

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/280621477>

Crop-raiding Baird's Tapir Provoke Diverse Reactions from Subsistence Farmers in Belize

Article · August 2015

DOI: 10.5281/zenodo.22642

CITATIONS

0

READS

97

1 author:



[Sian S Waters](#)

Durham University

25 PUBLICATIONS 70 CITATIONS

SEE PROFILE

Some of the authors of this publication are also working on these related projects:



Using ethnography to develop strategies to conserve the Endangered Barbary macaque in Morocco [View project](#)

All content following this page was uploaded by [Sian S Waters](#) on 03 August 2015.

The user has requested enhancement of the downloaded file.

Crop-raiding Baird's Tapir Provoke Diverse Reactions from Subsistence Farmers in Belize

Sian Waters¹

¹Director, Sociocultural Conservation, Bristol, UK & Barbary Macaque Awareness & Conservation, Tetouan, Morocco Email: sian@barbarymacaque.org

Keywords: Belize, crop-raiding, farmer-tapir relations

Agricultural areas where people grow crops to feed themselves and their families are often physically enclosed by a fence or represented by a forest edge (Figure 1). The purpose of these physical boundaries is obvious to people but not necessarily recognised by the wild animals they are designed to obstruct (Waters, 2014). Wild animals that cross these boundaries to feed on agricultural crops are commonly referred to by researchers as crop-raiders. A major grievance of subsistence farmers is the damage that crop-raiders do or farmers believe they might do to their crops and thus their livelihoods. Political, social and/or cultural factors as well as livelihood constraints will influence a farmer's reaction to wildlife crop-raiders (Hill, 1997; Riley, 2007; Waters, 2014).

There are anecdotal reports of tapir crop-raiding behaviour in many parts of their range (Waters *et al.*, 2006). Published information includes a record of conflicts between subsistence farmers and crop-raiding mountain tapirs (*Tapirus pinchaque*) in Colombia (Suarez & Lizcano, 2002), and a violent confrontation between a crop-raiding tapir (*T. terrestris*) and a farmer in south-eastern Brazil which resulted in the deaths of both (Haddad *et al.*, 2005). There are also reports of retaliatory killing of Baird's tapir (*T. bairdii*) for crop-raiding from Campeche state in southern Mexico (Reyna-Hurtado & Tanner, 2007) and Nicaragua (Koster, 2006).

In Belize, Baird's tapir was found to use riparian forest fragments and the surrounding agricultural mosaics, inevitably bringing it into close contact with people (Waters & Ulloa, 2007). This species is the national animal of Belize and is protected by national laws; however, any tapir threatening crops or livestock can legally be shot (Anon, 2000). The Wildlife Division of the Belize government expressed an interest in finding

out the extent of crop-raiding by Baird's tapir. Here, I report results of a survey focusing on subsistence farmers and their relationship with Baird's tapir in Belize and describe the range of different approaches to tapir crop-raiding behaviour. The quantitative data are based on the results of a questionnaire survey regarding farmer-wildlife coexistence in Belize.

Belize has one of the lowest human populations in Central America with ~240,000 inhabitants (Roberts, 2000) and over a third of its territory is protected in some way by conservation legislation (Anon, 2000). Agricultural practices differ depending on geographical location and, to a lesser extent, on ethnic group. Mayan farmers practice the *milpa* system of agriculture, the small scale slash-and-burn system of alternating cultivation and fallow based on indigenous knowledge of forest regeneration dynamics (Emch, 2003). The Mestizo (Indian/Spanish) population also practices the *milpa* system but allocates more land to pasture for cattle ranching (Carr, 2004).

I used a structured questionnaire to interview subsistence farmers regarding their perceptions about crop-raiding mammals in Belize. The survey took place over 12 weeks during March and May 2006. I surveyed villages outside protected areas which were selected by the wildlife department because the people who inhabit them are predominantly dependent on subsistence agriculture. The target survey population comprised men and boys over 16 years of age permanently residing in the selected village. Men and boys were chosen after my pilot study showed that women in Belize do not generally participate in *milpa* agriculture and were unable to answer many of my questions. I administered the questionnaire to an adult man in every sixth house in the village. If no adult men were at home I continued to the next house.

The survey team consisted of two people, an interviewer and a translator for those respondents who spoke only Spanish. I told the potential respondent that I was undertaking a survey about their agricultural practices. Participants were assured of anonymity and I asked their age and ethnic identity along with socio-economic questions regarding their main occupation, the crops they grew, and what issues positively and negatively affected their harvest. If wildlife was mentioned as a limiting factor on the respondent's harvest, then I asked which species caused the problem, how they caused it, and how farmers reacted to it. Data presented in percentage frequencies may sum to over 100% in questions eliciting multiple responses.

In total, 168 adult men of 23-72 years were interviewed during the survey across 63 villages located in all districts of Belize. We interviewed 2-3 men per village depending on their availability. Agriculture was the occupation for 73.2 % of those interviewed. Overall, corn was the most widely grown crop cultivated by 84.5% of respondents. Four wild mammals > 2kg were reported by more than 20% of respondents



Figure 1. Maize being cultivated adjacent to the forest edge in Belize

as being crop-raiders. White-nosed coatimundis (*Nasua narica*), peccaries (*Tayassu* sp.) and raccoons (*Procyon lotor*) were reported by 64%, 63% and 37% of respondents, respectively. Baird's tapir was reported as a crop-raider by 28% of respondents.

Respondents from 51 villages reported the presence of tapirs and 35 (69%) of those villages reported crop losses due to this species. Respondents reported that crops most frequently consumed by Baird's tapir were young bean shoots (60%), corn (57%) and plantain (11%) with cabbage, pineapple, potatoes, water melon and yam also reported as consumed by the species during crop-raiding events. Of those respondents reporting tapirs as a problem, 6% admitted killing them in retaliation for crop damage. For example, one respondent reported:

The tapir eats my corn every night so when I see a tapir I shoot it to eat it so I get to benefit from all that corn of mine it has eaten.

