Community attitudes and perceptions concerning rhinoceros poaching and conservation: A case study in eSwatini

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Received 21 June 2019. To authors for revision 21 August 2019. Accepted 11 January 2020

Rhinoceros poaching has been recognized the world over as a conservation crisis, the result of the high price of horn and demand in Asian markets. The commitment and participation of local people in conservation activities, however, are crucial for conservation success. Here we assess attitudes and perceptions towards rhino poaching and conservation in light of surveys in two local communities adjacent to the Hlane Royal National Park in eSwatini where perhaps 100 black (Diceros bicornis) and white (Ceratotherium simum) rhino occur. Our survey of 60 households addressed perceptions and attitudes towards rhino conservation and willingness to participate in rhino poaching and conservation activities. No efforts have been made to involve local people in conservation activities, and the people do not benefit from the park's activities. About 20% of respondents expressed their willingness to help rhino poachers provided they are paid for their services. Of the remaining 80%, some mentioned that they would not help poachers for fear of being apprehended. Still, some mentioned that they would not help poachers because of their concern about poaching and believe its prevention is important. Park authorities here and elsewhere could invest in building better people-park relationships, and provide opportunities for local communities to participate in conservation activities. Conservation policies to co-manage the resources could be used to deter poaching and to conserve wildlife involving local community members in monitoring and enforcement strategies.

Keywords: Ceratotherium simum, co-management, communities, conservation, Diceros bicornis, incentives, rhinoceroses, survey.

INTRODUCTION

The country of eSwatini (formerly Swaziland) is one of the minor range states in which rhinos have been re-introduced (Emslie & Brooks, 1999). Both African rhinos (black, *Diceros bicornis*, and white, *Ceratotherium simum*) are currently classified as critically endangered and near threatened, respectively, in the IUCN Red List of Threatened Species (IUCN, 2019), and poaching and habitat destruction have been identified as the main threats (Emslie, 2012a,b)

Historically, conservation strategies in many developing countries have excluded local communities (Hackel, 1999; Brandon & Wells, 1992), and have overlooked the fact that commitment and participation of local people in conservation activi-

ties are crucial for the success of the conservation endeavour (Hackel, 1999; Hulme & Murphee, 2001; Manfredo et al., 2004; Vodouhê et al., 2010; Yeo-Chang, 2009). The perceptions and values held by local people towards conservation areas determine the way the communities interact with these areas, which, in tur, n has a bearing on the effectiveness of conservation efforts (Ormsby & Kaplin, 2005; Allendorf et al., 2006; Ramakrishnan, 2007). The knowledge of people's perception towards conservation can yield information that could be included in decision-making processes. which can, in turn, help in the resolution of conflicts between park authorities and local communities (Trakolis, 2001; Manfredo et al., 2004; Weladji et al., 2003).

In this study, our objective was to assess attitudes and perceptions of communities neighbouring Hlane Royal National Park, in eSwatini, towards rhino poaching and conservation. Specifically, we



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aimed to: (i) to assess factors that might influence attitudes and perceptions of local people towards the conservation of rhinos in the park; (ii) to determine the level of exposure and awareness of the local people towards rhino conservation efforts; and (iii) to assess the willingness and motivation of local communities near the park towards supporting conservation activities.

MATERIALS AND METHODS

Study site

This study was conducted in the two communities, Khuphuka and Hlane (population ~7000), closest to Hlane Royal National Park in the Lubombo administrative region of northeastern eSwatini (Fig. 1). These communities were selected because of their proximity to the park, anticipating that any effort to involve local people in the conservation of natural resources housed in this park would most likely earmark members of these communities whose participation and support is critical to conservation (Wells & McShane, 2004). The 220-km² fenced park was declared in 1967 and is the largest protected area and only national park in the country (Reilly & Reilly, 1994). Rhinoceroses are flagship species for the park, and there have been several reports in the local news about poaching attempts of the rhinos that live there. Some of these poaching attempts were successful.

