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Human-tapir interaction: a case report of a lowland tapir attack and a global review of such encounters

Luan G. Araujo Goebel[1,*], Marcela Alvares Oliveira[2], Gabriela Rodrigues Longo[3], Mariana Bueno Landis[4,6] and Emília Patrícia Medici[5,6,7]

ABSTRACT

Anthropogenic alterations to ecosystems have resulted in proximity between humans and animals, imposing coexistence challenges. Here, we present a report of a tapir attack on a human in the Brazilian Amazon. In addition, we conducted a global literature review covering tapir-related incidents, compiling data from various parts of the world. Data was collected from testimonies from those involved in the aforementioned incident, without inducing the subjects. The global literature review was carried out by searching Google Scholar, digital communication sites, and YouTube for papers reporting attacks by tapirs on humans. In addition to the report described in this article, we found four reports of tapir attacks on humans around the world. Our study discusses potential explanations for the attacks since tapirs tend to express furtive behavior in risky situations. This study seeks to deepen the knowledge of the dynamics of human-tapir coexistence to improve conservation efforts and strategies aimed at the well-being of ecosystems.

Keywords: Coexistence, Human-Fauna interaction, Ungulate.

1 Laboratório de Ecologia e Zoologia de Vertebrados (LABEV), Instituto de Ciências Biológicas, Universidade Federal do Pará, Pará, Brazil.
2 Programa de Pós-Graduação em Conservação e Uso de Recursos Naturais, Universidade Federal de Rondônia, Porto Velho, RO, 76801-974, Brazil.
3 Instituto de Conservação de Animais Silvestres (ICAS), Campo Grande, MS, Brazil.
4 Instituto Manacá, São Miguel Arcanjo, SP, 18230-000, Brazil.
5 Lowland Tapir Conservation Initiative (LTCI), Instituto de Pesquisas Ecológicas (IPÊ), Nazaré Paulista, SP, 12960-000, Brazil.
6 IUCN SSC Tapir Specialist Group (TSG), Campo Grande, MS, 79046-150, Brazil.
7 Escola Superior de Conservação Ambiental E Sustentabilidade (ESCAS/IPÊ), Nazaré Paulista, SP, 12960-000, Brazil .
* Corresponding author ✉. E-mail address: LGAG (lg.araujogoebel@gmail.com), MAO (marcela.mugrabe@gmail.com), GRL (gabriela.longo28@hotmail.com), MBL (mariana@institutomanaca.org.br), EPM (medici@ipe.org.br)

SIGNIFICANCE STATEMENT

Our manuscript presents a case report of a lowland tapir attack on a human in the Brazilian Amazon, as well as a global literature review of similar incidents. This study is significant because it sheds light on the dynamics of human-tapir coexistence and the potential for conflict in areas where these animals are present. By identifying factors associated with tapir attacks, we hope to inform conservation efforts and strategies aimed at promoting peaceful coexistence between humans and wildlife. This research contributes to the growing body of literature on human-fauna interactions and highlights the need for continued efforts to understand and mitigate conflicts between humans and wild animals.

INTRODUCTION

Biodiversity has suffered from increasing anthropogenic pressures, including habitat fragmentation, loss, and degradation, that cause biological declines in ecosystem services and behavioral changes in animal species (Dirzo et al. 2014). Ecosystem changes, added to agricultural and urban expansion, have increased encounters and interactions between humans and wild animals (Marchini and Crawshaw 2015). These encounters may or may not result in situations of conflict and attacks (Souza et al. 2018; Araneda et al. 2021; Montalvo et al. 2023), which depend on numerous factors, such as local culture, income, and life experience, among others (Lima et al. 2020; Santos et al. 2020; Teixeira et al. 2021; Ballejo et al. 2022).

The vast majority of attacks by wild animals on humans are related to large predators (e.g. Haddad and Fonseca 2011; Neto et al. 2011; Iserson and Francis, 2015). Attacks by herbivores are uncommon, although there are records with elephants (Ram et al. 2022), hippos (van Houdt and Traill 2022), and rhinoceroses (Bhandari et al. 2020). Attacks such as these can lead to persecution and retaliation, due to the threat to human safety and well-being (Estrada 2006; Zimmermann et al. 2010), which poses conservation challenges to maintain the synergy of human-fauna coexistence. Coexistence is defined as a dynamic but sustainable state, in which humans and wildlife adapt to living in shared landscapes (Carter and Linnell 2016). Coexistence is guaranteed by institutions and policies that are effective in ensuring the long-term persistence of wildlife, as well as social legitimacy and tolerable levels of risk (Mekonen 2020), which govern human interactions with wildlife (Carter and Linnell 2016; Mekonen 2020). Thus, potential negative interactions, such as attacks, can be mitigated through public policies and institutional actions in conjunction with civil society.

