmetrical power relations that characterise campesino–bear interactions. These asymmetries are reflected in the way the game clearly depicts the bear as a cattle hunter, or in the life histories of some campesinos who used to be bear-hunters. Dancing in a circle, bears, cattle, and children, the game evokes a long history of building multispecies relationships through which their bodies learn to be affected by each other, yet without eliminating mutual differences or harmonising power asymmetries [65,66].

### 3.2. Conservation and Water Infrastructures Interrupt the History of the Andean Bear in Chingaza Páramo

Between 1965 and 1980, a series of events occurred in the Chingaza region that would fundamentally affect the relationship between campesinos, environmental institutions, and the Andean bear in the páramos surrounding Bogotá. In particular, Bogotá's rapid urban expansion in this period forced the city's authorities to secure access to new water sources. The Páramo of Chingaza, whose potential to expand the city's water infrastructure had been dismissed by previous scientific reports, suddenly became a viable option. The reorientation in the city's water management towards Chingaza, combined with the violent effects of the armed conflict on the Sumapaz region and consequently the limited state presence there, meant that the following developments translated into an increasing divergence between the two páramo regions. The Bogotá Water Company ordered the Geographical Institute "Agustin Codazzi" to execute topographic maps of the Páramo of Chingaza and the adjacent region towards Bogotá, which eventually revealed the quantity and possible exploitation of its water sources [67] (p. 14). Supported by the World Bank, the Water Company initiated technical and financial planning studies in 1966 [68] (pp. 69, 78, 82–84), [69,70]. The construction of the so-called Chingaza System started in 1968 and became operational in 1983 [68] (p. 92). The "radical and definitive turn" in its construction was the discovery of an opening in the Chuza river that facilitated the implementation of a reservoir, which was and continues to be the epicenter of the Chingaza System [67] (p. 14).

According to Darío Rivera, biologist and Andean bear expert at Fundación Wii, a foundation dedicated to Andean bear research and conservation, the Chuza reservoir "cuts the history of the Andean bear in two . . . there is a rupture in the people's relations with the bear, before and after the Chuza dam" [52]. The reservoir and the infrastructure developed around it initiated the presence of the Water Company, as well as the National Institute of Renewable Natural Resources and the Environment (INDERENA) in the region. The Water Company bought up or expropriated the lands of local campesino families and became the largest landowner of the Chingaza páramo, possessing over 25,000 hectares (within the Chingaza System, the Water Company possesses approximately 25,100 hectares of forest and páramo land, comprising the San Rafael and Chuza reservoirs, the Simayá pipeline, campsites, tunnels, water catchments, and measurement systems [50] (p. 223) [71] (p. 62)). In order to guarantee a stable and continuous flow of water to the city, the construction of water infrastructure went hand in hand with interventions to secure the protection of the water resources that would now benefit millions of the capital's residents. INDERENA

started operating in the area in 1968, upon the request by the Water Company to declare the Chingaza páramo a natural reserve [50]. In 1976, the Water Company and INDERENA formulated joint conservation and surveillance policies to promote the conservation of the páramo as an ecosystem, in which plant and animal species played an important role in sustaining its hydrological function.

From the perspective of local campesinos, however, the park rangers, who represented this environmental authority, operated as a police force. Common campesino practices such as burning, hunting, and livestock farming became illegal and were strongly punished. Campesinos were caught between agrarian policies and market pressures that encouraged them to intensify their production practices and environmental authorities that penalised these practices. Campesinos were forced to move their cows outside the reservoir's perimeter and migrate to other areas in the Chingaza region [52,72]. Campesinos' accounts of the events indicate how the ways cattle were dealt with sharpened the confrontation with the authorities. Stories are still told of animals' slaughter, in which officials took advantage of the steep areas to clear the cattle [72,73]. This created an atmosphere of distrust between the inhabitants of municipalities such as Fómeque, which houses the reservoir, and the Water Company and INDERENA. Tensions intensified with the creation of the Chingaza National Natural Park in 1977, which involved the state's purchase of land from most campesino inhabitants of the area, and as a result, their forced displacement [74]. The same year, the Sumapaz National Natural Park was established, although the formal designation was not enforceable due to the armed conflict. Adding to a general rural exodus in Colombia, the migration of campesinos in Chingaza to lower areas or further away left local livestock farmers behind with limited workforce. This reinforced the adoption of livestock management strategies that depend on the self-reliance of cows in the páramo, leaving them to graze alone in higher parts for long periods of time.

