Universidade de Aveiro
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Bruno Rafael Francisco Malheiro

Viver com o tigre da Amazónia: Observando o jaguar (*Panthera onca*) através dos olhos das gerações mais novas da Bolívia.

Pouncing the Amazon's tiger: Perceiving the jaguar (*Panthera onca*) through the eyes of Bolivia's younger generations.

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Dissertação apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Ecologia Aplicada, realizada sob a orientação científica do Doutor Nuno Negrões, Investigador do Departamento de Biologia da Universidade de Aveiro e Doutora Jenny Glikman, Investigadora do Institute for Conservation Research, San Diego Zoo Global.

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Dedico este trabalho a todos os jovens cientistas e investigadores que, apesar de todas as dificuldades que o mundo moderno apresenta, mantêm-se motivados a continuar os seus trabalhos e a lutar por um mundo cada vez mais informado, sustentável e justo para todos.

O júri

Presidente	Professora Doutora Maria Helena Abreu Silva, Professora Auxiliar, Universidade de Aveiro

Vogais

Arguente	Doutor Sílvio Marchini, Investigador, Universidade de São Paulo
Orientador	Doutor Nuno Miguel Negrões Soares, Investigador Doutorado (nível 1), Universidade de Aveiro

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Palavras-chave jaguar, conflito Homem-Natureza, Amazónia boliviana, conservação, educação ambiental, dimensões humanas, sustentabilidade

Resumo

Partilha de território com animais selvagens tem sido um problema cada vez mais alarmante ao longo dos anos e que resultou no declínio acentuado de muitas espécies, especialmente grandes predadores e carnívoros. Este é o caso do jaguar (*Panthera onca*) em praticamente toda a sua área de distribuição na América, nomeadamente na floresta Amazónica. Várias áreas protegidas foram surgindo ao longo do tempo com foco na conservação da Natureza, florestas e vida selvagem, assim como vários esforços legislativos contra o tráfico de animais e suas partes. No entanto, ainda há falta de informação acerca de como as comunidades nativas respondem e interagem com a presença de jaguar. O objetivo deste estudo foi investigar a maneira como jovens entre 11 e 20 anos de idade percecionam o jaguar nas áreas protegidas da Reserva Nacional de Vida selvagem Amazónica de Manuripi, IPA de Santa Rosa del Abuná e Pampas del Yacuma, assim como no território indígena Tacana II, e compará-las com estudos anteriores em adultos. Os meus resultados mostraram que as perceções e sentimentos dos jovens (n = 477) estão em conformidade com estudos prévios, sendo maioritariamente negativas. Também identifiquei o território indigena Tacana II como sendo a menos tolerante ao jaguar, comparando os resultados com jovens com os de estudos prévios. Comparando resultados entre áreas, Pampas del Yacuma reportou perceções e sentimentos mais positivos em relação às outras, talvez devido à forte presença de ecoturismo na economia local. Rapazes, comparativamente com raparigas, reportaram sentimentos significativamente mais positivos em relação ao jaguar. As pessoas que tiveram um contacto direto com um jaguar no passado tendem a ter sentimentos mais positivos em relação à espécie e as opiniões relativamente à sua importância ecológica foram significativamente mais favoráveis à conservação com o aumento de sentimentos positivos. Baseado nos meus resultados, sugeri o desenvolvimento de projetos piloto para a implementação de ecoturismo e educação ecológica nas áreas protegidas em que o conflito com estes grandes felinos ainda é muito acentuado, incentivando as comunidades nativas a serem agentes ativos na mitigação deste problema.

Keywords jaguar, Human-Wildlife conflict, Bolivian Amazon, conservation, Nature education, Human dimensions, sustainability

Abstract

Sharing the landscape with wildlife has been an increasingly challenging over the years that resulted in the accentuated decline of many animal species, especially large predators and carnivores. This is the case with the jaguar (Panthera onca) in virtually all of its distribution range in South America and, particularly, in the Amazon forest. Several protected areas have been created over the years to advocate for biodiversity conservation, however, there is still a lack of information on how natives living in these territories respond to the jaguar's presence and interact with it. The goal of this study was to understand how young people between the aged of 11 and 20 years old perceive the jaguar in the Bolivian protected regions of Manuripi National Amazon Wildlife Reserve, Integrated Management area of Santa Rosa del Abuná and Pampas del Yacuma, as well as the indigenous territory of Tacana II. In addition, I compared the findings from this study to previous ones that focused on adults of the same regions. Similar to previous studies, youngsters (n = 477) held overall negative perceptions and feelings toward jaguars, with slight differences among study areas. I also identified Tacana II as the least tolerant to jaguars, based on the comparison of feelings and perceptions among study areas and previous studies. Contrarily, Pampas del Yacuma was the most positive in terms of perceptions and feelings, which were connected to pronounced presence of ecotourism. Boys, compared to girls, significantly felt more positive towards the jaguar, as did people who had encountered a jaguar in the past, and those who believed that jaguar had ecological importance also had significantly more positive feelings. Based on conclusions, I suggested some studies to be applied in the future concerning jaguar population distribution and application of pilot ecotourism and ecological education projects in protected areas where the impact of these big cats is still a major issue, so native people can also be active agents of conservation.

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INTRODUCTION

Working around how native people perceive and interact with the jaguar is fundamental in mitigating both previously mentioned threats (habitat loss, human-wildlife conflict, and trafficking) and in helping control the illegal killing or retaliatory killing, aiding in the conservation of the species. Besides measures directly applied to jaguar populations and law making protecting the animals, it is important to understand the level of knowledge of native people, their perceptions, motivations and attitudes towards the jaguar. Knox and colleagues (2019) concluded that in the protected regions of Santa Rosa de Abuná, Tacana II and Manuripi National Amazon Wildlife Reserve (all of which are also included in the present study) 48,9% of inquired adult people disliked or strongly disliked jaguars and 26,8% felt neutral. While there are numerous studies depicting negative perceptions towards jaguars with adults in Amazonian countries (Cavalcanti, Marchini, et al., 2010; Knox et al., 2019; Marchini et al., 2018; Porfirio et al., 2016; Soto-Shoender et al., 2013; Villalva et al., 2019), few have focused on children (Marchini et al., 2020; Mascote et al., 2016). Indeed, taking children in consideration has been fairly neglected in past investigations to target the age classes that directly deals with jaguar (adults have more encounters with the animal while collecting natural resources or deal with damage to domestic animals caused by it), which is reasonable. However, in the long term, understanding how young generations perceive big predators can help shape future conservation efforts and change the way they engage with wildlife once they inherit their parents' positions and proficiencies in their community, striving for a more peaceful coexistence and future recovery of jaguar numbers.

Background context

From the time when the first traces of humanity started to emerge, mankind was exclusively dependent on primary natural resources and direct ecological processes such as seasonal food availability, ensuring the survival and continuity of its own species (Baskin, 1998; Kellert et al., 1993). Tasks such as food scavenging, shelter and protection from naturally occurring phenomena (*e.g.* volcanic eruptions, storms, floods, wildfires, etc.) could have dictated the success or extinction of human populations and even communities (Kellert et al., 1993). Out of this relationship with uncontrollable events, respect for Nature was regarded as a core element in most aspects of human settlements, and transcribed itself in their daily activities and spiritual beliefs (Kellert et al., 1993; Mohammadi et al., 2015). Early religions are a very good example of how Nature was regarded as both inspiring and feared, transcribed into deities and illustrating the bittersweet relationship that early humans had with raw natural forces and other entities, i.e. surrounding plants and animals, that were simultaneously life-threatening and necessary for their survival as an also included element of Nature itself (Mohammadi et al., 2015).

In the last couple of centuries, the relationship between humans and Nature has been increasingly more of a struggle than a mutual tolerance (Seymour, 2016). With the advances in technologic development and modernization of the world, human culture became progressively detached from Nature and more focused on establishing a thriving society by becoming as self-sustained as possible (Baskin, 1998; Seymour, 2016). Due to this progression, some of the primordial struggles of survival were mitigated, but others arose as the human footprint grew larger across the world. Modern issues like climate change, unsustainable exploitation of natural resources, habitat loss, extinctions of species, etc., are just some examples of negative changes that have been linked to human activity and represent one of the biggest priorities of today's society when regarding the future (Cook et al., 2013; Correa Ayram et al., 2017; Malcolm et al., 2006; Shafiei et al., 2014). Plans to advert these issues are already in action to try and guarantee a sustainable future for the planet and future generations (European Commission, 2018; United Nations, 2015, 2018).

Conflict also happens in the form of active or passive confrontation between people over wildlife and its impact on human activities (Conover, 2002; Dickman, 2010; Frank et al., 2019; IUCN/SSC, 2020b, 2020a; Knox et al., 2019). Even though humans can have regular contact and interaction with wildlife in urban areas, negative tension and clash are especially true for those living in rural areas and closer to wild ecosystems (Distefano, 2005; Knox et al., 2019). Such is the case of Bolivia, where some native populations and communities living in and around protected territories of the Amazonian

forest have daily contact with numerous animals and plant species (Knox et al., 2019). Even though there is a survival dependency between these communities and wildlife (people collect wild resources in practices such as hunting, fishing, farming, etc.), such a direct contact is also bound to give rise to negative interactions with animals that pose a threat to human assets, such as domestic animals that are the main source of income for many of them (Knox et al., 2019; Marchini et al., 2018).

One of the most iconic animals in Bolivian history of wildlife, and the object species of this study, is the Jaguar (*Panthera onca*). This big feline is currently listed as "Near-threatened" (Quigley et al., 2017) and "Vulnerable" in Bolivia (Ministerio de Medio Ambiente y Agua, 2009) and is the largest cat, as well as the only representative of the *Panthera* genus in the American continent (Nowell et al., 1996). Like most of the threatened big predators, the main risk that jaguars face is the loss of habitat, and its fragmentation, to the expanding human territories (Marchini et al., 2018), which in turn creates bigger chances at direct contact with humans. Even though these large predators may be perceived as a nuisance, dangerous or in any other negative light, they are still an important part of the ecosystem they are in, and play a major role in maintaining healthy biodiversity values and ecological equilibrium (Ripple et al., 2014; Terborgh, 2015). Because of this, and since human presence is the dominant pressure, the survival and thriving of jaguars became reliant on their interaction with surrounding human populations, how these perceive them and the conservation measures in place. It is also influenced by changes to their original habitat and whether they can adapt to new conditions. Hence, the importance of preserving healthy populations of jaguar and minimizing its persecution is imperative. De La Torre and colleagues (2018) estimated a global population of 64,000 jaguars in the world (of which 57,000 can be found in Amazonian territory), while Jędrzejewski and colleagues (2018) estimated a number of 120,000 individuals in the world, also mostly concentrated in Amazonia. Both studies were published in the same year with very different estimates, meaning that the real number of jaguars in the wild is still hard to assess and calculate due to its almost cryptic and secluded lifestyle and lack of reliable distribution data. This also means that the conservation status of jaguar populations may be illusive and the threat of decline may be worse or better than inferred. According to Nuñez and colleagues (2017), Bolivia is estimated to house a total of 2,000 to 3,000 individuals, but even if these numbers aren't 100% precise, one things is consensual: the global populations of jaguar are in decline (Quigley et al., 2017).

Another major threat to jaguar populations is the trafficking of feline parts, which has been a growing issue especially in Latin-American countries like Bolivia, where jaguars and other cats are purposely (and illegally) hunted for the collection of trophies - usually their fangs, claws, skulls and pelts – that are later exported to Asian countries (Arias et al., 2020; Morcatty et al., 2020). Between 2014 and 2016, Bolivian authorities apprehended, at least 34 skulls and 344 jaguar fangs, which are considered the most valuable trophy and are used to make jewellery or transform into powder for eastern medicinal practices (Nuñez et al., 2017). Additionally, in 2015 a Chinese citizen was intercepted in Beijing for trafficking 119 jaguar fangs that were added to 304 more in early 2019 from 6 other trafficking cases (Jauregui, 2020). Summing up the figures, from 2014 to 2019, a total of 757 jaguar fangs were apprehended, which translates into at least 190 animals being poached in Bolivia in the timespan of 5 years. This problem has been linked to foreign citizens that live and work in Bolivia (Arias et al., 2020; Morcatty et al., 2020; Navia, 2018; Nuñez et al., 2017) that act by taking advantage of the economic struggles and conflict between the animal and native people to pay alluring amounts of money to hunt and collect their parts for them, further perpetuating the items in trafficking routes (Arias et al., 2020; May, 2017).

The main objective of the current study is to understand how the young generations of native populations living in the Bolivian Amazon perceive the jaguar, and to compare the results to the ones of previous studies that focused on adults. Specifically, following a similar approach to that of Knox et al.(2019) and Marchini et al. (2012), the aim was to assess the cognitions and emotions of the younger generation of the Bolivian Amazon towards the jaguar, as well as demographic information and past experiences with this species.

Theoretical Framework

Following the cognitive hierarchy framework (Fulton et al., 1996; Vaske et al., 1999), human behaviour towards wildlife is influenced by cognitions such as values (guiding principles that are present throughout the existence of a person or community (Jacobs et al., 2018)), norms (an action or belief that is taken as normal in a group of people and commonly approved or disapproved (Jacobs et al., 2018; Mackie et al., 2014)), beliefs (thoughts regarding a specific topic or object (Jacobs et al., 2018)), attitudes (favourable or unfavourable evaluation regarding a person, object or action (Eagly et al., 1993)). Even though they are not included in the framework itself, emotions are also an important aspect to be considered when studying human-wildlife dimensions (Jacobs et al., 2018; Manfredo et al., 2008), since they include affective and cognitive components which are essential to evaluate surrounding information and experiences in the environment and determine whether they are good for a person's goals (survival, identity, relationships, etc) (Olin E. Jr et al., 2009). In this way, emotions may dictate how an individual stands on conservation matters.