The most important livelihood activity in both the study communities is subsistence farming. For income levels, the average gross national income per capita of eSwatini is E57535 (US\$3850) in 2018 (World Bank, 2019).

Research design

We interviewed 30 randomly selected households in each of the two communities. We defined a household as an individual or group of individuals living under the same roof or different roofs in the same compound. In the absence of the male head of the household, their wives or any other

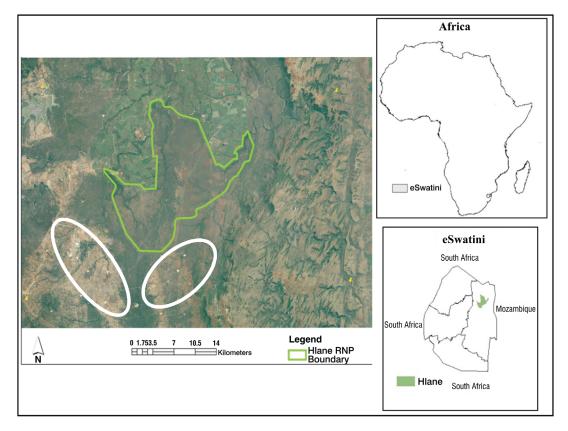


Fig. 1. Location of the Khuphuka community (white oval – southwest) and the Hlane community (southeast) relative to Hlane Royal National Park in eSwatini.

member of the household aged 18–65 years was interviewed. The aims of the survey were briefly outlined to each potential subject after which informed consent was sought before the interview. Potential subjects were made aware that their participation was voluntary and that they could choose at any point not to continue with the interview should they feel uncomfortable with any of the questions. They were all assured of absolute confidentiality and anonymity of their responses; to ensure this, any personal identifiers were not collected.

Data were collected using face-to-face interviews guided by a structured questionnaire. Questionnaires were written in English, but all interviews were translated and administered in the local language siSwati. Questions on attitudes and interests were measured using a five-point Likert scale. Data on general demographic characteristics, age, and gender were also collected. On average, each interview took no longer than 20 minutes to complete. The survey was reviewed and approved by the Institutional Review Board (IRB) for Human Subjects Research (Oakes, 2002) of the University of Massachusetts, Amherst (Protocol #2017-3886).

The questionnaire consisted mostly of closedended questions. Open-ended questions were included to investigate the perceptions and attitudes of the local people towards wildlife conservation in general and rhino poaching in particular, and their willingness to participate in rhino conservation causes. Through the responses, we wanted to measure to what extent would they support rhino conservation efforts. Summed together, the responses to all these questions should be useful in assessing attitudes of the residents towards rhino poaching and conservation. St. John et al. (2011) used the theories of reasoned action and planned behaviour in defining attitude as a function of beliefs about the behaviour, and an outcome evaluation of the behaviour. In this study, we focused on attitudes toward rhino poaching and conservation. According to Kideghesho et al. (2007) an attitude is made up of three contributing factors; behaviour or the intention to carry out a specific behaviour (for example, such as being for or against a particular action), knowledge or a cognitive factor, and the affective factor (relating mostly to beliefs and emotions). For the behaviour factor, we had two guestions: (i) Would you help a poacher in exchange for money and (ii) How much would you be willing to donate towards a conservation cause? For the cognitive factor, we had three questions: (i) Are you aware of any rhino charities and how have their campaigns influenced you? (ii) How frequently do you interact with situations involving rhinos and (iii) Do you think rhino poaching is an issue today? From answers to these questions, we wanted to ascertain the frequency of exposure of residents to issues involving rhinos since they live close to a national park, their knowledge of the plight faced by rhinos, and to find out if they recognize any of the current efforts in rhino conservation. For the affective factor, we had three questions; (i) How would you rate your love for wildlife? (ii) How would you describe your attitude towards rhino poaching? (iii) How important is the prevention of rhino poaching to you? For the analysis of the data, descriptive statistics were used, mainly frequencies and percentages.

