SHORT-TERM MEASURES TO AVOID RETALIATORY KILLING OF A TAPIR (*Tapirus bairdii*) DURING A CASE OF HUMAN CONFLICT AT LA AMISTAD BIOSPHERE RESERVE, COSTA RICA

MEDIDAS A CORTO PLAZO PARA EVITAR CACERÍA POR RETALIACIÓN DE UN TAPIR (Tapirus bairdii) DURANTE UN CASO DE CONFLICTO HUMANO-TAPIR EN LA RESERVA DE LA BIÓSFERA LA AMISTAD, COSTA RICA

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Abstract

The increase in human tapir conflict and lack of management options is worrying and has been identified as a research priority in previous conservation planning reviews for the group. Crop-raiding by Baird's tapir was reported on a private farm within the La Amistad Biosphere Reserve, Costa Rica. We conducted an open interview with the owner and baited the tapir out of the damaged area using an artificial salt-lick. The measures taken (quick response, assistance on alternative solutions, and the decision to use of salt-licks) were successful short-term measures to avoid lethal retaliatory control of tapirs.

Key words: crop-raiding, hunting, interview, salt-lick.

Relevancia

Las medidas de mitigación oportunas como, la atención inmediata, la asistencia con soluciones alternativas y el diálogo con los pobladores afectados, pueden ser medidas efectivas para evitar el conflicto con la vida silvestre.

Resumen

El aumento en los conflictos humano-tapir y la falta de opciones de manejo es preocupante, por lo que han sido identificados como una prioridad de investigación en revisiones previas de planeación para la conservación del grupo. En una finca privada ubicada dentro de la Reserva de la Biósfera La Amistad, Costa Rica, se reportó el daño a cultivos de un tapir centroamericano. Se

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realizó una entrevista abierta con el propietario y se atrajo al tapir fuera del área afectada usando un saladero artificial. Las medidas a corto plazo tomadas (respuesta rápida, asistencia en soluciones alternativas y la decisión del uso de saladeros) al parecer fueron exitosas para evitar el control letal retaliativo de tapires.

Palabras clave: asalto de cultivos, cacería, entrevistas, saladeros.

Human-wildlife conflict is escalating as a conservation issue globally, as humans increasingly encroach on remaining wildlife habitat (Woodroffe *et al.*, 2005). The viability of many wildlife populations depends on interactions with humans (Dickman, 2010; Madden, 2004; Treves *et al.*, 2006). Conflict is defined as a negative interaction between people and wildlife over common resources that elicit mixed opinions among different sectors of society (Marchini, 2014). In the Neotropics, studies have been historically focused on conflicts with large carnivores (Aconcha-Abril *et al.*, 2016; González-Maya *et al.*, 2013; Inskip and Zimmermann, 2009; Marchini and Crawshaw, 2015; Michalski *et al.*, 2006). However, conflicts with large herbivores such as tapirs have also been reported (Haddad *et al.*, 2005; Koster, 2006; Reyna and Tanner, 2007; Suárez and Lizcano, 2002; Waters, 2015; Waters *et al.*, 2006), although we still know very little about conflict patterns, factors that promote conflict and potential management actions to reduce or avoid the conflict and the responses. It is likely that habitat fragmentation and poaching can be considered drivers of conflict (Waters *et al.*, 2006; Waters, 2015), although the specific drivers in our study area still need to be properly assessed.

Due to the increase in conflicts between humans and tapirs, the IUCN Tapir Specialist Group (TSG) created the Human-Tapir Conflict (HTC) Working Group (Medici, 2006; Waters *et al.*, 2006). The increase in conflict and lack of management options is worrying and has been identified as a research priority by the TSG. We expect to contribute baseline information by presenting a case of crop-raiding by the Baird´s tapir, *Tapirus bairdii* (Gill, 1865), at La Amistad Biosphere Reserve in Costa Rica. We describe actions implemented in the short term to prevent lethal control of the animal.

Crop-raiding by Baird's tapir occurred on a private farm (8.94775° N, -82.89609° W) at approximately 1,300 masl within the La Amistad Biosphere Reserve, in the buffer area surrounding La Amistad International Park, Costa Rica (Figure 1). This property is approximately 15 ha and produces primarily subsistence crops, as well as some commercial coffee (*Coffea arabica*) and hot pepper (*Capsicum* sp.). The farmland neighbors cattle ranching properties and adjoins the forest matrix of Las Tablas Protected Zone.

On June 14 2016, the owner of the property reported to neighbors and our NGO that an adult tapir had been entering his crops for the last few days. The species identification was confirmed by the presence of tapir tracks. The animal was trampling into his hot pepper crops, with considerable losses according to the owner. On June 15, 2016 we visited the property, followed the tapir's tracks and set up two camera traps (Figure 1). We conducted a twenty-minute open interview with the owner, who expressed his determination to control the tapir's entry to his property by any means. During our interview, other than covering basic questions, we convinced the owner that there were alternative methods to control the tapir's crop-raiding issue without eliminating the animal. He accepted to work with us to find solutions so long as the tapir did not enter his pepper crops again.

Trough informal conversations with two local people, searching on scientific literature and personal observations, we identified three possible explanations for the tapir entering farmlands: 1) crop-raiding is a usual behavior in tapirs (Waters *et al.*, 2006; Waters and Ulloa, 2007); 2) this individual tapir is searching for salt-licks set up for cattle or baited near sites in order to illegally hunt for sport and food (D.A. Gómez-Hoyos pers. obs.), on the assumption that salt-licks are a limited resource (Gómez-Hoyos *et al.*, 2018) and partially explain activity pattern of tapirs (Gómez-Hoyos *et al.*, 2018 ; Holden *et al.*, 2003; Lizcano and Cavelier, 2000), and; 3) tapirs may move between more suitable habitat patches via this farm.