Considering this socio-psychology component as an approach to human-wildlife conflict, this study analyses the specific context of the Bolivian Amazon and points out new strategies for generating and transmitting information about jaguar ecology to the younger generations, so that they can grow up to be informed adults and appreciate the importance of the jaguar in ecosystems as well as the risks it currently faces.

According to the theoretical framework and the gap in information regarding conflict perceptions by younger generations, the following hypotheses were tested:

H1 - Feelings towards the jaguar are influenced by sex, direct experience (having seen the jaguar before or knowing someone who has killed one) and Risk Perception (opinion on whether jaguars attack people).
H2 - Boys are more likely to see jaguars, compared to girls.
H3 - People that have seen jaguars before are more likely to use positive adjectives to describe it.
H4 - Knowing people that were attacked by a jaguar influences opinion on if jaguars attack people.
H5 - Beliefs regarding the ecological importance of jaguars are influenced by feelings or previous encounters/sightings.
H6 - People that believe jaguars are important for the ecosystems also want its numbers to increase in 5 years' time.
H7 - There are differences in jaguar identification between sexes, ages, school grades and people that have seen a jaguar before.

MATERIAL AND METHODS

Study Areas

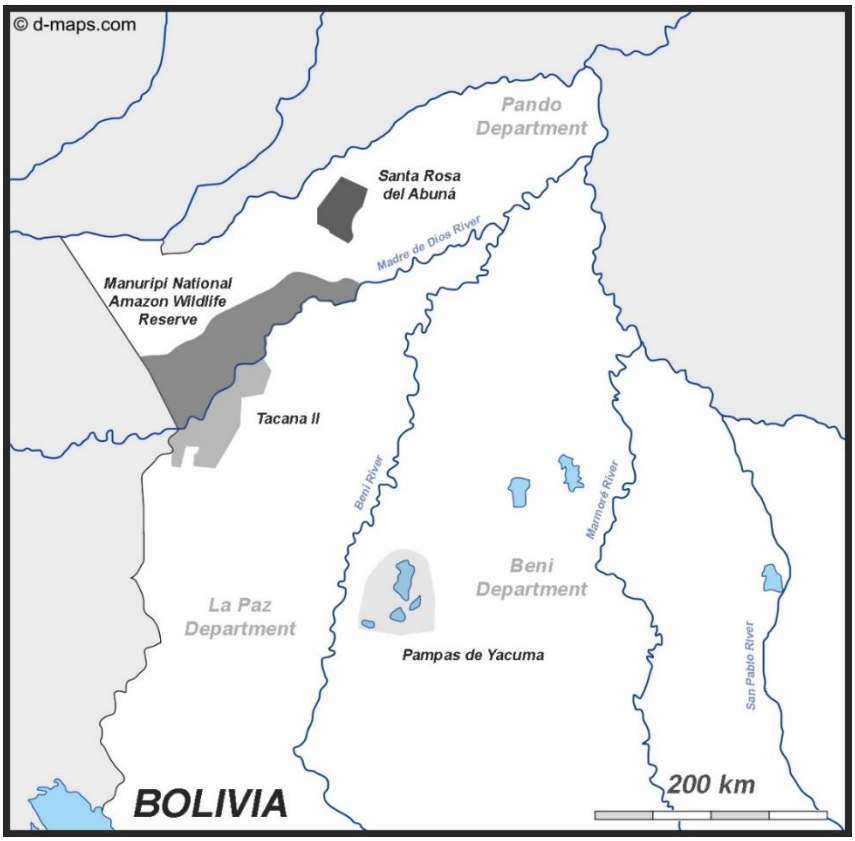

Figure 1 – Map and hydrography of the 4 study areas in Bolivia: Manuripi National Amazon Wildlife Reserve, Santa Rosa del Abuná, Tacana II and Pampas del Yacuma (created in Adobe Photoshop using a template map from http://d-maps.com)

The areas where the questionnaire was applied were selected for being protected territories with different legal frames and facing threats to its ecosystems and wildlife caused by increasing development. Their socio-economical context and proximity with the jaguar's natural habitat were also taken into account. In total, 4 areas were represented in this study (*Figure 1*): Manuripi National Amazon Wildlife Reserve (hereafter referred to as "Manuripi"); Integrated Management Area of Santa Rosa del Abuná (hereafter referred to as "Santa Rosa"); Tierra Comunitária de Origen (TCO) Tacana II (hereafter referred as "Tacana II"); Pampas del Yacuma Municipal Protected Area (hereafter referred to as "Pampas del Yacuma"). All of these are located in the north-western provinces of Bolivia and are integrated in the Amazonian forest area.

Local economies rely on the gathering of natural resources, domestic animal breeding, agriculture, gold mining, forestry, ecotourism or other activities that require close contact with the forest and wildlife. The main and most widespread trade in north-western Bolivia is the collection and commerce of non-timber forest products (NTFP) of the *Bertholletia excelsa* tree, commonly known as Brazilian nut tree. This species is found scattered throughout Amazonian river banks and is mainly harvested for its edible seeds (called Brazilian nuts) both for consumption and oil extraction. The Açai berry (*Euterpe precatoria*) is another product of growing popularity that is gathered in smaller quantities by some communities. In 2018, Bolivia became the world's top exporter of Brazilian nuts, representing a growth in the trade whose extraction, harvest, processing and commercialization employ thousands of people that depend on it as the main source of their income (Incofin, 2018; Stoian, 2004).

Manuripi National Amazon Wildlife Reserve (Manuripi)

Located in the south-eastern part of the Pando department, it is currently the protected area in Bolivia with the biggest area of Amazon forest, spanning about 725,000 hectares of land, which host a wide variety of landscapes like wetlands, lowland rainforests and savannas (WWF, 2020). Some of the most ecologically intact savannas in the world can be found in this reserve, as well as more than 20 endangered species, making it an extremely important ecological area and of elevated protection status. Its high species per taxa ratio and overall high diversity may be among the highest in all of Bolivia. About 1,500 people live in the reserve, distributed in 9 communities whose main source of income is the sustainable harvesting of Brazilian nuts and Açaí (*Euterpe precatoria*), complemented by small-scaled agriculture and animal breeding (cows, pigs, chicken, ducks) (Knox et al., 2019).

Integrated Management Area of Santa Rosa del Abuná (Santa Rosa)

Located in the department of Pando, in the municipality of Abuná, this area has been recently established in 2017 to promote sustainable development and biodiversity conservation, this area spans about 171,800 hectares of Amazonian forest, of which 97% remains intact. Linking the initiative of 20 communities to preserve healthy forests by Bolivia's national forest policies, it acts as a buffer against deforestation in nearby areas and across the Brazilian border, and is classified as category IV protected area by the IUCN, allowing natives to sustainably harvest natural resources (Andes Amazon Fund, 2017). About 2,200 people live in the area and the main source of income is the harvesting of Brazilian nuts and Açai, complemented by small-scaled agriculture and animal breeding (cows, horses, pigs, chicken, ducks) husbandry.

Tierra Comunitária de Origen (TCO) Tacana II

Situated on the northern border of the Madidi river and spanning about 350,000 hectares of land, it represents an important area for the conservation of Amazonian lowlands and savannas, housing a large number of species. It houses around 700 indigenous Tacana people that have rights of tenure over the land, granted by the Bolivian state (Knox et al., 2019; WCS Bolivia, 2017b). They also developed their own system for internal regulation of land and natural resource management, helping prevent their overexploitation and the destruction of the forest owned by the community while finding ways to ensure sustainable lifestyle for their communities based on the development of several productive activities. The main source of income is the harvesting of Brazilian nuts, complemented by small-scaled agriculture, animal husbandry and gold mining (IUCN, 2015).

Pampas del Yacuma Municipal Protected Area (Pampas del Yacuma)

Located in the department of Beni, this protected area spans for about 616,453 hectares and one of its main objectives is to ally biodiversity conservation to sustainable development. It holds unique ecological dynamics associated with annual flooding, which characterizes its savannas, wetlands and forests habitats, as well as providing them with a complex vegetation diversity (WCS Bolivia, 2017a). It also hosts an interesting animal diversity, many of which are considered threatened. Three endemic and endangered species are worth noting, which are the Benny and Olalla titi monkeys (*Callicebus modestus* and *Callicebus olallae respectively*) and the blue-throated macaw (*Ara glaucogularis*). About 7,000 people live in the area, distributed in 170 cattle ranches, 9 communities and the municipal capital, and the main source of income is cattle breeding together with the ecotourism that the typical landscapes and biodiversity attracts. On a smaller scale, there is some agriculture and small animal breeding.

Study design

Data were collected between the years of 2015 and 2016, in the form of structured questionnaires. These contained both open-ended and closed questions (some using a Likert-type scale) and followed the same methodology and structure as Knox et al., 2019. With the target social group (young high schoolers in the age range of 11 to 20 years old), questions were designed to be simple, specific and of easy interpretation in the native language (Spanish). Different regions had variations of the same questionnaire, which was not constructed exclusively for the collection of information on the jaguar, but also included questions regarding the giant otter (*Pteronura brasiliensis*) and the maned wolf (*Chrysocyon brachyurus)* (See *Annex 1* for an example of questionnaire applied in Manuripi*)*. For the purpose of this study, only the common questions (among areas) specifically concerning the jaguar were considered and analysed.

The questionnaires were delivered by the investigating team and answered in schools (with the institution's prior consent and authorization). A short briefing and explanation regarding the study's structure and objective was given to each class of students before the questionnaires were handed and filled individually. Participation was voluntary and answering every question was not required. The ethical approval was obtained from Miami University Ohio IRB for Human Subject Research, Protocol Number 03252e.

Data treatment and statistical analyses

In total 16 questions were selected and used for further analyses (13 questions were common for all the 4 areas, the other 3 were common for Manuripi, Santa Rosa and Tacana II), which means there was a total of 15 variables considered in this study. All of them, except for "Age" and "School grade", were treated as categorical (*Table 1*). H1 and H7 were tested using an ordinal logistic regression, H2 using a logistic regression and H3, H4, H5 and H6 using a multinomial logistic regression.

Table 1 – List of variables and their corresponding factors.

Group	Variable	Test	Factors
Sociodemographics	**Site**	X2	Manuripi, Pampas del Yacuma, Santa Rosa, Tacana II
	Sex	X2	Female, Male
	Age	Kruskal-wallis	11 to 20
	School grade	Kruskal-wallis	From the 1st year of secondary school to the 6th
Knowledge	**Jaguar picture identification**	X2	Incorrect, Correct
Experience	**Have you ever seen a jaguar?**	Logistic regression	No, Yes
Feeling	**Adjectives used to describe the jaguar**	Multinomial logistic regression	Negative; Neutral; Positive
Feeling	**How do you feel about the jaguar?**	Ordinal / Multinomial logistic regression	Likert-type scale: 1- "Don't like it at all", 2- "Don't like it", 3- "Indifferent", 4- "Like it", 5- "Like it a lot"
Belief	**Is it common for jaguars to attack people?**	Multinomial logistic regression	No, Don't know, Yes
Belief	**Is the jaguar important for the ecosystems?**	Multinomial logistic regression	No, Don't know, Yes
Attitude	**Would you be happier if there were more jaguars in your area?**	Multinomial logistic regression	No, Don't know, Yes

Experience	**Do you know someone who was attacked by a jaguar?**	Logistic regression	No, Yes
Experience	**Do you know someone who killed a jaguar?**	Logistic regression	No, Yes
Feeling	**How would you feel if you encountered a jaguar?**	X2	Fear, No fear
Feeling	**How would you feel if you encountered a jaguar track?**	X2	Fear, No fear
Attitude	**What would you like to happen to jaguar populations in the next 5 years?**	Kruskal-Wallis	Likert-type scale: 1- "Disappear or decrease a lot", 2- "Decrease", 3- "Stay the same", 4- "Increase", 5- "Increase a lot"

All of the aforementioned variables were analysed independently and according to areas, with Manuripi as the reference factor, to test for differences among them through Pearson's $\chi 2$ test (*Figure 2*). Those with significance (*p-value* lower that 0,05) were further tested using Logistic Regression (for binary factors), Ordinal Logistic Regression (for Likert-type scales and other ordered factors) and Multinomial Logistic Regression (for 3 or more unordered factors). For the purpose of some statistical analyses with Likert-type answer variables, I decided to run Multinomial Logistic Regression tests instead of Ordinal Logistic Regression tests, so every type of answer was analysed instead of a continuous range between the minimum and maximum option. This way negative answers were independently analysed from positive and neutral ones. This ensured that more positive or negative results were not masked in the estimate values as neutral. For the other variables, the reference factor was the one who occupied the lowest value (marked as 1 in the list). Numerical variables were tested for normality with Shapiro-Wilk's normality test, and analysed using Kruskal-Wallis's test in case they did not follow a Gaussian distribution.
Models were compared and selected based on their Akaike Information Criterion (AIC) and factors were considered significant at a *p-value* lower than 0.05. The total number (*n*) of data entries varied between tests due to missing values.

Data were organized using Microsoft Office Excel and statistics were performed in RStudio (Version 1.3.1093) (RStudio Team, 2020) with the "nnet" (Venables, 2020) (for Multinomial Logistic Regression), "Stargazer" (Hlavac, 2018) (for easier model result interpretation and cleaner tables) and "MASS" (Brian et al., 2020) (for Ordinal Logistic regression) packages.

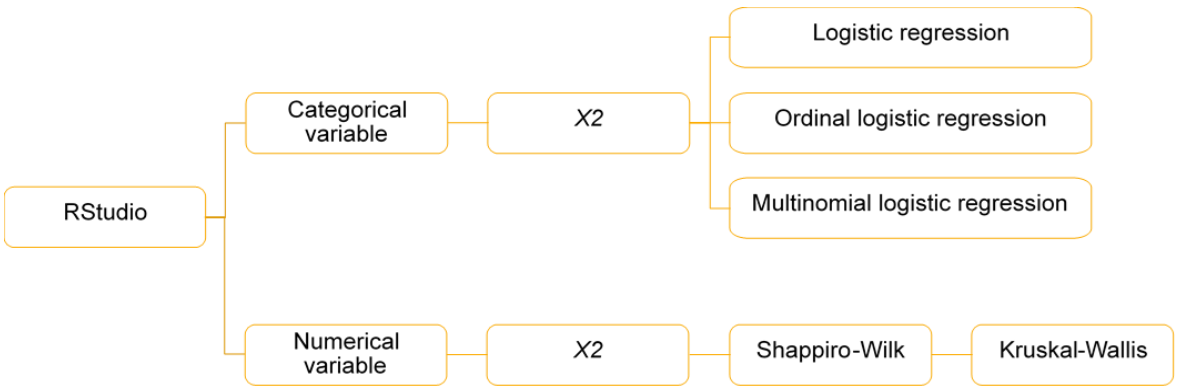

Figure 2 – Statistical methodology employed in this study, describing the tests that were selected for the analysis.