For the future of the Andean bear, however, the effectiveness of the new conservation policies in Chingaza had significant implications. Decades of growing pressures to expand agricultural production, as well as hunting practices, had reduced and fragmented the Andean bear's habitat and contributed to its population decline in the eastern Colombian mountain range [75]. In parallel, as the Páramo of Chingaza developed as a protected area, the bear gradually recovered and became a conservation icon, featuring on the National Natural Parks of Colombia logo. Since 1982, the Andean bear has been explicitly labeled as a vulnerable species on the IUCN Red List [1]. This led eventually to the adoption of national legislation in Colombia, securing its protection as a threatened wildlife species (the National Code of Renewable Natural Resources and Environmental Protection, issued in 1974, prohibits the killing of wildlife. The resolution 0192 of 10 February 2014, issued by the Ministry of Environment, includes the Andean bear on a list of threatened wildlife species), principally due to the fragmentation of its habitat [76]. In 1997, the Chingaza National Natural Park started an Andean bear monitoring programme [77], which consolidated after 2010 with support of the Wildlife Conservation Society [41]. In 2001, a national program for its conservation was created [78], followed by the formation of the Interinstitutional Board for the Management of Andean Bear-Human Conflicts in 2010 [79] under the auspices of the Ministry of the Environment, and executed with the support of the regional autonomous corporations, the national parks agency, and a number of national and international NGOs. The coordination of a national policy initiative was backed by an emerging scientific research tradition in Colombia regarding the Andean bear, which was initiated with the research of Jorgenson and Sandoval [3], and Jhon Jairo Poveda [80] in the early 2000s. As a result of joint research and conservation efforts, the Andean bear has been classed an "umbrella species", whose protection also contributes to the conservation of large amounts of forests, especially high Andean forest, as well as areas of páramos and lagoons, and therefore, other species of fauna and flora that inhabit these ecosystems [81]. This has led to the rebranding of the Andean bear in media campaigns as a "guardian of the forest" [76], a "guardian of the páramo" [82], and a "guardian of the water" [83].

### 3.3. Conservation and Campesino Disagreement about Bears

Since the 1970s, with the construction of the Chuza dam and the creation of the Chingaza National Park, campesino stories have started to circulate about the arrival of helicopters or trucks with bears [52,64,72]. According to these accounts, the CAR, the Water Company and the National Parks agency brought these bears to live in the National Park, and to attack their livestock. The experts we consulted agree that these stories are apocryphal [52,64]. As Darío Rivera explains, this is a way for campesinos to hold the state accountable, as the construction of the Chuza Dam undermines the possibility for local inhabitants to “manage their territory and have governance over it”. Thus, developing the narrative of the introduction of bears by environmental authorities is a way of taking revenge and forcing the state to pay for the damages that may be caused by them [52].

Although dismissed by scientists and environmental authorities operating in the region, those stories are credible to the campesinos, and reinforce the narrative of displacement of campesinos from the páramo in the name of conservation. Central to farmers’ concern of bears being brought into the area is the campesinos’ view that bears attack and kill cows in the páramo to drive away farmers from the area, a practice used decades ago by the Water Company and the Park. Furthermore, campesinos say the spectacled bear, the herbivorous one, is different from the bear they see on their walks through the páramo and the forest. This disjuncture between a herbivorous bear and the one they encounter is in part based on a longstanding misunderstanding between scientists, environmental educators, and local communities about key features of the Andean bear’s behaviour and appearance.

Through their work in local communities, the biologists and practitioners we interviewed became aware that campesinos acknowledge not just one type of Andean bear, but two [52,53,64]. The first is the one that environmental educators frequently talk about. A charismatic, harmless, and peaceful animal, characterised by having ‘glasses’ on their face. The second is black (without spectacles), fierce, and does not hesitate to attack and eat cattle. According to Felipe Sarmiento, an Andean bear conservation practitioner who grew up in the Chingaza region, these accounts of two bears still stand firm in local campesino communities, although some campesinos argue that they are one and the same bear [53]. These accounts demonstrate that through historically changing relations with campesinos (and cows), the bear can become multiple (the charismatic spectacled bear and the cattle-hunting black bear) in campesino practices and knowledge, while remaining a singular species (*Tremarctos ornatus*) in scientific practices and knowledge. Today, scientists have had to change some of their concepts regarding the bear’s behaviour and appearance. Because of recent observations of changes in the bear’s behaviour in Chingaza, none of the interviewed experts hesitates to agree to some extent with the campesinos [52,64,84–86]. A close analysis of the bear’s habits has shown that its diet includes cows, and mammalogists today accept that this animal is omnivorous, taking every opportunity to supplement its protein needs, via either scavenging or the killing of livestock [52,84,87]. As Darío Rivera explains, the Andean bear is depicted in national campaigns as a ‘spectacled’ animal distinguished by the white areas on its face, based on the first scientific description of an Andean bear obtained from northern Peru in 1825 [88] (p. 89).