One of the species involved in attack events is the lowland tapir (*Tapirus terrestris*), with one reported case of human death (Haddad et al. 2005). The tapir is a large animal, that can weigh more than 200 kg and is classified as endangered (Medici et al. 2012). It has an herbivorous diet, consuming a huge variety of fruits, and is considered essential for dispersing seeds, especially large fruits (Vidal et al. 2013; Goebel et al. 2023). As part of its feeding ecology, it is common to find the species in anthropized areas in search of food resources, including crops, which can cause damage and harm to farmers, as well as enable encounters with humans (Flesher and Medici 2022). In this context, a conflictual situation puts both humans and tapirs at risk, especially considering that this is an animal listed as Vulnerable to Extinction (Varela et al. 2019; Brasil 2022). They are described as shy and docile, preferring to flee or take refuge in water in threatening situations, but they can defend themselves with bites, as they have powerful teeth (Haddad et al. 2005; Campos-Arceiz et al. 2012).

This study documents an episode of a tapir attack on a human in the Brazilian Amazon. In addition, we present a global literature review of tapir attacks to determine factors associated with these events: (a) the country of the incident, (b) the living condition of the animal, and (c) the body parts affected. The results of this study have implications for human-fauna coexistence practices.

MATERIAL AND METHODS

The area where the event occurred is located in the municipality of Vilhena, state of Rondônia, Brazil (12° 49.112'S, 60° 17.742'W) (Figure 1). It has a territorial extension of 11,699,150 km^2 and is the 4th most populous city in the state, with 102,211 inhabitants. According to the MapBiomas initiative, 82.88% of the city's area is made up of natural habitats (forests and non-forest natural formations), 16.33% belongs to agriculture, and 0.72% to non-vegetated areas (Projeto Mapbiomas 2023). From a biogeographical perspective, it is in an ecotone area with high biodiversity, on the interface between the Amazon Rainforest and the Cerrado. It has a tropical climate, with dry summers and winters of the Aw type, between June and August, and rainy periods between October and April (Alvares et al. 2014).

To understand the tapir attack event, we collected testimonies from those involved. In addition, we carried out a literature review on tapir attacks on humans using the Google Scholar database. We used keywords in Portuguese, English, and Spanish: ataque OR attack OR anta OR tapir OR humano OR human. All

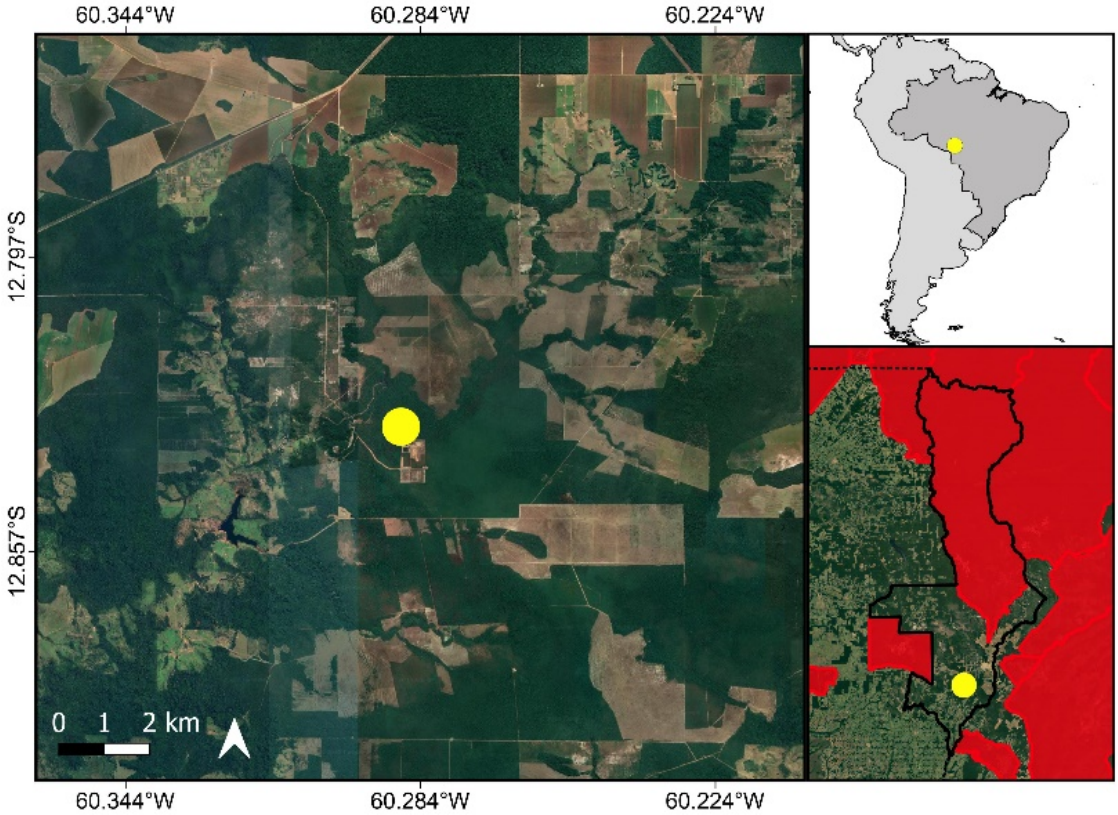

Figure 1. Location of a lowland tapir (*Tapirus terrestris*) attack on a 66-year-old female in the municipality of Vilhena, Rondônia, Brazil. The protected areas near the attack site are indicated in red.