RESULTS

In total, 477 young people answered the questionnaire.

The descriptive analysis of all variables compared by region can be consulted in *Table 2*. These results will be discussed by variable in this section, along with each test's result, for easier reading navigation.

Table 2 - Descriptive analysis for all variables for Manuripi (N= 105), Pampas del Yacuma (N= 159), Santa Rosa del Abuná (N= 137), Tacana II (N= 76) and the total of answers of all areas (N= 477)

Variable	Description	Manuripi	Pampas del Yacuma	Santa Rosa	Tacana II	Total
Sex	% Male	54,8	53,8	46,0	44,0	50,2
Age	Mean (1 to 6)	15,07 (SD= 1,84)	16,85 (SD = 1,18)	15,32 (SD = 1,87)	14,77 (SD = 1,89)	15,66 (SD = 1,88)
School grade	Mean (to 20)	3,02 (SD = 1,53)	5,42 (SD = 0,49)	3,08 (SD = 1,47)	3,14 (SD = 1,62)	3,99 (SD = 1,68)
ID	% Correct	89,5	93,2	92,5	92,0	92,6
Sightings	% Yes	53,3	46,8	38,7	68,9	49,6
Adjectives	Mean (-1 to 1)	-0,81 (SD = 0,57)	-0,58 (SD = 0,62)	-0,68 (SD = 0,61)	-0,75 (SD = 0,57)	-0,69 (SD = 0,60)
Feelings	Mean (1 to 5)	2,29 (SD = 1,43)	3,05 (SD = 1,35)	2,42 (SD = 1,32)	2,58 (SD = 1,44)	2,63 (SD = 1,41)
Jaguar attacking people	Don't know	24,4	37,3	19,2	23,7	27,3
	Yes	12,2	51,3	20,8	34,2	31,9
	No	63,4	11,4	60,0	42,1	59,2
Ecological importance	Don't know	30,4	44,6	22,0	35,1	33,6
	Yes	44,6	45,9	47,0	29,7	43,3
	No	25,0	9,5	31,0	35,2	23,1
Happier if jaguars increased	Don't know	38,0	30,4	23,3	9,2	33,7
	Yes	12,0	29,7	22,6	3,9	25,3
	No	50,0	39,9	54,1	86,9	68,8
Knowing someone who was attacked	%Yes	18,7	19,6	12,6	32,9	19,6
Knowing someone who killed a jaguar	% Yes	62,0	19,1	48,1	74,7	45,6
Jaguar encounter	% Fear	90,6	-	88,4	87,7	88,9
Jaguar track encounter	% Fear	64,2	-	75,0	64,8	69,1
Jaguar populations in 5 years	Mean (1 to 5)	2,42 (SD = 1,17)	-	2,57 (SD = 1,26)	2,39 (SD = 1,07)	2,49 (SD = 1,20)

Sex

Overall, 50,2% (n = 474) participants were boys and there were no significant differences between sexes ($\chi 2$ = 0,01; *p-value* = 0,93). There was also a similar representation of sexes in all study areas ($\chi 2$ = 3,83; *p-value* = 0,28) (*Figure 3*), with 54,8% (n = 104) of respondents in Manuripi were male, 53,8% (n = 158) in Pampas del Yacuma, 46% (n = 137) in Santa Rosa and 44% (n = 75) in Tacana II.

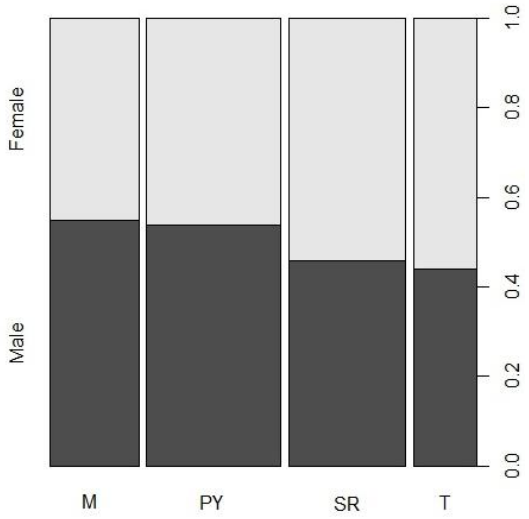

Figure 3 – Proportion (percentage) of males and females according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Age

Ages ranged from 11 to 20 years old and, overall, the average was 15,66 (SD = 1,88, n = 442) with significant differences among age groups ($\chi 2$ = 230,81; *p-value* < 0,01) (*Figure 4*). The means for each area were 15,07 (SD = 1,84, n = 96) for Manuripi, 16,85 (SD = 1,18 n = 141) for Pampas del Yacuma, 15,32 (SD = 1,87 n = 130) for Santa Rosa and 14,77 (SD = 1,89 n = 75) for Tacana II. Pampas del Yacuma had significantly higher age values compared with the other areas ($\chi 2$ = 15,21; *p-value* = 0,02) (*Figure 5*).

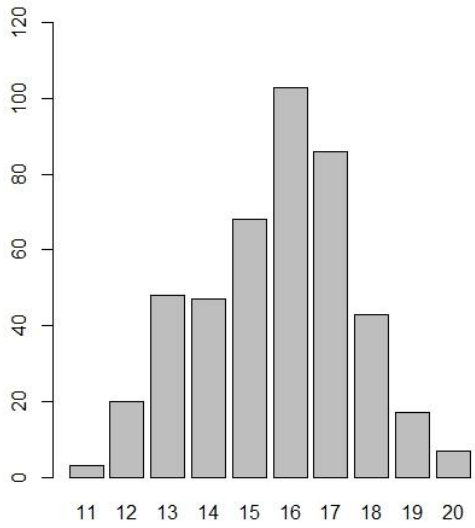

Figure 4 – Total number of answers in each age group.

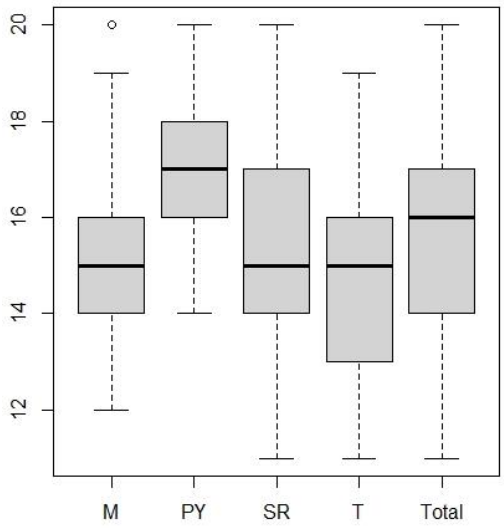

Figure 5 – Boxplot representing the age group distribution (Y axis) in each area, compared to the total number of participants (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

School Grade

Grades ranged from the 1st to the 6th year of secondary school and, overall, the average was 3,99 (SD = 1,68, n = 363) with no significant differences among them ($\chi 2$ = 10,41; *p-value* = 0,06) (*Figure 6*). The means for each area were 3,02 (SD = 1,53, n = 98) for Manuripi, 5,42 (SD = 0,49, n = 92) for Pampas del Yacuma, 3,08 (SD = 1,47, n = 129) for Santa Rosa and 3,14 (SD = 1,62, n = 44) for Tacana II. Only Pampas del Yacuma was significantly different ($\chi 2$ = 4,83; *p-value* = 0.027) (*Figure 7*) across the regions, with more participants being in higher grades.

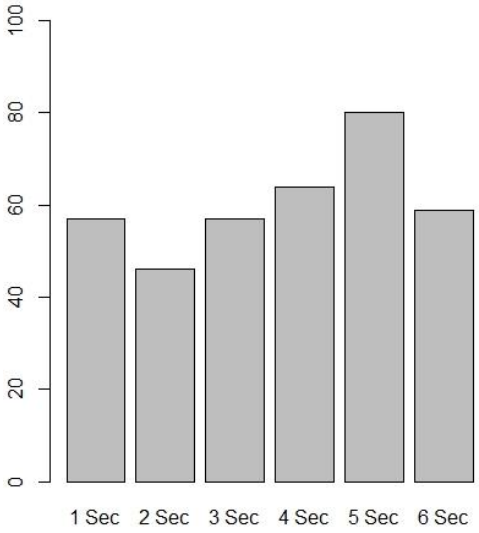

Figure 6 – Total number of answers in each school grade group.

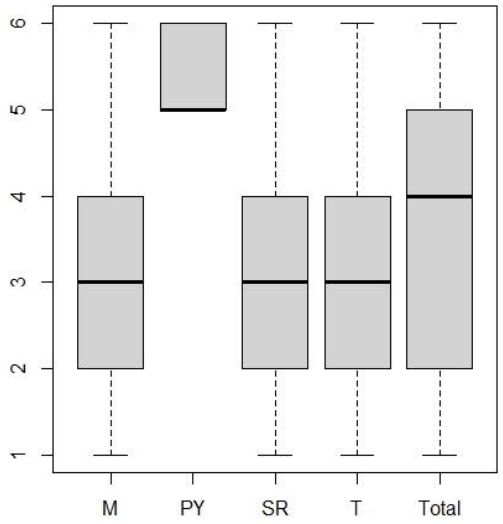

Figure 7 – Boxplot representing the school grade distribution in each area, compared to the total number of participants (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Jaguar picture identification

Overall, 92,6% (n = 448) participants correctly identified the jaguar ($\chi 2$ = 325,72; *p-value* < 0,01) (*Figure 8*). Comparing among areas, 89,5% (n = 92) of respondents in Manuripi, 93,2% (n = 148) in Pampas del Yacuma, 92,5% (n = 133) in Santa Rosa and 92% (n =75) in Tacana II correctly identified the animal of the presented picture as being a jaguar, with no significant differences among them ($\chi 2$ = 0,14; *p-value* = 0,99) (*Figure 9*).

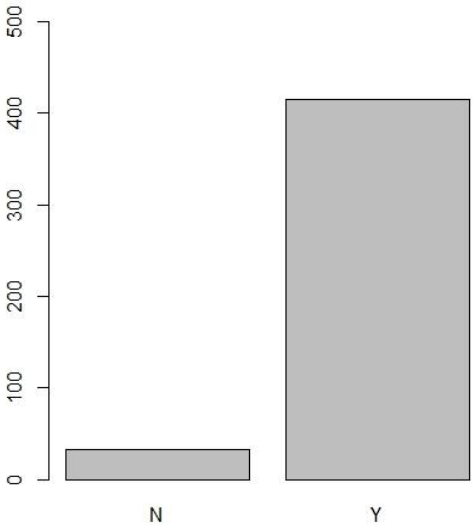

Figure 8 – Total number of correct (Y) and incorrect (N) jaguar identifications

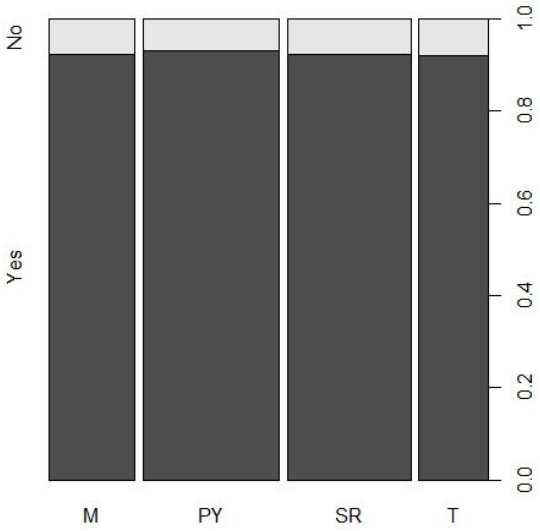

Figure 9 – Proportion (percentage) of correct (Yes) and incorrect (No) jaguar identifications according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Have you ever seen a jaguar?

Overall, 49,6% (n = 460) participants claimed to have seen a jaguar ($\chi 2$ = 0,03; *p-value* = 0,85) (*Figure 10*). Comparing among areas, 53,3% (n = 92) of respondents in Manuripi, 46,8% (n =158) in Pampas del Yacuma, 38,7% (n = 136) in Santa Rosa and 68,9% (n = 74) in Tacana II reported having seen a jaguar in the past, and there were significant differences among areas ($\chi 2$ = 17,35; *p-value* < 0,01) (*Figure 11*). The logistic regression test determined that:

- Santa Rosa was the region where less people had seen jaguars (*p-value* = 0,044) and that Tacana II was where more jaguar sightings were reported (*p-value* = 0,042).

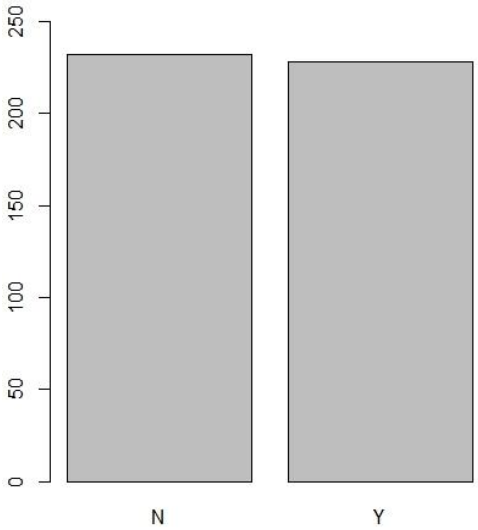

Figure 10 – Total number of participants that had seen a jaguar (Y) and of those who had not (N).