“From the Huancabamba depression [Peru] to the south, they have glasses, and from that depression up, they are black bears. The ones here [Colombia] are black bears. In Chingaza, there is no facial stain, and sometimes there is a chest and a snout ( . . . ) Conservationists say that you have to take care of the spectacled bear. However, people say, no, that one is not here. The one we have here is the black bear” [52].

In response to campesino statements about the existence of two different bears, conservation scientists suggest that we call it “Andean bear” and not “spectacled bear”, as they believe the name is currently confusing [64]. This consideration from biologists to take into account the different appearance of the Andean bear in Colombia potentially opens up the

possibility that campesinos' knowledge about the bear can also be incorporated into the way in which conservation is implemented.

#### 4. Discussion

The campesino practices of inhabiting the páramo that we discussed in the results section produce a 'campesino' version of the páramo; a '*campesino páramo*'. Relying on landscape history and oral histories, we have revealed that the process through which the páramo becomes the life-world of the campesinos—the everyday life of the campesino's world—is historically dynamic and shaped by multispecies interactions, including humans as well. Following anthropologist Anna L. Tsing [17], we can approach this historical and multispecies process and its outcome, the páramo as a campesino life-world, as an emerging relationship that contests the modern ontological separation between human and nature. Campesinos "have never been human" [65] in the modernist, humanist, or Cartesian sense of the term where there is a separation between the social and the natural world [89]. Campesinos, among other marginalised groups, have historically been categorised under nature, as resources. In the campesino páramo, *chiruda* cows, people, pastures, clearings, and burning are articulated with practices that establish relationships with entities such as condors, bears, wetlands, and lagoons; relationships that are fraught with friction. Campesinos and bears have thus found themselves in relationships also marked by death as campesinos used to hunt bears and to destroy its habitat, and bears learned to eat cows. Later, following campesino's accounts, bears have participated in the displacement of campesinos as part of a conservation effort that has driven them off their former lands. As we have already stated, conceptualising the páramo as a contact zone allows us to insist on the páramo as a landscape "full of the complexities of different kinds of unequal power that do not always go in expected directions" [65] (p. 218). Following Haraway's paraphrasing of Jim Clifford's proposal of a contact approach, we argue that adopting such an approach allows us to "presuppose not [naturalcultural] wholes subsequently brought into relationship, but rather [multispecies] systems already constituted relationally, entering new relations through historical processes of displacement" [65] (p. 216–217).

Conservation also produces its own version of the páramo; a *conservation páramo*. This version is also a particular assemblage of practices of care that historically has tended to exclude campesinos. Therefore, the disagreement between campesinos and environmental authorities about the bear is reflective of a 'multiple páramo'. The disagreement emerges from the encounter between different páramo versions made up of dynamic and historically shaped multispecies configurations. Considered in this particular history and landscape, where campesinos coexist with cattle and bears within a specific conservation assemblage, human-bear conflict is both material and ontological. Furthermore, the daily encounters between people and bears are marked by a history in which the bear is part of a series of policies in which conservation cannot be separated from water intake practices for Bogotá.

An ontological conflict emerges not only because of differences between perspectives on the páramo or the bear, but also because of different and often discordant ways of assuming what the páramo and the bear are and can be. In this way, when the environmental educator or the park official says 'bear', he unknowingly refers to an entity that is not exactly the same as the one referred to by the campesino when they say 'bear'. Not exactly the same, but not different either, because when a campesino shoots an individual *Tremarctos ornatus* (which is perceived as the carnivorous black bear), the Andean (spectacled) bear defended by the law and the Park officials is also killed. Eduardo Viveiros de Castro coined the term "equivocation" [90,91] to refer to this type of situation in which multiple entities generate misunderstandings that go unnoticed by the participants. In asymmetric scenarios such as the one we describe, campesinos' chances of being heard are very few because with páramo 'nature-based solutions', their contextual knowledge about the bear is not equated with (or is given lesser weight than) that of scientists and officials, and also because the equivocation gives the appearance that those involved are talking about the same entity. For this reason, the stories of airborne bears in Chingaza attacking cattle are dubious (even

impossible) for the experts to believe, even if they are possible for the campesinos who have experienced the simultaneous emergence of a conservation páramo and the displacement of local inhabitants from it (this is then a complex misunderstanding that combines two situations: first, an equivocation (in the sense of Viveiros de Castro [90]) since the bear is different without campesinos and environmental authorities being aware of it. Second, a disagreement (in the sense of Rancière [92]) since campesino's knowledge cannot be considered by environmental authorities and scientists (the existence of two types of bears and the fact that bears can be airlifted into the park are considered impossible, only beliefs, in short, not true). For a relation between disagreement and equivocation, see Marisol de la Cadena [27]).