published articles were considered. From the records found, data such as the year of the attack, location, species, parts of the human body attacked, and occurrence of death were recorded. Furthermore, we searched different digital media sites and the YouTube platform for attacks by free-living or captive tapirs on humans in different locations in Brazil. To do this, we used the same keywords and combinations as in the literature search. We included only online media reports that provided specific details about the incident (e.g. location, date, context) and were published by media outlets with identifiable authorship or editorial responsibility. When multiple sources reported the same event, we selected the version from reputable media outlets. All records published until November 2, 2023, were considered.

RESULTS AND DISCUSSION

On July 16, 2023, a case of an attack by a pregnant female tapir (*Tapirus terrestris*) on a 66-year-old woman in a rural area was reported. Information regarding the sex and pregnancy of the animal was reported by the victim's husband but not confirmed. The human victim and her domestic dogs were walking through an area of native vegetation, permeated by a stream. The elderly woman was carrying a machete and was looking for *babaçu* palm leaves (*Attalea* sp.), which would be used to feed her livestock. The woman reports that, while crouching down to remove the palm leaves, she noticed her dogs barking at a distance. However, she was unaware of the reason for the barking, and that, as the dogs barked at the tapir, it was in an alert state. Many negative interactions between domestic and wild animals have already been identified in the literature and are seen as the origin of socio-environmental conflicts (Torres et al. 2018; Santos et al. 2020). Later, the tapir approached the woman, knocking her into the stream that runs through the property, and inflicted several bites, hitting her hand (Figure 2) and arm (which were used as a defense), back, and buttocks. The frightened woman started shouting in an attempt to stop the attack, but this only happened when the victim's husband arrived at the scene and pushed the animal away, shouting and raising his arms. During the attack, the dogs kept barking at the tapir, without attacking it. The victim was taken to a hospital for medical attention, where it was found that her arm had been fractured. Also, vaccinations, such as anti-rabies, were administered to prevent contamination.

Figure 2. Lacerations on the hands caused by an attack by a lowland tapir (*Tapirus terrestris*) on a 66-year-old woman in the municipality of Vilhena, Rondônia, Brazil. Source: Folha do Sul Online.

By searching Google Scholar for recorded cases of tapir attacks, we found 12 results, nine were recorded in Brazil involving *T. terrestris*, one in Ecuador with *T. pinchaque*, one in Honduras with *T. bairdii*, and one in Ireland with *T. terrestris*. Among the cases, 11 were recorded in the wild, while two occurred in captivity. In the majority of cases (n=8), there were lacerations to the arms, probably parts of the body used by humans to defend themselves from blows during attacks (Table 1).

In one of the cases compiled, a death was recorded in the state of São Paulo, Brazil, in a situation where the farmer attacked the animal repeatedly, and the tapir tried to defend itself (Haddad et al. 2005). There are reports of other attacks around the world involving different tapir species, with injuries to various parts of the body being reported. In 2016, an adult tapir attacked the keeper of the Zoo Safari, the Vila Moraes unit in the city of São Paulo, Brazil (Table 1). The keeper suffered a fractured arm and had to undergo surgery. In the case of the attack in Ireland, at the Dublin Zoo, during a supervised visit in which interaction with the animals takes place (Table 1). In the records available on YouTube, all attacks were observed in aquatic environments, with the animal chasing humans and, in one case, attacking dogs. However, tapirs usually show stealthy behavior in risky situations and generally do not attack humans (Haddad et al. 2005).

Tapirs have robust and sharp teeth, specialized for eating and chewing hard seeds (Campos-Arceiz et al. 2012). Also, as it is a large animal, its weight can also contribute to the magnitude of the injuries. Attacks with wild animals can happen for several reasons, but mainly as a defensive response, such as protecting oneself and/or one's cub, as well as health problems like illnesses and injuries (Castellanos and Gomez 2015). It is important to consider the presence of domestic dogs as a factor that can increase the chances of wild animal attacks on humans, since in many areas there is an overlap of habitats (Rosa et al. 2020). The dogs can instinctively approach wild animals, arousing defensive behaviors, as well as resulting in predation and disease transmission (Gatti et al. 2018). In this case, despite their docile and calm behavior, in a defensive or cornered state, tapirs can react aggressively to defend themselves, resulting in direct attacks on dogs and, in rarer cases, on nearby humans, as reported in this study and by Estrada (2006). Attacks involving herbivores such as tapirs, elephants, and hippos are also related to the intensification of fragmentation, the proximity and availability of water resources, and the presence of plantations (Ram et al., 2022; van Houdt and Traill, 2022).