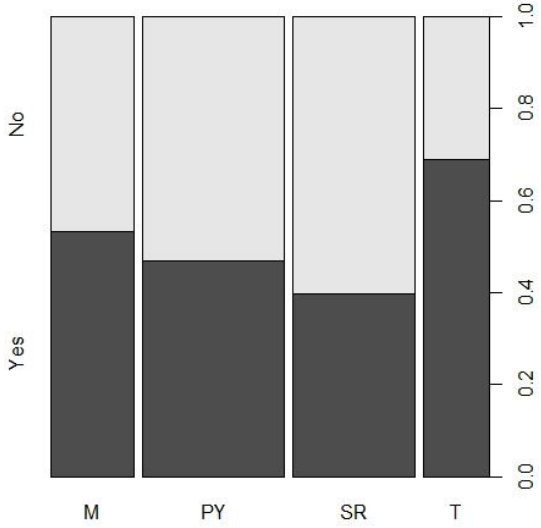

Figure 11 – Proportion (percentage) of participants that had seen a jaguar (Yes) and of those who had not (No) according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

What adjective would you use to describe the jaguar?

Answers were classified as ranging from -1, 0 and 1 (Negative, Neutral and Positive). Some respondents used more than one adjective in their answer, so only 1 classification was taken into consideration for statistics, following the general orientation of the words used. Overall, the average was -0,69 (SD = 0,60, n = 428) with significant differences among them ($\chi 2$ = 362,58; *p-value* < 0,01) (*Figure 12*). The means for each area were -0,81 (SD = 0,57, n = 91) for Manuripi, -0,58 (SD = 0,62, n = 142) for Pampas del Yacuma, -0,68 (SD = 0,61, n = 120) for Santa Rosa and -0,75 (SD = 0,57, n = 75) for Tacana II, and there were significant differences in answer distribution among areas ($\chi 2$ = 29,73; *p-value* < 0,01) (*Figure 13*).

The multinomial logistic regression test determined that, compared with negative answers:

- Manuripi was the area with less neutral (*p-value* < 0,01) and positive (*p-value* <0,001) adjectives used;
- Pampas del Yacuma was the area where most people used neutral adjectives (*p-value* < 0,001), followed by Santa Rosa (*p-value* = 0,005) and Tacana II (*p-value* = 0,02) in that respective order;
- Positive adjectives proportion was not significantly different in any area except for Manuripi.

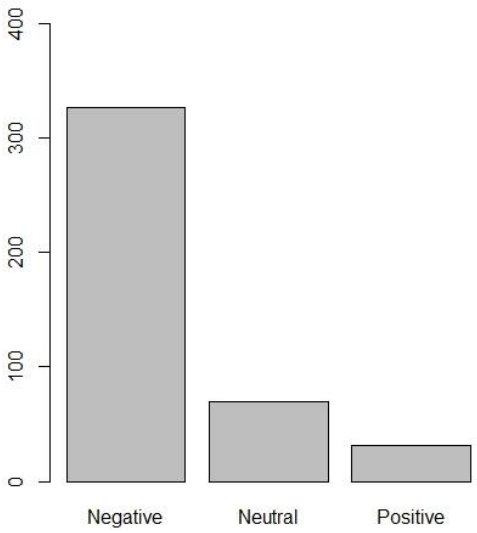

Figure 12 – Total number of participants that used negative, neutral and positive adjectives to describe the jaguar.

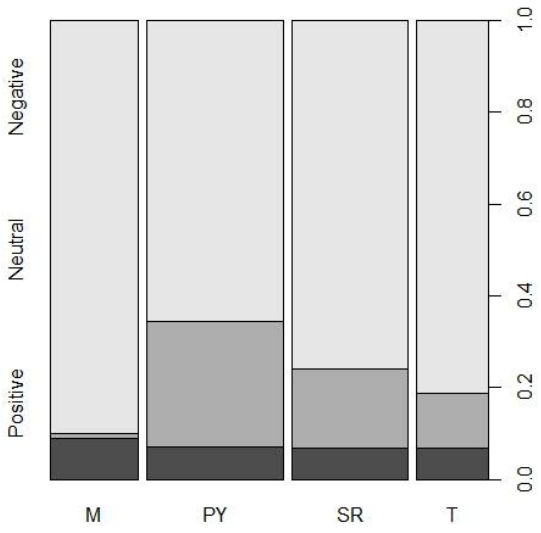

Figure 13 – Proportion (percentage) of participants that used negative, neutral and positive adjectives to describe the jaguar according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

In order to explore which adjectives were used and how often, each individual word of every answer was accounted. Overall, 59 words were used to describe the jaguar, from which 71,79% were negative, 20,15% were neutral and 8,06% were positive (n = 521, *Table 3* (in the appendix)). The 15 most used adjectives are depicted in *Figure 14*.

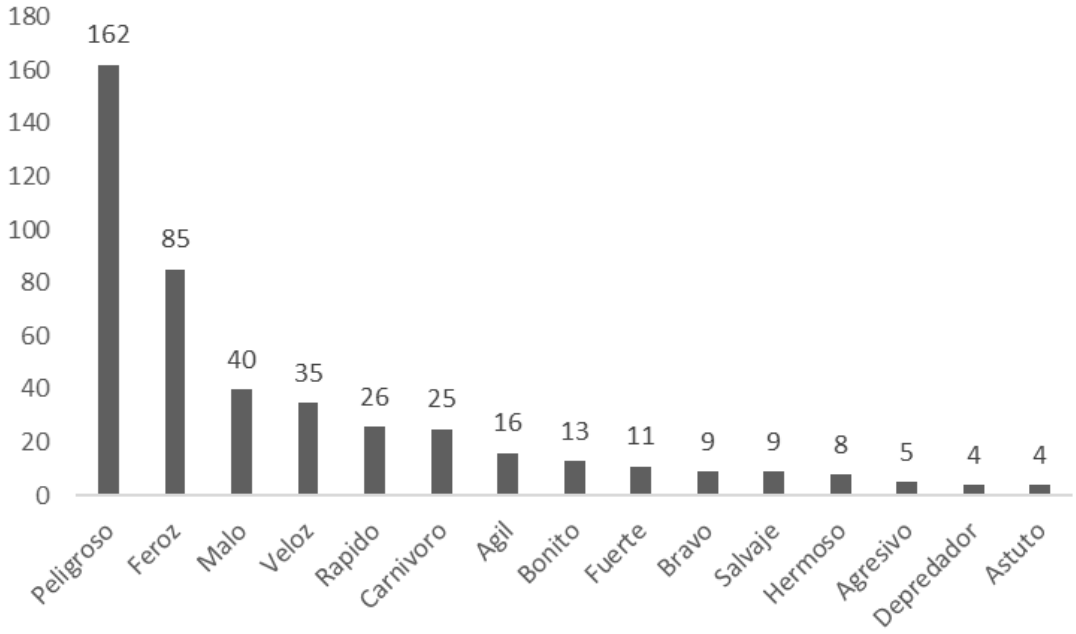

Figure 14 – 15 most used adjectives to describe the jaguar. Each bar has the number of times the adjective was used, and the complete table can be consulted in the appendix (*Table 3*).

How do you feel about the jaguar?

Answers were arranged in a Likert-type scale that ranged from 1 to 5 ("Don't like it at all" to "Like it a lot") and, overall, the average was 2,63 (SD = 1,41, n = 454) with significant differences among them ($\chi 2$ = 97,88; *p-value* < 0,01) (*Figure 15*). The means for each area were 2,29 (SD = 1,43, n = 91) for Manuripi, 3,05 (SD = 1,35, n = 154) for Pampas del Yacuma, 2,42 (SD = 1,32, n = 133) for Santa Rosa and 2,58 (SD = 1,44, n = 76) for Tacana II, and there were significant differences in answer distribution among areas ($\chi 2$ = 41,34; *p-value* < 0,01) (*Figure 16*). The multinomial logistic regression test determined that, compared with the lowest option:

- Pampas del Yacuma was the area with the most neutral (*p-value* = 0,002) and positive ("Like it" (*p-value* < 0,01) and "Like it a lot" (*p-value* = 0,046)) answers;
- Tacana II came after with a higher proportion of "Like" answers (*p-value*= 0,026), followed by Santa Rosa (*p-value* = 0,026);
- Manuripi was the area with least neutral (*p-value* < 0,01) and positive ("Like it" (*p-value* < 0,01) and "Like it a lot" (*p-value* < 0,01)). In other words, it was the area with most negative feelings towards the jaguar.

The ordinal logistic regression test corroborated these results and determined that Pampas del Yacuma significantly reported more positive scores in the scale, compared to the other areas (*p-value* < 0,01).

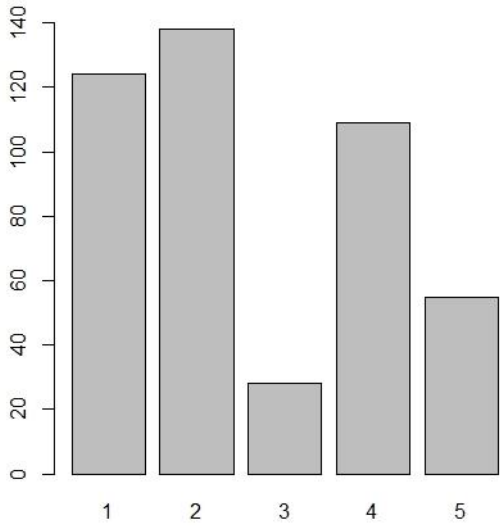

Figure 15 – Total number of participants that described feelings towards the jaguar (1 = Don't like it at all, 2 = Don't like it, 3 = Indifferent, 4 = Like it, 5 = Like it a lot).

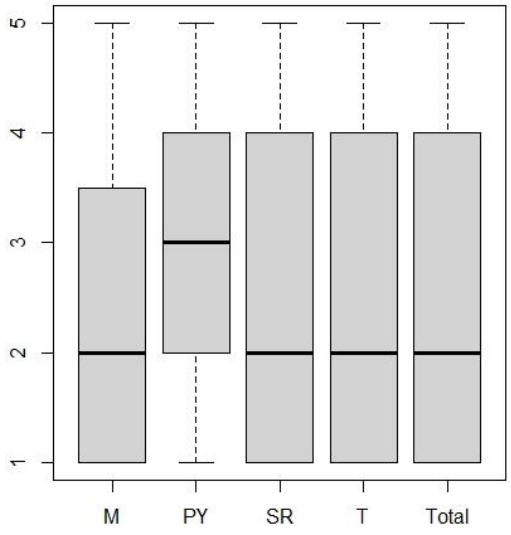

Figure 16 – Boxplot representing feelings towards the jaguar (1 = Don't like it at all, 2 = Don't like it, 3 = Indifferent, 4 = Like it, 5 = Like it a lot) in each area, compared to the total number of participants (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Is it common for jaguars to attack people?

Overall, 31,9% of participants believe that the jaguar attacks people and 27,3% did not know (n = 454), with significant differences among answers ($\chi 2$ = 12,69; *p-value* < 0,01) (*Figure 17*). Comparing among areas, 12,2% (n = 90) of respondents in Manuripi, 51,3% (n = 158) in Pampas del Yacuma, 20,8% (n = 130) in Santa Rosa and 34,2% (n = 76) in Tacana II reported thinking that jaguars attack people if they live near human settlements, and another 24,4% in Manuripi, 37,3% in Pampas del Yacuma, 19,2% in Santa Rosa and 23,7% in Tacana II reported that they did not know if jaguars attacked humans. There were significant differences in responses among areas ($\chi 2$ = 100,74; *p-value* < 0,01) (*Figure 18*) and the multinomial logistic regression test determined that, compared with "No":

- Manuripi was the area with the less "Don't know" (*p-value* < 0,01) and "Yes" (*p-value* < 0,01) answers, which means it had the most "No" answers out of all areas;
- In contrast, Pampas del Yacuma was the area where more people selected "Don't know" and "Yes" (both cases with *p-value* < 0,01);
- Tacana II was the second area with most "Yes" answers (*p-value* < 0,01).

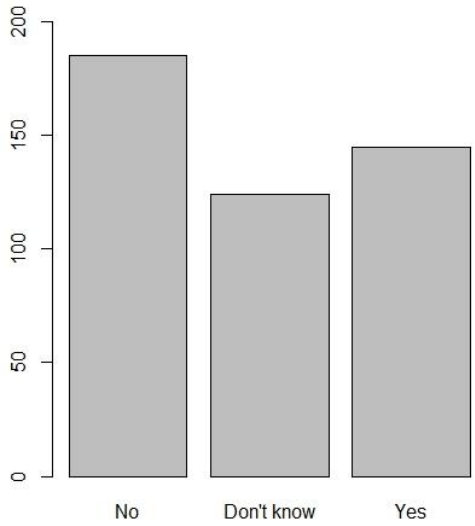

Figure 17 – Total number of participants that reported that jaguars attack people (Yes), that it doesn't (No) and that don't know.

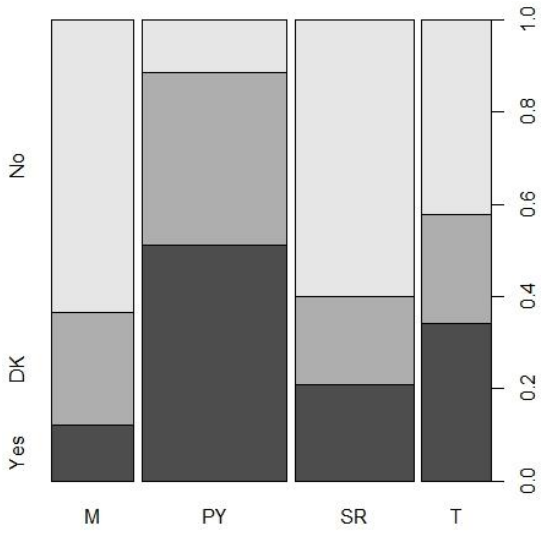

Figure 18 – Proportion (percentage) of participants that reported that jaguars attack people (Yes), that it doesn't (No) and that don't know (DK), according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Is the jaguar important for the ecosystem it lives in?