Urged to avoid retaliation to the tapir involved, we decided to bait the tapir out of the damaged area using an artificial salt-lick. On June 16, 2016, we installed a salt-lick, using cattle salt, on a path that we identified the animal was using to

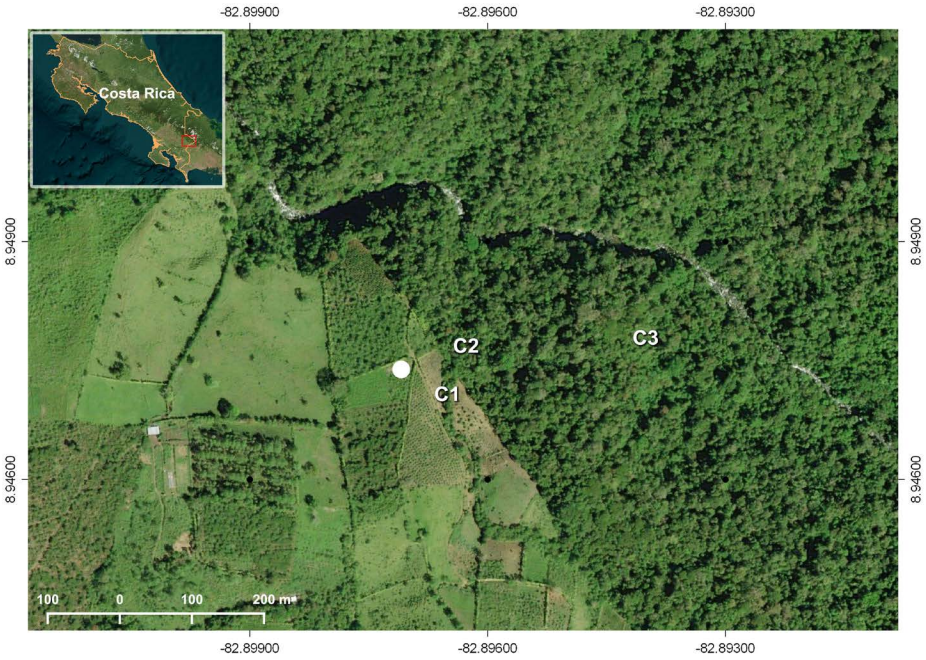

Figure 1. Private farm and forest area at La Amistad Biosphere Reserve, Costa Rica. Hot pepper crop affected area (white dot). C1: camera trap between farm and forest edge; C2: site of first artificial salt-lick set up on June 16, 2016; C3: site of second artificial salt-lick set up on August 29, 2016.

enter the property when coming from the adjoining reserve. The salt-lick consisted on approximately 1 kg of salt dispersed over a fallen tree and was located approximately 36 m in from the forest border where we lost track of the tapir path, at a site not transited by people. For monitoring, we installed one camera trap (Bushnell Trophy Cam ™) at the site, and another at the border between the forest and the crops, where we also found tapir tracks. Baird`s tapir are often individually recognizable based on skin and pelvic waist scars, a method which has been used in other studies in the area (González-Maya *et al*., 2012).

On July 21, 2016, we confirmed that at least two Baird's tapirs were entering the property. Photo-captures evidenced their entrance six times from June 21 to July 15, 2016 (Figure 2A). We determined, by using skin-marks and scars, that these individuals were also arriving at our artificial salt-lick. We cannot determine the exact date when tapirs stopped entering the farmland because the camera trap located on the forest border was stolen after July 22. However, the land owner committed to inform us if the tapir was entering his property but we have not had any more reports from him.

At least two Baird's tapirs, a male and a female visited the salt-lick 15 days regularly between July 2 and 30 (Figure 2B). Following this situation, on August 29 we decided to remove the salt-lick by dispersing a hot pepper (*Capsicum* sp.) water solution in the area. This is a method we considered to eliminate artificial salt-licks to prevent wildlife from becoming easy targets for illegal hunters. This solution was based on tests to repel African elephants (*Loxodonta africana*; Blumenbach, 1797), which are well known crop raiders with large impacts on small communities (Karidozo and Osborn, 2015).

In August, we installed a similar salt-lick, 270 m into the forest (Figure 1), and set up a camera trap in this new location. At least 2 individuals visited this new salt-lick (Figure 2C, 2D). We identified a female that had visited both salt-lick sites. On October 29 we removed the salt-lick and recovered the camera trap.

By November 10, 2016 we have not had any reports of Baird's tapir crop-raiding in neighboring farmlands. We concluded that the measures taken (i.e., quick response, assistance on alternative solutions, and the decision to use of salt-licks) were emergency successful short-

Figure 2. Baird's tapir individuals, *Tapirus bairdii*, entering the private farm-land (**A**), visiting an artificial salt-lick set up on June 16th (**B**), and visiting another artificial salt-lick set up on August 29, 2016 (**C**, **D**).

term measures in this case, to avoid lethal retaliatory hunting of one or more individuals. Our conclusion is based on circumstantial evidence and needs to be carefully considered in other contexts; therefore, we have not empirical evidence to support it and we cannot discard retaliatory tapir killing without the communication between, local people and researchers. This case suggests measures where efficient and effective, in this specific ecological and local context in the buffer area of La Amistad International Park. However, it is necessary to implement and assess a program with short, medium and long-term solutions that deal with HTC and considering biological, social, cultural, economic and political conditions of the region where the conflict is occurring (Dickman, 2010; Madden, 2004; Waters, 2015). Therefore, our next approach to HTC is to design a robust assessment of the efficacy of temporal artificial salt-licks to avoid tapirs' crop-raiding and to prevent further conflict.

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