It is not surprising that the bear can be seen as a participant of the displacement process. In their own accounts, campesinos were expelled from the protected area by the Water Company and the National Parks Agency, and their cows were banned, and even killed [72]. While new water infrastructures and conservation figures excluded them, their cattle and their practices, the status of the bear was elevated to that of 'guardian' of the water that feeds those same infrastructures. When this bear attacks the cows, which have long been partners in campesino practices of inhabiting and making the páramo habitable for them, the bear becomes an instrument of dispossession to the campesinos. The assumption of the existence of more than one bear is the result of historically-formed divergent practices. A bear is never just a bear. People advocating conservation practices that seek to ensure the water intake for Bogotá form and promote conceptions of the 'bear' that are very different from those of the campesinos engaged in livestock production in the same high mountainous areas. In this sense, the bear is an integral part, and product, of multispecies and historical assemblages that include humans, their sciences, knowledge, and politics, but can also exclude humans, certain forms of knowledge and politics.

Like other wildlife species, the bear is protected by law, and as Oscar Fuentes says, in Colombia, "the bear is not alone" [9]. Beyond the punitive sanctions imposed by the law, the country's complex system of environmental authorities has tried to incorporate the campesinos in the cause of Andean bear conservation. For years, environmental education programmes have been implemented, targeting the campesinos to influence their productive activities and their perception of the Andean bear within what conservation practitioners define as "a conflict landscape" [79,84]. These programmes introduced the bear to a population that has been living with it for generations in one way or another. According to our interviewees, educators taught campesinos in the 1990s according to what their scientific information indicated: *Tremarctos ornatus* has herbivorous, elusive, and shy behavior [52,53]. It does not present danger to people and must be protected; therefore, it is not justified to enter in conflict with it. For the campesinos, who have encountered another bear, the chances of disagreeing with their educators were nil. In vain, as Oscar Fuentes told us, the campesinos insisted to the authorities that many times their animals had been attacked, killed, or eaten by bears [85]. Educators did not take these accounts seriously, despite the scientific evidence that the bear is an omnivorous and opportunistic animal. As we discussed in the results, the particular history of Chingaza must also be considered in the bear behaviour. Due to the migration of campesino families and the loss of their land, campesinos adapted their cattle ranching practices, leaving cows to graze alone for long times in the highest parts of the mountains, hence bringing cows and bears into closer contact.

In this context, the bear can learn and take advantage of the behavior of cows, for example learning to identify when cows get mired in muddy areas or being aware of accidents in steep areas. There are even suggestions of bears that know how to herd cows, recognise the weakest, isolate them from a group, select them, and predate them. In the campesino páramo, the bear is capable of more things than scientists had thought of just a few years ago [52,64,84,86]. In the case of Chingaza, bears are not only the result of their natural history, but also of a complex history of development projects, urban-rural relationships, campesino practices, and environmental conflicts.

In recent years, environmental authorities and NGOs have made a significant effort to get closer to campesino communities [79]. However, according to several of the Chingaza Park's current officials, it has been difficult to overcome years of mistrust and conflict. In this process, it has been vital to enroll campesinos in environmental activities. As we have already seen, their daily knowledge of the bear is critical. Miguel Valencia, for example, tells us that without the expert guidance of some campesinos his scientific work with these animals is impossible.

“Walk with a farmer for 20 days in the mountains, and you come back knowing more than what you were taught at university. The campesinos taught me how to walk at night, use a machete, and follow the bears ( . . . ) I arrived saying that I was the bear expert, but with the campesinos my perspective changed. Working with the bear is like working with a ghost; you never see it; I've only seen 3 in my life in all these years. But you were walking with a campesino like Don Ernesto, and he tells you where the bear is, he tells you if the bear is walking or resting. I tried to walk with him because he is the one who sees the most bears. He only needs to look at the páramo and can tell you if there is a bear. He knows the páramo so much that every slightest change is noticeable to him” [86].