Overall, 43,3% of participants believed that the jaguar is important for the ecosystems, and 33,6% did not know (n = 455), with significant differences between answers ($\chi 2$ = 27,92; *p-value* < 0,01) (*Figure 19*). Comparing among areas, 44,6% (n = 92) of respondents in Manuripi, 45,9% (n = 157) in Pampas del Yacuma, 47% (n = 132) in Santa Rosa and 29,7% (n = 74) in Tacana II reported thinking that jaguars are important for the ecosystems they live in. Another 30,4% in Manuripi, 44,6% in Pampas del Yacuma, 22% in Santa Rosa and 35,1% in Tacana II reported that they did not know if jaguars had any importance. There were significant differences in responses among areas ($\chi 2$ = 35,99; *p-value* < 0,01) (*Figure 20*) and the multinomial logistic regression test determined that, compared with "No":

- Pampas del Yacuma was the area with the most "Don't know" (*p-value* < 0,01) and "Yes" (*p-value* = 0,011) answers, which means it had the least "No" answers out of all regions;
- Next to Pampas del Yacuma, Manuripi had a significantly high ratio of "Yes" answers (*p-value* = 0,027);
- The model predicts Tacana II to be the region with the least "Yes" answer with a non-significant *p-value* of 0,056.

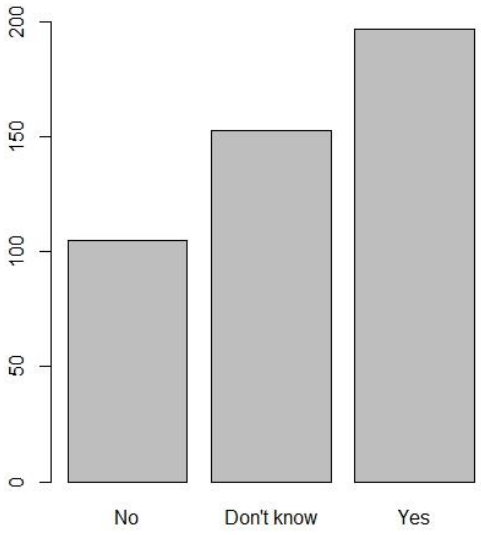

Figure 19 – Total number of participants that reported the jaguar as important to ecosystems (Yes), unimportant (No) and that don't know.

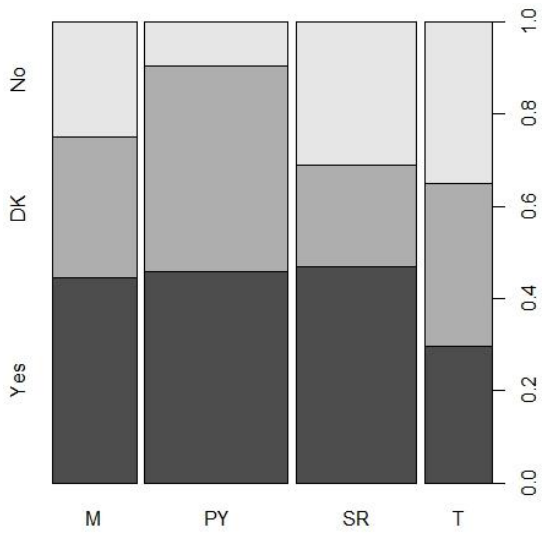

Figure 20 – Proportion (percentage) of participants that reported the jaguar as important to ecosystems (Yes), unimportant (No) and that don't know (DK), according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Would you be happier if there were more jaguars in your region?

Overall, 25,3% of participants believed or perceived that they would be happier if the number of jaguars increased, and 33,7% did not know (n = 459), with significant differences between answers ($\chi 2$ = 89,57; *p-value* < 0,01) (*Figure 21*). Comparing among areas, 12% (n = 92) of respondents in Manuripi, 29,7% (n = 158) in Pampas del Yacuma, 22,6% (n = 133) in Santa Rosa and 3,9% (n = 76) in Tacana II reported positive feelings in having more jaguars live in their region. Another 38% in Manuripi, 30,4% in Pampas del Yacuma, 23,3% in Santa Rosa and 9,2% in Tacana II reported that they did not know. There were significant differences in responses among areas ($\chi 2$ = 56,93; *p-value* < 0,01) (*Figure 22*) and the multinomial logistic regression test determined that, compared with "No":

- Tacana II was the area with less "Don't know" (*p-value* < 0,01) and "Yes" (*p-value* = 0,015) answers, which means that most people would not feel happy if jaguar populations increased;
- Pampas del Yacuma was the area that reported more "Yes" (*p-value* < 0,01) answers;
- Manuripi had the second lowest ratio of "Yes" (*p-value* < 0,01) answers.

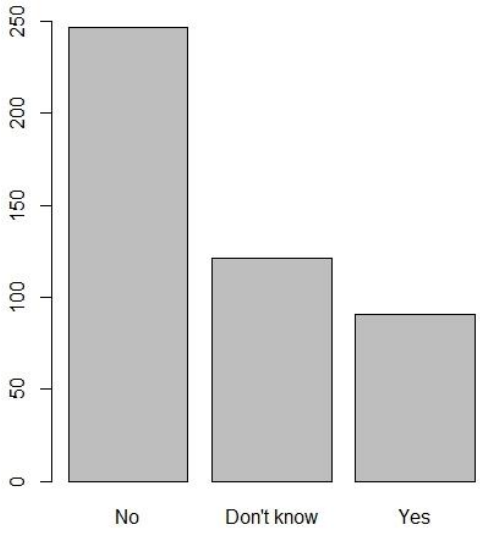

Figure 21 – Total number of participants that would be happier if jaguar numbers increased (Yes), wouldn't be happy (No) and that don't know.

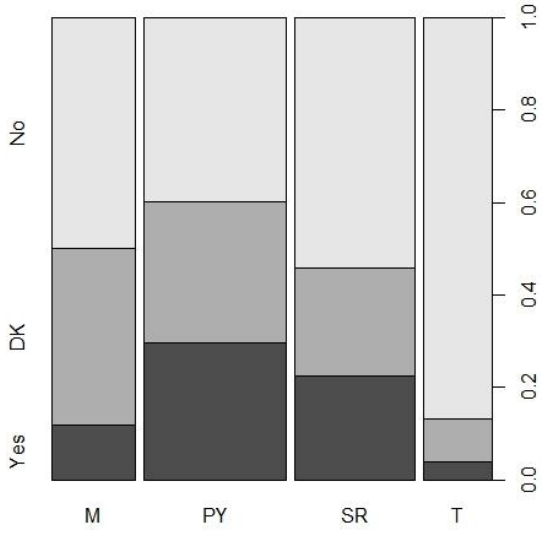

Figure 22 – Proportion (percentage) of participants that would be happier if jaguar numbers increased (Yes), wouldn't be happy (No) and that don't know. (DK), according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Do you know anyone that was attacked by a jaguar?

Overall, 19,6% (n = 460) of participants claimed knowing some one that was attacked by jaguar, with significant differences between answers ($\chi 2$ = 170,43; *p-value* < 0,01) (*Figure 23*). Comparing among areas, 18,7% (n = 91) of respondents in Manuripi, 19,6% (n = 158) in Pampas del Yacuma, 12,6% (n = 135) in Santa Rosa and 32,9% (n = 76) in Tacana II reported knowing someone who was attacked by a jaguar. There were significant differences in answer distribution among areas ($\chi 2$ = 12,8; *p-value* < 0,01) and the logistic regression test (*Figure 24*) determined that, compared to "No":

- Tacana II was the area that reported more people knowing someone that suffered a jaguar attack (*p-value* = 0,037).

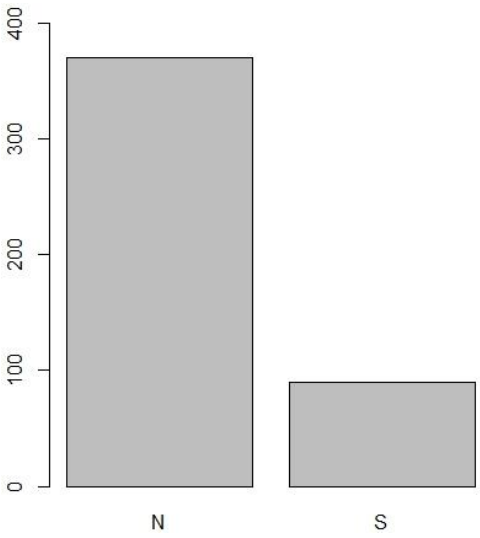

Figure 23 – Total number of participants that knew someone who was attacked by a jaguar (Y), and that didn't (N).

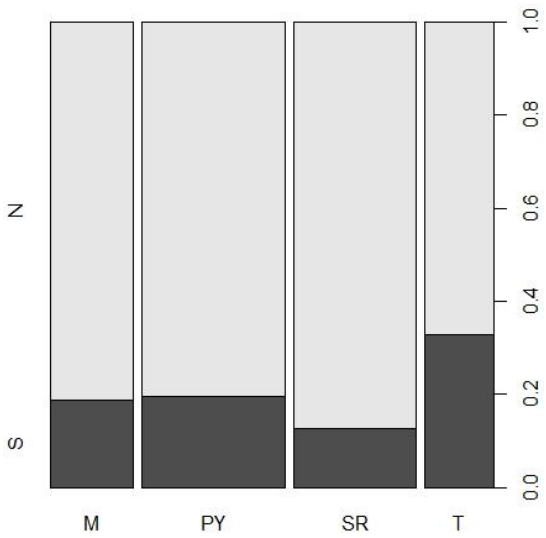

Figure 24 – Proportion (percentage) of participants that knew someone who was attacked by a jaguar (Y), and that didn't (N), according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

Do you know anyone who killed a jaguar?

Overall, 45,6% (n = 454) of participants claimed to know someone who killed a jaguar, with no significant differences between answers ($\chi 2$ = 3,52; *p-value* = 0,06) (*Figure 25*). Comparing among regions, 62% (n = 92) of respondents in Manuripi, 19,1% (n = 152) in Pampas del Yacuma, 48,1% (n = 135) in Santa Rosa and 74,7% (n = 75) in Tacana II reported knowing someone who had killed a jaguar. There were significant differences in answer distribution among areas ($\chi 2$ = 78,92; *p-value* < 0,01) (*Figure 26*), and the logistic regression test determined that, compared to "No":

- Pampas del Yacuma was the area that reported the least "Yes" (*p-value* < 0,01) answers, followed by Santa Rosa (*p-value* < 0,01);
- Manuripi had significantly more "Yes" answers (*p-value* = 0,023);
- Although not significant (*p-value* = 0,082), the model predicts Tacana II to be the area with the highest ratio of "Yes" answers.

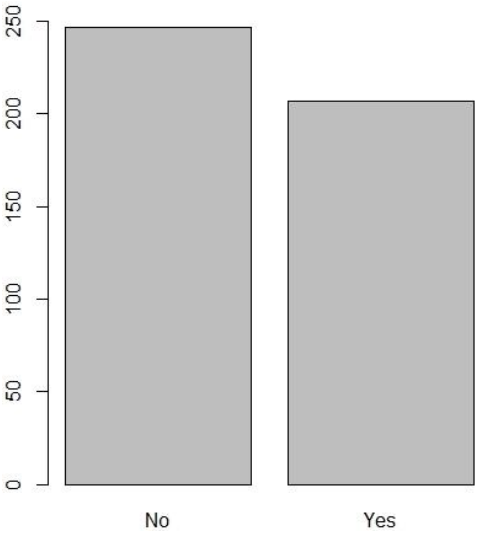

Figure 25 – Total number of participants that knew someone who had killed a jaguar (Yes), and that didn't (No).

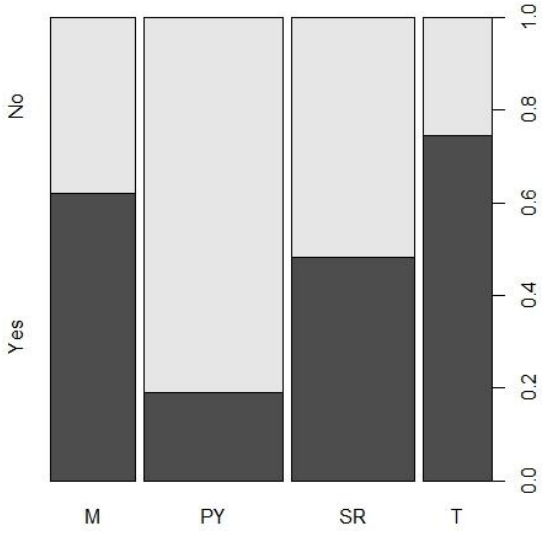

Figure 26 – Proportion (percentage) of participants that knew someone who had killed a jaguar (Yes), and that didn't (No), according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

How would you feel if you encountered a jaguar?

This question was not part of the questionnaire of Pampas del Yacuma, so there were no responses in this area. Overall, 88,9% (n = 287) of participants reported feeling dread or scared in the case of jaguar encounter, with significant differences between answers ($\chi 2$ = 173.27; *p-value* < 0,01) (*Figure 27*). Comparing among areas, 90,6% (n = 85) of respondents in Manuripi, 88,4% (n = 129) in Santa Rosa and 87,7% (n = 73) in Tacana II reported feeling scared if they ever encountered a jaguar, and there were no significant differences in answer distribution among areas ($\chi 2$ = 0,39; *p-value* = 0,82) (*Figure 28*), which means all the areas were similar in mostly reporting fear as an answer.