This statement corroborates reports from other areas of Baird's tapir distribution where subsistence farmers will not forego an opportunity to kill a tapir that may be responsible for consuming and damaging crops (Estrada, 2006; Koster, 2006). In Bosawas reserve, in Nicaragua, a conservation agreement with indigenous

people to reduce unsustainable hunting stipulated that crop-raiding tapirs could still be hunted, thus acknowledging the concern felt by local people that their crops are likely to be raided (Koster, 2006).

Other respondents in this survey did not consider lethal retaliation as an option and some compromised by altering their farming practices in response to heavy crop-raiding by tapirs. Seven respondents stated they expected tapirs and other wildlife would visit their fields, so they planted "enough for all". In the Toledo district, six respondents reported giving up cultivating their *milpa* due to the presence of a tapir. For instance:

I abandoned my bean field in the forest because the tapir ate all the plants. She had a calf so she was hungry.

The status of the Baird's tapir as the national animal of Belize is important to some respondents with ten farmers stating they tolerated tapir crop-raiding "because it is the national animal".

In Central America, there are differences in people's preference for tapir meat and it is considered unpalatable by some communities in southern Mexico and north eastern Honduras (Jorgenson, 1995; Reyna-Hurtada & Tanner, 2007; Dunn *et al.*, 2012). However, whether an animal is good to eat or not is immaterial to an angry farmer retaliating in response to a crop-raiding event. In this study, some individuals admitted they killed and consumed crop-raiding Baird's tapir but this was not a universal response to the problem. Some subsistence farmers attributed greater importance to the tapir's status as the Belizean national animal than any crop losses they sustained due to the species' crop-raiding behaviour. Most of the ethnographic data presented here are the result of informal conversations which took place after the questionnaires had been administered and respondents felt relaxed and more likely to discuss issues they felt important. I would thus recommend that future work employ semi-structured interviews rather than a questionnaire survey. Further data are needed to better understand the interaction between farmers and tapirs. This study suggests a remarkable heterogeneity in subsistence farmer's relations with tapirs. This heterogeneity was observed both within and among villages. It thus important that tapir conservationists working with farming communities outside protected areas work with local villagers to understand their individual perceptions of tapirs and what influences their behaviour towards the animals.

Acknowledgements

The Royal Zoological Society of Scotland (RZSS) financially supported this study. I am grateful to the Belize Wildlife Department and particularly to Oscar Ulloa for his assistance throughout the survey. Thanks to David Barclay of RZSS for his assistance with

fieldwork. I thank Lucy Radford and two anonymous reviewers for their useful comments on an earlier version of this manuscript.

References

- Anon. (2000). Belize Wildlife Protection Act. Revised edition 2000, Chapter 220, part II. Sections 5.1 & 5.2. Retrieved 23rd March 2014.
- Carr, D.L. (2004). Ladino and Q'eqchi Maya land use and land clearing in the Sierra de Lacandon National Park, Peten, Guatemala. *Agriculture and Human Values* 21:171-179.
- Dunn, M., Estrada, N. & Smith, D.A. (2012). The coexistence of Baird's tapir and indigenous hunters in northeastern Honduras. *Integrative Zoology* 7:429-438.
- Emch, M. (2003). The human ecology of Mayan cacao farming in Belize. *Human Ecology* 31:111-131.
- Estrada, N. (2006). Humans attacked by a Baird's tapir (*Tapirus bairdii*) in the Sierra de Agalta National Park, Olancho, Honduras. *Tapir Conservation* 15:13-14.
- Haddad, V. Assuncao, M.C., de Mello, R.C., & Duarte, M.R. (2005). A fatal attack caused by a lowland tapir (*Tapirus terrestris*) in southeastern Brazil. *Wilderness & Environmental Medicine* 16: 97-100.
- Hill, C.M. (1997). Crop-raiding by wild vertebrates: the farmer's perspective in an agricultural community in western Uganda. *Int. J. of Pest Management* 43:77-84.
- Jorgenson, J.P. (1995). Maya subsistence hunters in Quintana Roo, Mexico. *Oryx* 29:49-57.
- Koster, J.M. (2006). Assessing the suitability of Baird's tapir hunting in the Bosawas Reserve, Nicaragua. *Tapir Conservation* 15:23-28.
- Reyna-Hurtado, R. & Tanner, G.W. (2007). Ungulate relative abundance in hunted and non-hunted sites in Calakmul Forest (southern Mexico). *Biodiversity and Conservation* 16:743-756.
- Riley, E.P. (2007). The human-macaque interface: conservation implications of current and future overlap and conflict in Lore Lindu National Park, Sulawesi, Indonesia. *American Anthropologist* 109:473-484.
- Roberts, S.A. (2000). National Population and Housing Census 2000, Report No.1. Retrieved 30th September 2009.
- Suarez, J.A. & Lizcano, D.J. (2002). Conflict between mountain tapirs (*Tapirus pinchaque*) and farmers in the Colombian High Andes. *Tapir Conservation* 11:18-20.
- Waters, S. (2014). Including People in Primate Conservation: A Case Study of Shepherds and Barbary Macaques in Bouhachem Forest, North Morocco. PhD thesis, Durham, UK.
- Waters, S. Lizcano, D.J. & Chalukian, S. (2006). Human-tapir conflicts working group. *Tapir Conservation* 15:8.
- Waters, S. & Ulloa, O. (2007). Occurrence of Baird's tapir outside protected areas in Belize. *Tapir Conservation* 16:17-20.