Table 1. Records of tapir attacks on humans. The table indicates the year of the record, country, species of tapir involved, parts of the human body affected by the attack, death record (yes or no), and bibliographical reference. * Human death.

Year	Country	Species	The animal's living conditions	Affected human body parts/behavior	Reference
2005*	Brazil	*Tapirus terrestris*	Wild	Anterior cervical area; left arm; thighs; testicles; and bruises all over the body	Haddad et al. (2005)
2006	Honduras	*Tapirus bairdii*	Wild	Arm	Estrada (2006)
2010	Brazil	*Tapirus terrestris*	Wild	Arm; multiple skin lacerations	Neto et al. (2012)
2012	Brazil	*Tapirus terrestris*	Wild	Persecution	YouTube
2013	Ireland	*Tapirus terrestris*	Captivity	Arm; abdominal laceration	Independent Newspaper
2014	Brazil	*Tapirus terrestris*	Wild	Persecution	YouTube
2015	Equator	*Tapirus pinchaque*	Wild	Head; hands	Castellanos & Gomes (2015)
2016	Brazil	*Tapirus terrestris*	Captivity	Arm fracture	G1 Newspaper
2019	Brazil	*Tapirus terrestris*	Wild	Persecution	YouTube
2020	Brazil	*Tapirus terrestris*	Wild	Arm	G1 Newspaper
2021	Brazil	*Tapirus terrestris*	Wild	Persecution	YouTube
2022	Brazil	*Tapirurs terrestris*	Wild	Persecution	YouTube
2023	Brazil	*Tapirus terrestris*	Wild	Hands, arm, back, and buttocks	Present study

Identifying the factors that cause these incidents is fundamental to developing effective prevention strategies. A relevant aspect to be discussed is the impact that cases like this can have on communities. Actions are needed to raise public awareness about the presence and behavior of tapirs in natural habitats, to reduce the risk of conflicts, and to promote coexistence between humans and wildlife. A study evaluating the perception of animals by residents of a community showed that people may dislike tapirs due to the damage they cause to their crops (Ferraz et al. 2022). In addition, cases of retaliation could occur, which would be detrimental to the conservation of tapirs, that are already suffering from different pressures, such as vehicle collisions on highways, hunting, and habitat alteration (Medici et al. 2012; Oliveira et al. 2023a,b).

In order to help reduce the risk of conflict and provide guidance on how communities can act safely and respectfully in areas shared with wildlife, we have outlined some preventive measures:

- If you spot sick or injured individuals, you should notify local wildlife management agencies, such as the Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (IBAMA) or the Centros de Triagem de Animais Silvestres (CETAS), as these individuals may be at greater risk from negative interactions with humans.

- Human populations should avoid approaching, touching and feeding wild animals to prevent attacks and contamination by diseases associated with these species, as well as the transmission of diseases from humans to tapirs.

- Physical barriers, such as electric fences, can be installed around plantations that are at risk of crop-raiding — one of the main causes of human-tapir conflict. These fences help prevent crop consumption and encounters with wild animals. However, fencing involves high costs for installation and maintenance, making it not always a viable option, especially for small rural producers (Pastor-parajeles and Landis 2024).

- In the cases where wild animals have young individuals alongside, care must be redoubled due to the animals' maternal behavior.

CONCLUSION

Tapir attacks on members of communities living in the vicinity of natural areas highlight the urgent need for an approach that ensures the safe coexistence of humans and wildlife, especially in anthropized landscapes. By understanding the causes of these incidents and implementing prevention strategies, we can work towards a more harmonious and sustainable future, ensuring the survival of endangered species and ecosystems. We therefore see the need for further research that observes the complex dynamics of conflicts between humans and wildlife in Brazil, especially in rural areas, where interaction with wild animals is more intense. Conducting such research could result in data that would assist in developing public policies aimed

at mapping conflicts and environmental education for wildlife management and peaceful coexistence.

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DATA AVAILABILITY

The data used to support the findings of this study are available from the corresponding author upon reasonable request.

CONFLICT OF INTEREST

The authors have no conflicts of interest to declare.

CONTRIBUTION STATEMENT

Conceived of the presented idea: LGAG, MAO.
Carried out the data analysis: LGAG, MAO, GRL.
Wrote the first draft of the manuscript: LGAG, MAO, GRL, MBL, EPM.
Review and final write of the manuscript: LGAG, MAO, GRL, MBL, EPM.

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