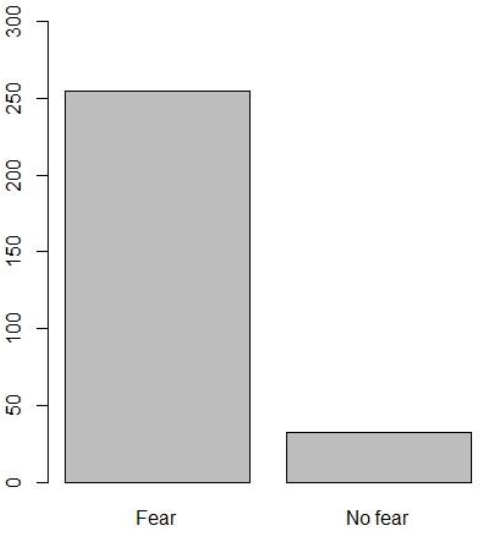

Figure 27 – Total number of participants that reported feeling fear or no fear in case of jaguar encounter.

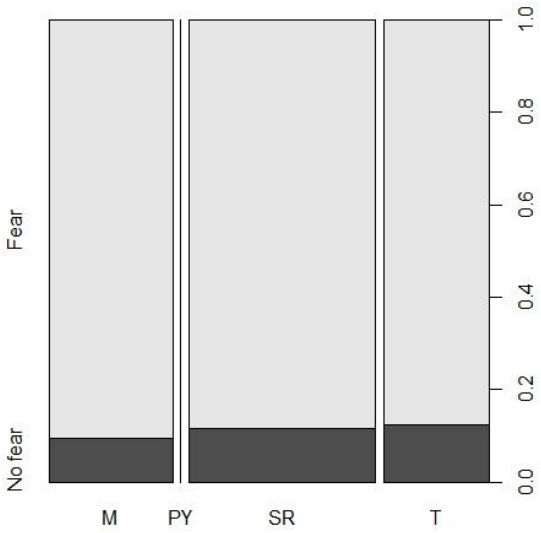

Figure 28 – Proportion (percentage) of participants that reported feeling fear or no fear in case of jaguar encounter, according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

How would you feel if you encountered a jaguar's track?

This question was not part of the questionnaire of Pampas del Yacuma, so there were no responses in this area. Overall, 69,1% (n = 272) of participants reported feeling fear in the case of encountering a jaguar's track, with significant differences between answers ($\chi 2$ = 39.77; *p-value* < 0,01) (*Figure 29*). Comparing among areas, 64,2% (n = 81) of respondents in Manuripi, 75% (n = 120) in Santa Rosa and 64,8% (n = 71) in Tacana II reported feeling fear if they ever encountered a jaguar track, and there were no significant differences in answer distribution among areas ($\chi 2$ = 3,49; *p-value* = 0,17) (*Figure 30*), which means all the areas were similar in mostly reporting fear as an answer.

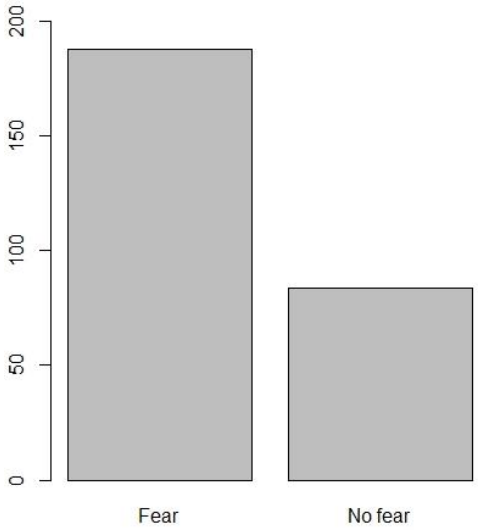

Figure 29 – Total number of participants that reported feeling fear or no fear in case of encountering a jaguar's track.

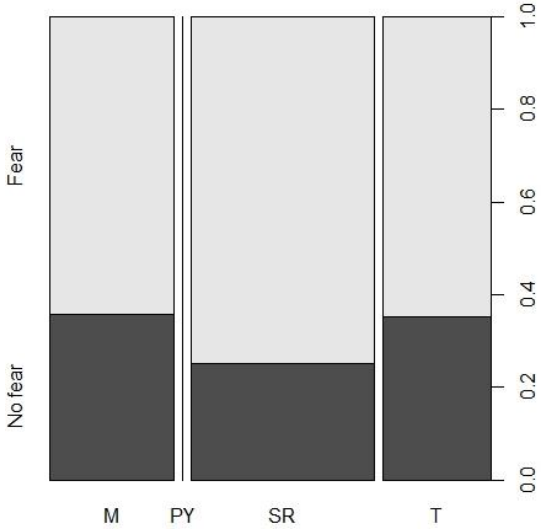

Figure 30 – Proportion (percentage) of participants that reported feeling fear or no fear in case of encountering a jaguar's track, according to area (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

What would you like to happen to jaguar populations in the next 5 years?

This question was not part of the questionnaire of Pampas del Yacuma, so there were no responses in this area. Answers were arranged in a Likert-type scale that ranged from 1 to 5 (“Disappear or decrease a lot” to “Increase a lot”) and, overall, the average was 2,49 (SD = 1,20, n = 264) with significant differences between them ($\chi 2 = 78.58$; *p-value* < 0,01) (*Figure 31*). The means for each area were 2,42 (SD =1,17, n = 89) for Manuripi, 2,57 (SD = 1,26, n = 131) for Santa Rosa and 2,39 (SD = 1,07, n = 44) for Tacana II, and there were no significant differences in answer distribution among areas ($\chi 2 = 10,44$; *p-value* = 0,24) (*Figure 32*). By the mean value of each area, we can infer that the most common answers were for jaguar populations to keep the same numbers it currently has or to decline.

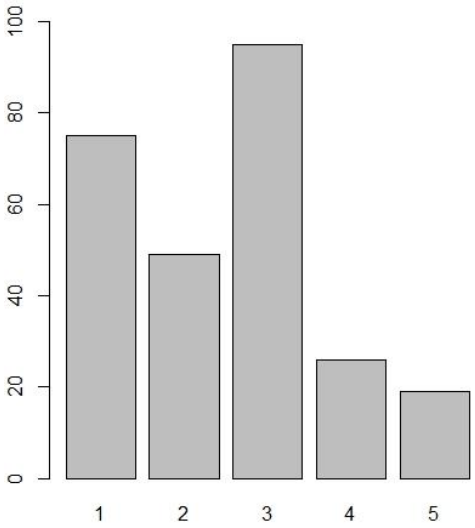

Figure 31 – Total number of participants that described how the want jaguar populations to evolve in 5 years (1 = Disappear or decrease a lot, 2 = Decrease, 3 = Stay the same, 4 = Increase, 5 = Increase a lot).

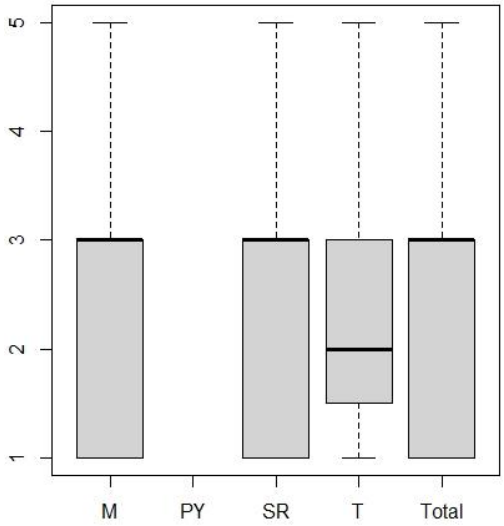

Figure 32 – Boxplot representing how participants want jaguar populations to evolve in 5 years (1 = Disappear or decrease a lot, 2 = Decrease, 3 = Stay the same, 4 = Increase, 5 = Increase a lot) in each area, compared to the total number of participants (M = Manuripi, PY = Pampas del Yacuma, SR = Santa Rosa, T = Tacana II).

H1 - Feelings towards the jaguar are influenced by sex, direct experience (having seen the jaguar before or knowing someone who has killed one) and Risk Perception (opinion on whether jaguars attack people).

The ordinal logistic regression using all the variables determined that knowing people who had killed a jaguar (*p-value* = 0,176) and people who were attacked *p-value* = 0,228) were not significant (AIC = 1268,54), so 3 more models were tested without each of the variable and without both, in order to try and get a better fit. The AIC of the first test was lower than the others, so it was selected (*Table 4*). According to the model (*Table 5*):

- Boys had significantly more positive feelings towards the jaguar (*p-value* < 0,01):
- People that reported having seen a jaguar in the past, although not significant, tended to report more positive feelings (*p-value* = 0,06);
- People that believed that jaguars attack people significantly reported more positive feelings towards them (*p-value* = 0,05).
- As stated above, knowing someone who had killed a jaguar or that was attacked had no significant effect on how respondents feel about the animal.

H2 - Boys are more likely to see jaguars, compared to girls.

The logistic regression determined that (*Table 6*):

- Boys significantly see more jaguars than girls (*p-value* = 0,01, *Figure 33*).

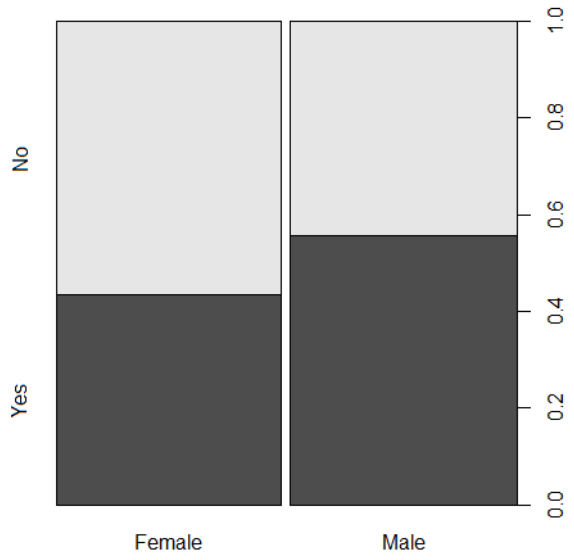

Figure 33 – Proportion (percentage) of participants that reported having seen a jaguar, according to sex.

H3 - People that have seen jaguars before are more likely to use positive adjectives to describe it.

The multinomial logistic regression determined that (*Table 7*):

- Respondents who had seen a jaguar before tended to use more neutral adjectives, but this interaction was not significant by a very small difference (*p-value* = 0,05, *Figure 34*);
- Respondents that never saw a jaguar before significantly used less neutral and positive adjectives (both *p-values* < 0,01) or, in other words, used more negative adjectives.

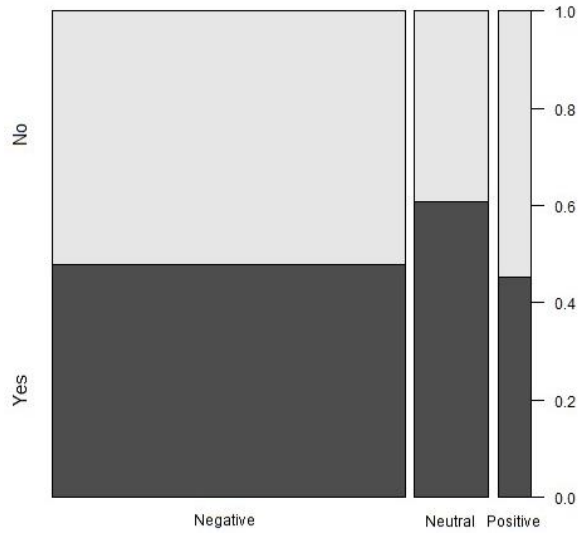

Figure 34 – Proportion of adjective types used by respondents according to whether they have seen a jaguar or not.

H4 - Knowing people that were attacked by a jaguar influences opinion on if jaguars attack people.

The multinomial logistic regression determined that (*Table 8*):

- Respondents that did not know people that was attacked by a jaguar significantly picked less "Don't know" (*p-value* < 0,01) and "Yes" (*p-value* = 0,03).

H5 - Beliefs regarding the ecological importance of jaguars are influenced by feelings or previous encounters/sightings.

The multinomial logistic regression using all the variables determined that having seen a jaguar was not significant (AIC = 948,25, *p-value* = 0,22)), so a second model was tested without this variable, in order to try and get a better fit. The AIC of this second test was slightly higher (AIC = 948,33) than the first one, so it was discarded (*Table 9*). According to the selected model (*Table 10*):

- Respondents that held positive feelings (answered "Like" and "Like a lot") significantly believed that the jaguar is important to the ecosystems (both *p-values* < 0,01) (*Figure 35*).

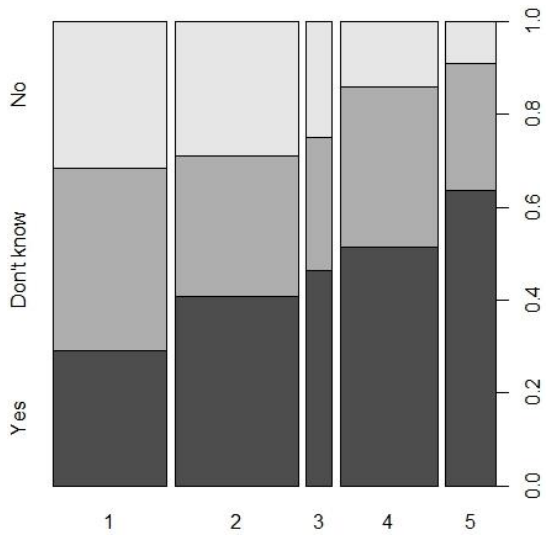

Figure 35 – Proportion (percentage) of participants that reported the jaguar as important to ecosystems (Yes), unimportant (No) and that don't know, according to feelings towards the species (1 = Don't like it at all, 2 = Don't like it, 3 = Indifferent, 4 = Like it, 5 = Like it a lot).

H6 - People that believe jaguars are important for the ecosystems also want its numbers to increase in 5 years' time.