Many of these experts, like Don Ernesto, come from families that were expert hunters. Their trajectories show that there are other ways of modeling the relationships that until now have been considered in terms of conflict: new arrangements in which the knowledge of the campesinos and their needs are also considered. Miguel is awestruck by Don Ernesto's knowledge of the páramo, even if Miguel and Elias do not share entirely the same forms or practices of knowing. This detail is relevant because even though Miguel wants to learn from Don Ernesto, he knows that the campesino knowledge will always exceed his scientific comprehension. Similarly, local professionals from campesino families in Chingaza have come to adopt key roles in the Andean bear monitoring projects of environmental authorities and NGOs. In their capacity to navigate between the partially overlapping worlds of campesinos and scientists, they contribute to the design of more balanced programmes that protect the bear and its habitat without ignoring campesino practices and interests.

Following Viveiros de Castro, we suggest that to consider equivocation means to acknowledge there is not a definitive solution that harmonizes all differences [90,91]. This is not a matter of finding a correct translation but of enacting an opening to the possibilities of knowledge and worlds that can exceed one's own knowledge and world. Viveiros de Castro calls this method “controlled equivocation”, and its aim is to allow a conversation capable of articulating different worlds [27]. In our case, for instance, to control the equivocation between *Tremarctos ornatus* and the campesinos' black bear means to be open to the particularities of bears in Chingaza, the same details that campesinos understand better, even if they do not know the bear by its scientific name. In practice, to control the equivocation means for us to transform both the campesino páramo and the conservation páramo. This shift requires science to open up to campesino knowledge, steps that scientists such as Miguel Valencia, Ana Puerta, Darío Rivera, and many more have begun to take together with campesinos who are becoming protagonists of conservation in the region. Improving the efficiency of farming, which implies changing many cattle management and agricultural practices, must therefore go hand in hand with an assessment of the páramo as a landscape also produced by people, which implies co-creating conservation actions together with paramo inhabitants. In Chingaza, for bear conservation to succeed, it must be conservation not only of the bear.

## 5. Conclusions

In the introduction to this article, we presented two cases in which contact between humans and bears in Chingaza resulted in the latter's death. In the first, the bear was killed by a farmer who received a criminal sanction. In the second, the bear was electrocuted in a power transformer owned by the water company. Both cases were conceived very

differently by environmental authorities, the first as an ‘environmental crime’ and the second as an ‘accident’. Following our approach, we can understand why the two deaths are conceived so differently and the effects of that difference. As we have shown, practices to ensure conservation and water intake have been aligned for decades in Chingaza, and involved the rejection and even penalisation of peasant activities in the páramo. Thus, the differences in interpretation, sanction, media coverage, public rejection, etc., are the outcome of a particular history in which human activities in the páramo have been examined asymmetrically. The double standard with which the human presence in Chingaza is evaluated risks to deepen a decades-long conflict and to undermine the efforts of scientists, environmental officials, and peasants to find concerted solutions.

In this article, we have explored our two overarching research questions about long-standing human-bear conflicts in the páramo regions surrounding Bogota. Regarding the first research question, the findings suggest that when a specific type of conservation policy or intervention is enacted, the agencies of both bears and cattle farmers tend to be simplified. This obscures the histories of how humans and nonhumans transform multispecies landscapes through their affective relations with each other. Thus, we conclude that human-bear conflicts not only reflect a conflict between diverging perspectives and interests among humans—a human–human conflict—but also an ontological conflict between interconnected yet different life-worlds. In responding to the second research question, our historical, political ontology and multispecies perspective on páramo landscapes sheds light on the unintended consequences of Andean bear conservation strategies. Although conservation programmes have been beneficial in terms of bear population numbers in the paramos surrounding Bogota, they have generated distrust and conflict between campesinos and environmental authorities, undermining the efficiency of conservation strategies. Over the last decade, conservation measures demonstrate attempts to better articulate environmental governance agendas with local campesinos’ knowledge and needs. This development indicates the need for mechanisms that enable conservation practitioners and environmental authorities to consider the interconnections as well as the disconnections between the campesino’s and the bear’s histories of marginalisation in the páramos surrounding Bogotá. Such mechanisms will offer a strategy to manage, rather than to suppress, the many equivocations and disagreements between different life-worlds. Our research urges for mechanisms that strengthen and legitimise the role of local experts, scientists and environmental officials with a capacity to mediate the practices and worlds that make up the campesino páramo and the conservation páramo. These intermediaries can play a fundamental role in imagining ways to allow campesinos to gain livelihoods from bears, as well as in imagining how bears can get protection from campesinos. Their participation can contribute to the formulation of local policies that do not separate the campesino or the bear from their respective intertwined histories.

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