The multinomial logistic regression using all the variables determined that (*Figure 36*, *Table 11*):

- Respondents that believe that the jaguar has ecological importance significantly wanted its populations to increase, increase a lot or stay the same (all with *p-value* < 0,01);
- Respondents that did not know about the jaguar's ecological importance significantly wanted its populations to stay the same (*p-value* = 0,01);
- Respondents that wanted jaguar populations to disappear or decrease a lot significantly selected less "Don't know" (*p-value* < 0,01) and "Yes" (*p-value* = 0,04) answers regarding its ecological importance.

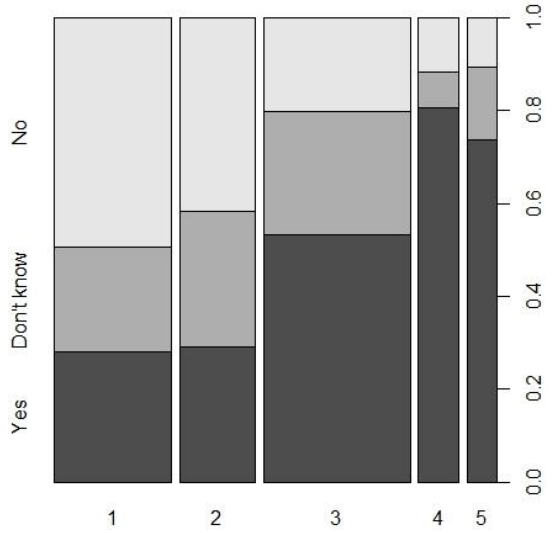

Figure 36 – Proportion (percentage) of participants that reported the jaguar as important to ecosystems (Yes), unimportant (No) and that don't know, according to how the want jaguar populations to evolve in 5 years (1 = Disappear or decrease a lot, 2 = Decrease, 3 = Stay the same, 4 = Increase, 5 = Increase a lot).

H7 - There are differences in jaguar identification between sexes, ages, school grades and people that have seen a jaguar before.

The ordinal logistic regression using all the variables determined that (*Table 12*):

- Sex (*p-value* = 0,84), age (*p-value* = 0,79), school grade (*p-value* = 0,74) and jaguar sightings (*p-value* = 0,40) were not significant in determining differences in jaguar identifications (AIC = 159,13).

DISCUSSION

Comparison across areas

The overall results show a clear consistency on negative feelings and perceptions towards the jaguar in children and young people throughout almost all studied areas, though there are some differences. 92% of participants (at least 89,5% in each area) correctly identified the jaguar in pictures, meaning that it may be a reference species or prevalent animal in the communities' culture, even if for negative reasons. Negative feelings towards these animals were also prevalent in all areas except for Pampas del Yacuma, where the mean value of answers indicates more neutral and positive sentiments (*Table 1*). Although predominantly negative as well, the usage of adjectives to describe jaguars had some differences between areas as seen in the mean values. The 3 most used adjectives overall were "Peligroso" (dangerous, 31,09%), "Feroz" (ferocious, 16,31%) and "Malo" (bad, 7,68%), which were all negative. The test models significantly indicated Pampas del Yacuma, once again, as the area with the most usage of neutral and positive feelings and adjectives, opposed by Manuripi in the negative answer spectrum. It is also important to note that when I employ the terms "more negative" and "more positive" I am assuming the context of the scale of answers where a neutral option was available. At least 87,7% of respondents in Manuripi, Santa Rosa and Tacana II predicted feeling fear if they ever encountered a jaguar in the jungle, and at least 64,2% predicted having the same feeling just by encountering a jaguar track. The tests concluded that there were no significant differences among areas regarding these variables. This result is in accordance to the notion of fear being very present and how it may be influential in dictating how overall communities (Cavalcanti, Marchini, et al., 2010; Knox et al., 2019; Marchini et al., 2018) and specific stakeholders (ranchers, farmers, hunters or any other occupation that directly deals with jaguars or their actions (Jędrzejewski et al., 2017; Marchini et al., 2012)) perceive this species and act upon it.

Knox et al. (2019) did a similar study, in the same study areas (except for Pampas del Yacuma) but with adults. Their results pointed out that Tacana II was the area with the most negative feelings towards the jaguar and Manuripi was the opposite, tending to include more positive answers. My results revealed a contrary scenario in children, revealing that Manuripi was the most negative area and Tacana II was one of the most positive area in terms of feeling expression. This may be explained by the disparity in experiences and knowledge regarding the jaguar between adults and youngsters, as well as the access to information that both possessed, both from cultural and social sources like stories and myths from the community, values transmitted from parents or information provided in schools (Dickman, 2010). Engel et al. (2017) supported this claim, stating that younger people tended to be less informed about big cats, compared with adults.

Even though Tacana II was not the most negative area regarding the "feelings" variable, several other results showed that it is the least tolerant to jaguars. Out of all areas, it was the one to report more jaguar sightings (68,9% of respondents) and known people that killed a jaguar (74,4% of respondents) or were attacked by it (32,9% of respondents). All these variables were significant in tests except for the second one, with a result tendency that would need to be validated with further research. Tacana II was also the second area with the highest proportion of respondents who believed that jaguars attack people (34,2% of respondents) and the only one where more people answered that jaguars are not important to ecosystems (35,2%) compared to those who think they are (29,7%). All other areas had a higher percentage of people that believed this species has an ecological importance. Concerning jaguar populations, Tacana II significantly reported the highest percentage of respondents that claimed they would not be happy if jaguar numbers increased in their region (86,9%). Overall, this was the area with the least tolerance towards jaguar, supporting and complementing Knox et al.'s (2019) results in adults. One interesting point to observe is how in both studies Tacana II significantly reported more jaguar killings than others, which adds strength and fidelity to this variable's information in the conflict context of this area. Knox et al. (2019) also addressed the influence of social acceptance of jaguar killing in the communities of this area. Negative perceptions may be heightened in this area because of socioeconomic factors. Native communities presiding over the territory prioritize the gathering of natural resources like the Brazilian nut (WCS Bolivia, 2017b) to develop local economies and to guarantee their family's main source of income. The negative perceptions of jaguars, allied to random encounters in the jungle, may be seen as a direct obstacle to the safety and success of their labour, and induce defensive reactions that may result in the death of the animal (Marchini et al., 2012). This seems to be supported by the areas'

tendency to think that the jaguar is not important to the ecosystems, hence it's easier to kill without much remorse. In fact, as stated above, significantly more respondents in this study expressed more favour in the decrease of jaguar population numbers in Tacana II, so they may not be particularly invested in the conservation of this species.

Retaliation killings as responses to jaguar attacks on domestic animals (or people) is also a factor to be taken into consideration for areas where this activity exists (Jędrzejewski et al., 2017; Marchini et al., 2012; Peña-Mondragón et al., 2017; Villalva et al., 2019; Zimmermann et al., 2005), since it is still a considerable income source and a significant trigger for conflict with humans (Cavalcanti & Gese, 2010; Cavalcanti, Marchini, et al., 2010; Marchini et al., 2012; Zimmermann et al., 2005). Negative losses on a family's source of income derived by jaguar attacks may also affect a children's perception, since these issues are openly discussed and it may affect their quality of life (Mascote et al., 2016; Peña-Mondragón et al., 2017). Thus, negative feelings and perceptions about the jaguar may be transferred from adults (who have higher chances of directly dealing with jaguars or jaguar-caused problems) to their children. A direct comparison of adults versus children across all 4 areas is needed.

Manuripi and Santa Rosa were very similar in answer proportion, displaying a few slight differences. Feelings were mostly neutral or negative in both areas. Manuripi had more negative variable scores and was also the area with significantly more negative adjectives used to describe the jaguar. In both areas, more than 60% of respondents believed that jaguars do not attack people and the percentage of people that believed jaguars to be important to the ecosystems is higher than those who don't (results were only significant for Manuripi). Santa Rosa differed for significantly being the region with less jaguar sightings and the second one to report less people that killed an animal between the four. This may indicate that the communities living in this area may not have as much contact with jaguars and, therefore, their opinions on it and perceptions are not as polarized as other territories. Results for these two areas were in line with Knox et al. (2019) for adults, which once again suggested the influence of social environment in the formation of perceptions of younger generations.

The additional study area of Pampas del Yacuma was surprisingly positive when compared to the other three. This was the only area to obtain a positive mean of feelings towards the jaguar (3,05 (SD = 1,35)), with the most percentage of correct animal identifications (93,2%), significantly positive beliefs of it being important to the ecosystems (45,9%) and significantly less people known for killing one (19,1%). It was also the area to significantly reported more positive feelings in the increase of jaguar populations (29,9% of respondents). The most contradicting variable in this area was whether it is common for jaguars to attack people, in which 51,3% of respondents answered yes, even though only 19,1% knew someone that had suffered an attack. One of the main sources of income in Pampas del Yacuma, unlike the other areas, revolves around the ecotourism that profits from the outstanding biodiversity and unique ecosystems. One of the most popular attractions is two to three day tours around the Yacuma river for observation of faunal diversity that is unique to the region (Arze et al., 2017). This high ratio of beliefs about jaguar attacks may be explained by random encounters during these trips and subsequential display of defensive behaviour that might be misinterpreted as an attacking scenario. It would be interesting to study the frequency of jaguar sightings by tourists that attend these tours and the description of those events to ascertain this possibility. Another explanation may be the higher access to ecological knowledge of youngsters living in the region and the fact that biodiversity directly affects their family's livelihoods. Therefore, even though they perceive the jaguar as a potential life risk to humans, it is regarded as an important species that is necessary for maintaining the healthy ecosystems that sustain their family and community. It would also be interesting to see if other conflicting species in this region produce similar results, to try and explain this high rate of responses regarding jaguar attack risk versus the perceptions of their importance.

Factors that affect perceptions

Data analysis produced some interesting results to help understand how distinct social groups in different areas may influence jaguar perceptions and may be indicators on how to better structure future solutions. Those who had seen a jaguar clearly tended to report more positive feelings. The *p-value* was not significant, but it was extremely close (0,059), and further research would validate this result. Adding to this assumption, boys significantly saw more jaguars than girls and also held more positive feelings towards the jaguar. Typically, in these communities, boys have tasks that require them to spend more time in the jungle than female counterparts, which also means that they are more likely to have direct contact with wildlife and, in this case, jaguars. These results also indicated a possible disparity between expectations about jaguars (mostly negative, as the results and previously studies have pointed towards (Marchini et al., 2012; Morcatty et al., 2020; Peña-Mondragón et al., 2017; Zimmermann et al., 2005)) versus how the species actually behaves in an encounter scenario. In support to hypothesis 3, respondents who had seen jaguars before clearly tend to use more neutral adjectives to describe the jaguar ("Veloz" (fast), "Fuerte" (strong), "Grande" (big), "Conocido" (well known), etc.), and those that had never seen a jaguar significantly used less neutral and positive adjectives. All these results clearly corroborate the hypotheses 1 and 5, that positive experiences resulting from encounters with the jaguar can significantly improve youngsters' perceptions about it. In addition, people that did not know anyone that had been attacked by a jaguar significantly believed that this species doesn't commonly attack humans. These conclusions are in accordance with other studies that showed experiences with jaguar to people, or people in the same community, directly influenced the shaping of their perceptions and feelings. Finally, respondents who believed that jaguars attack people significantly reported more positive feelings towards them, which supported hypothesis 1. Although it may be contradictory at first, this result probably reflects the variable interaction in Pampas del Yacuma, as discussed above.

Hypothesis 7 revealed that sex, age and school grade were not significant in jaguar identifications, which reinforces the idea of it being an emblematic species that is well known in the communities.

Respondents that reported more positive feelings significantly believed that the jaguar is an important part of the ecosystems it lives in, confirming the notion that improving perceptions and feelings regarding this species is an important step in making natives more invested in its conservation and more aware of its current threats and ecology. Adding to this assumption, respondents that thought jaguars are important for the ecosystems significantly wanted their numbers to increase or stay the same (*Figure 34*).

Main conclusions and future of research in conflict with jaguar

Some crucial points can be inferred from the results of this study, regarding several aspects of the complex conflict issue with jaguars in Bolivia. . My results show significantly more people claiming to have had seen a jaguar and killings in the area of Tacana II, which may possibly hint for a higher number of individuals in this territory, or may simply be explained by people spending more time in the forest during their daily occupations and thus having more possibilities of interaction with wildlife. Following the same logic, Santa Rosa had less sightings reported, and low experience with jaguar encounters due to low numbers would explain why variables in this territory were not as significant and feelings were not as polarized as other areas. However, these are only assumptions, as there is a lack of reliable quantitative data of jaguar populations (see e.g., contrasting results from Antonio De La Torre et al. (2018) and Jędrzejewski et al. (2018)), it is imperative to ascertain the current size and distribution of this species. These studies are fundamental, in order to identify areas where jaguar populations are more at risk or in a more critical decline and conflict situation so that conservation actions can be adequately designed, prioritized and properly addressed. It is clear that in Tacana II, for example, would be considered a priority for conservation efforts, given the high conflict scenario depicted in this study and by Knox et al. (2019).

Another crucial aspect to consider is the significant difference in perceptions and feelings towards jaguars between Pampas del Yacuma and the other areas. It can be transcribed as the difference between an area where ecotourism is an important source of income and areas where natural resource gathering and domestic animal husbandry are the main economic revenues. The first case is a representation of a potentially more peaceful coexistence solution and community development that profits on Nature conservation, even though there are still some management and structural

problems to sort out regarding work and ecological ethics (Arze et al., 2017). In this context, a jaguar encounter can be regarded as a positive experience that generates income, unlike the case of other areas where contact with this species happens in association to cattle attacks and situations that may induce fear while gathering Brazilian nuts or açai for example. My results showed a clear tendency of positive feelings being associated with jaguar sightings and contact with this species, and a possible solution to conflict may be to precisely provide safe and positive contact experiences between animals and communities. Introducing ecotourism in protective territories is a great opportunity to generate more income and awareness to local ecosystems and communities, while increasing local knowledge about the surrounding ecosystems and raising awareness for wildlife decline. The impact of ecotourism in jaguar populations has been regarded as positive in the Brazilian Pantanal, which has the potential to be a great example of wildlife tourism development and peaceful coexistence (Tortato et al., 2017). Thus, making wildlife an integrant part of the life of local people may potentially help in involving them in conservational efforts and Nature valorisation, since it would directly translate into a greater success of their economic status. It would also help in increasing the connection between scientists and native communities, who would work side by side to correctly and sustainably apply these ideas and allow for a smoother exchange of knowledge and data concerning the jaguar and other species.

Profiting from healthy ecosystems and wildlife could also help in controlling the jaguar parts trafficking, which Nuñez et al. (2017) suggests to be a major threat to the species, by creating conditions where animals would be worth more alive than dead and sold. This scenario could possibly create a shift in values and promote community values of jaguar and forest protection, which my tests corroborate by indicating that positive feelings significantly increase positive opinions regarding the ecological importance of this species.

It is also important to note that these results are representing children and young people, whose values and perceptions are influenced by their community and family's (Mascote et al., 2016) and can, also, influence the adults' point of view (Marchini et al., 2020). This is the age group in which information is most easily assimilated and ecological education is transmitted most effectively, directly affecting their affinity for conservation causes (Grúňová et al., 2017). Since children will eventually take over their predecessors' roles in their communities, educating them about the surrounding ecosystems and wildlife can play a major part in changing the fear-ruled perception paradigm that is observable today, which would make natives more receptive to be an active part of the conservation of their territories' ecosystems.

To summarize my conclusions, it would be interesting to further research if lower levels of tolerance directly impact jaguar population abundance, so critical areas for conservation could be identified and dealt with accordingly. Also, implementing models of ecotourism and ecological education in all these protected regions could potentially produce positive effects in improving jaguar perceptions, aiding in its conservation, stopping jaguar parts trafficking and promoting a peaceful coexistence between the animals and natives. I recommend that small scale pilot actions are performed in conflicting regions so that these suggestions' viability can be established and studied.

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APPENDIX

Table 3 – List of all the adjectives used by respondents to describe the jaguar, their classification and percentage of use (n = 521)

Adjective (Spanish)	Adjective (English)	Classification	%
Peligroso	Dangerous	Negative	31,09
Feroz	Ferocious	Negative	16,31
Malo	Bad	Negative	7,68
Veloz	Fast	Neutral	6,72
Rapido	Fast	Neutral	4,99
Carnivoro	Carnivore	Negative	4,80
Agil	Agile	Neutral	3,07
Bonito	Beautiful	Positive	2,50
Fuerte	Strong	Neutral	2,11
Bravo	Wild	Negative	1,73
Salvaje	Wild	Negative	1,73
Hermoso	Pleasant	Positive	1,54
Agresivo	Aggressive	Negative	0,96
Depredador	Predator	Negative	0,77
Astuto	Astute	Positive	0,77
Grande	Big	Neutral	0,77
Cazador	Hunter	Negative	0,77
Aterrador	Terrifying	Negative	0,58
Gordo	Fat	Negative	0,58
Terrible	Terrible	Negative	0,58
Temido	Feared	Negative	0,58
Prejudicial	Harmful	Negative	0,38
Lindo	Beautiful	Positive	0,38
Llamativo	Appealing	Positive	0,38
Inteligente	Intelligent	Positive	0,38
Ligero	Stealthy	Neutral	0,38
Bueno	Good	Positive	0,38
Temeroso	Fearful	Negative	0,38
Feo	Ugly	Negative	0,38
Comilon	Gluton	Neutral	0,38
Hambriento	Hungry	Neutral	0,38
Traicionero	Treacherous	Negative	0,38
Aburrido	Boring	Negative	0,19
Apestoso	Smelly	Negative	0,19
Assustador	Scary	Negative	0,19

Atento	Focused	Neutral	0,19
Belo	Beautiful	Positive	0,19
Cariñoso	Gentle	Positive	0,19
Conocido	Well known	Neutral	0,19
Dominante	Dominant	Neutral	0,19
Gracioso	Gracious	Positive	0,19
Horroroso	Horrible	Negative	0,19
Asesino	Killer	Negative	0,19
Elegante	Elegant	Positive	0,19
Espantoso	Amazing	Positive	0,19
Furioso	Furious	Negative	0,19
Increible	Incredible	Positive	0,19
Inocente	Inocent	Positive	0,19
Magnifico	Magnificent	Positive	0,19
Acechador	Stalker	Negative	0,19
Pendejo	Stupid	Negative	0,19
Camuflado	Stealthy	Neutral	0,19
Temible	Terrible	Negative	0,19
Traidor	Traitor	Negative	0,19
Musculoso	Brawny	Neutral	0,19
Jogueton	Playful	Positive	0,19
Flexible	Flexible	Neutral	0,19
Visto	Seen	Neutral	0,19
Voraz	Voracious	Negative	0,19

Table 4 – List of the tested models for the first hypothesis ("H1 - Are feelings towards the jaguar influenced by sex, having seen the jaguar before, opinion on whether jaguars attack people or knowing someone who has killed or attacked by one?"). Selected model (lowest AIC) is highlighted in gray.

Model	AIC
Feel ~ Sex + Seen + Attack + Know + Death	1268.54
Feel ~ Sex + Seen + Attack + Know	1286.70
Feel ~ Sex + Seen + Attack + Death	1275.96
Feel ~ Sex + Seen + Attack	1294.03

Table 5 – Results table of the ordinal logistic regression test for the first hypothesis ("H1 - Are feelings towards the jaguar influenced by sex, having seen the jaguar before, opinion on whether jaguars attack people or knowing someone who has killed or attacked by one?").

Variable	Estimate	Std. Error	*t value*	*p value*
Sex:Male	0.9030347	0.1786552	5.054624	0.00
Seen:Yes	0.3558330	0.1884488	1.888221	0.059
Attack:Don't know	0.3068465	0.2194271	1.398399	0.162
Attack:Yes	0.4092745	0.2068806	1.978312	0.048
Know:Yes	0.2766107	0.2290149	1.207829	0.228
Death:Yes	-0.2558667	0.1886914	-1.356006	0.176

Table 6 – Results table of the logistic regression test for the second hypothesis ("H2 - Are boys more likely to see jaguars, compared to girls?").

Variable	Estimate	Std. Error	*z value*	*p value*
Intercept	-0.2647	0.1336	-1.981	0.048
Gender:Male	0.4918	0.1883	2.611	0.090

Table 7 – Results table of the multinomial logistic regression test for the third hypothesis ("H3 - Are people that have seen jaguars before more likely to use positive adjectives to describe it?"). The table was elaborated through the "Stargazer" package in RStudio. The first value for each variable represents the "Estimate" and the number below represents each variable interaction's corresponding *p-value*.

	Dependent variable (Adjective)	
	Neutral	Positive
Seen:Yes	0.528	- 0.108
	p = 0,051	*p* = 0.775
Constant	- 1.840	- 2.303
	p = 0.00	*p* = 0.00

Table 8 – Results table of the multinomial logistic regression test for the fourth hypothesis ("H4 - Knowing people that were attacked by a jaguar influences opinion on if jaguars attack people?"). The table was elaborated through the "Stargazer" package in RStudio. The first value for each variable represents the "Estimate" and the number below represents each variable interaction's corresponding *p-value*.

	Dependent variable (Attack)	
	Don't know	Yes
Know:Yes	0.198	0.212
	p = 0,500	*p* = 0.448
Constant	- 0.436	- 0.274
	p = 0.001	*p* = 0.028

Table 9 – List of the tested models for the fifth hypothesis ("H5 - Are opinions regarding the ecological importance of jaguars influenced by feelings or having seen the animal before?"). Selected model (lowest AIC) is highlighted in gray.

Model	AIC
Important ~ Feelings + Seen	948.25
Important ~ Feelings	948.33

Table 10 – Results table of the multinomial logistic regression test for the fifth hypothesis ("H5 - Are opinions regarding the ecological importance of jaguars influenced by feelings or having seen the animal before?"). The table was elaborated through the "Stargazer" package in RStudio. The first value for each variable represents the "Estimate" and the number below represents each variable interaction's corresponding *p-value*.

	Dependent variable (Important)	
	Don't know	Yes
Feelings:Don't like	- 0.192	0.436
	p = 0.537	*p* = 0.166
Feelings:Indiferent	- 0.045	0.788
	p = 0.937	*p* = 0.135
Feelings:Like	0.715	1.456
	p = 0.058	*p* = 0.0002
Feelings:Like a lot	0.903	2.094
	p = 0.108	*p* = 0.0001
Seen:Yes	- 0.259	- 0.313
	p = 0.322	*p* = 0.221
Constant	0.350	0.037
	p = 0.159	*p* = 0.889

Table 11 – Results table of the multinomial logistic regression test for the sixth hypothesis ("H6 - Do people that think jaguars are important for the ecosystems also want its numbers to increase in 5 years time?"). The table was elaborated through the "Stargazer" package in RStudio. The first value for each variable represents the "Estimate" and the number below represents each variable interaction's corresponding *p-value*.

	Dependent variable (Important)	
	Don't know	Yes
5Years:Decrease	0.421	0.210
	p = 0.356	*p* = 0.636
5Years:Same	1.052	1.534
	p = 0.013	*p* = 0.0001
5Years:Increase	0.372	2.512
	p = 0.698	*p* = 0.0002
5Years:Increase a lot	1.183	2.512
	p = 0.218	*p* = 0.0002
Constant	- 0.778	- 0.566
	p = 0.008	*p* = 0.039

Table 12 – Results table of the logistic regression test for the seventh hypothesis ("H7 - Are there differences in jaguar identification between sexes, ages, school grades and people that have seen a jaguar before?").

Variable	**Estimate**	**Std. Error**	***t value***	***p value***
(Intercept)	3.04005	2.45463	1.238	0.216
Sex:Male	0.09587	0.47113	0.203	0.839
Age	-0.05176	0.19475	-0.266	0.790
School	0.06965	0.21259	0.328	0.743
Seen:Yes	0.40280	0.47828	0.842	0.400

Annex 1

CUESTIONÁRIO - CONOCER LA FAUNA SILVESTRE REF#_____

Este cuestionario tiene como objetivo conocer un poco mejor la fauna que vive en la región, y la relación del as personas con la fauna. Este cuestionario es voluntario. Si en algún momento no quiere contestar usted es libre de hacerlo, pero le agradecemos que conteste a todas las preguntas.

1.Fecha:_____/_____/_____2.Comunidad:_____

3. Nombre:_____**4.**Género: Mujer/Varón **5.** Edad:_____

5. Nombre del Padre/Madre:_____

5. Nivel Escolar:

6. Centro Castañero:_____

HABLEMOS AHORA DE ANIMALES SILVESTRES….

7-Cita 3 animales silvestres que conoces que viven en tu centro castañero

1-_____

2-_____

3-_____

8. ¿Cuál de ellos te gusta más?_____

9. ¿Cuál de ellos te gusta menos?_____

10. Has tenido algún animal silvestre como mascota? No ( ) Sí ( ) ¿Cuáles?

11. ¿Comes carne de animal silvestre regularmente?

Nunca( ) Una vez por semana por lo menos( ) Algunas veces por mes( )

Algunas veces por año ( )

Mas en la época de la safra_____ o fuera de la safra_____. Porque?

12. ¿Qué especies de animales silvestres ya has comido?

13. ¿Qué especie de animal silvestre has comido por última vez y cuándo?

14. Como se llama este animal?

15. ¿Alguna vez has visto este animal? No ( ) SÍ ( ) Cuenta como fue:

16. Conoces alguna persona que tenga sido atacado por él? No ( ) SÍ ( ) Cuenta como fue:

17- Completa la frase: "De todos los animales el jaguar/tigre es el más_____"
18. Lo que sientes en relación a los jaguares/tigres es mejor descrito como:
no me gustan para nada( ) no me gustan( ) indiferente( ) me gusta( ) me gustan mucho( )
Porque?

19. Es común que los jaguares/tigres que viven cerca de la gente ataquen las personas:
_____No estoy de acuerdo para nada _____No estoy de acuerdo _____Estoy de acuerdo _____Estoy totalmente de acuerdo _____No se

20- Los jaguares/tigres son importantes para el bosque donde viven.
No ( ) Sí ( ) No sé ( ) ¿Por qué?

21. Sería más feliz si hubieran más jaguares/tigres en la región de Tacana II:
No ( ) Sí ( ) No sé ( ) Porque?

22. Qué desearías que ocurriera a las populaciones de tigre que viven en la Tacana II en los próximos 5 años?
( ) disminuyese mucho ( ) disminuyese un poco ( ) se mantuviese
( ) aumentase un poco ( ) aumentase mucho ( ) desapareciera
Porque?

23. Imagine esta situación: Esta castañando o caminando solo en el monte y se encuentra frente a frente con un tigre.
Que sentirías?

24. Imagine esta situación: Esta castañando o caminando solo en el monte y ve una huella fresca de tigre. Que sentirías?

25- Alguna vez una persona tuya conocida ha matado un jaguar? No ( ) Sí ( ) ¿Por qué?

¿Cuándo fue la última vez?

26- Cuales son los beneficios/ventajas de vivir dentro/cerca de la Reserva de Vida Silvestre Amazónica Manuripi ?

27- Cuales son los perjuicios/desventajas de vivir dentro/cerca de la Reserva de Vida Silvestre Amazónica Manuripi ?

28- Evaluando las ventajas y desventajas para usted vivir dentro/cerca de la Reserva de Vida Silvestre Amazónica Manuripi tiene mas? ( ) Ventajas ( ) Desventajas ( ) Igual ( ) No sé
Porque?

29- Cómo describiría lo que siente en relación a la Reserva?
( ) no me gustan para nada ( ) no me gustan ( ) indiferente ( ) me gustan ( ) me gustan mucho

Porque?

30- Lista que especies de animales silvestres consideras peligrosas para las personas y en que circunstancias las mata.

Especie	**Nunca las mato**	**Cuando las veo algunas Veces las mato**	**Cuando las veo muchas veces las mato**	**Cuando las veo siempre las mato**

MUCHAS GRACIAS ☺ ☺