RESULTS

None of the households that we approached declined to take part in the interview. Most respondents (59%) were females because, in most of the households we visited, the heads were absent, whether out in the fields or away in the workplace. No gender differences in responses were identified.

Attitudes of residents towards rhino poaching and conservation

About 85% of the respondents said they believe rhino poaching is a big issue worth the attention of conservationists, but only 17% said they were aware of some rhino charities, mostly Save The Rhino programme. Of these (n = 10), four said the campaigns from these charities had helped them realize the importance of rhinos and why they deserve protection; the remainder said the campaigns had not changed the way they viewed or felt about rhinos. Very few of the older participants (over 30) showed interest in anything conservation-related; they did not care about what is happening to rhinos, nor did they appreciate the existence of the park. Most of them portrayed bitterness towards the existence of the park compared to younger participants (18-29). The source of their bitterness stemmed from claims of being excluded from the park and being restricted from using/enjoying the natural resources housed in the park. Interestingly, 20% of all respondents admitted that, given an opportunity to help a poacher with a share of the money made after the sale of the horn, they would gladly do it.

Respondents were asked to rate their love for

wildlife on a scale of 1 to 5, with 5 being the most passionate. About 56% of respondents considered themselves most passionate, 12% said they love wildlife but would not consider themselves very passionate, another 12% rated themselves at 3 or 2, and 8% rated themselves as 1, insinuating that they do not care about wildlife and they are not passionate about it.

Concerning local people's attitudes towards poaching, most (56%) of those who considered themselves very passionate about wildlife also said they were very concerned about the ongoing rhino poaching. Another 18% considered themselves moderately concerned, 5% were indifferent, 3% were moderately unconcerned, while 17% were not concerned. Most of the respondents (88%) considered the prevention of rhino poaching of paramount importance.

When asked about the frequency of interactions with situations involving rhinos, 39% said they had no contact at all, 25% said the frequency was low, 23% said it was medium, and 8% said it was high. Some of those who said that they had no contact also said they had never set foot inside the park, albeit having lived close to the park for over 20 years. Some of the 5% who said they had very high contact said most of their interactions with rhino situations is through the media (*i.e.* local news and newspapers).

When asked how much would they be willing to donate towards rhino conservation initiatives, 23% said they were not willing to make a monetary contribution towards rhino conservation, 44% stated that at most they would donate not more than E50 (~US\$4), 13% said they would donate up to about E200, 3% would donate up to about E400, 5% said they would be willing to donate up to E600, and only 12% said they would donate E700 (~US\$55) or more. Some of those who said they would be willing to donate E700+ were quick to clarify that the donation would occur only using whatever remained after they have taken care of their own needs.

Who are the poachers, and what is the main motivator behind the poaching?

The responses of the residents to the question of whom they thought were potential poachers were varied, and they had conflicting views. Around 32% of the respondents believed that poachers were foreign nationals working closely with residents; 23% thought poachers were local citizens away from the park, 20% believed they were foreign nationals without a partnership with residents, 15% said they had no idea who they were, and 10% of them believed that poachers were mostly residents close to the park.

Most of the residents (55%) considered the quick income potential associated with rhino horn to be the leading motivator behind the poaching. These respondents also admitted that the potential rewards from selling the horn were indeed tempting. Poverty and unemployment came second in the rank of the drivers, with 28% of the respondents considering it the major motivator. Another 7% of the respondents considered poaching for entertainment to be another potential driver; they mentioned that poachers consider rhinos ordinary wild animals, attaching not much value to them, and as such see no reason why they should not be hunted like any other wild animal. Some (2%) respondents thought a lack of public awareness about the importance of rhinos is the reason they are being poached at such a rate, and 8% of respondents ascribed poaching incidences to several possible drivers, including poverty and unemployment, quick income potential and greed.

Strategies for rhino protection

On conservation actions that can be taken for rhino protection, 39% of the respondents unanimously agreed that strict penalties (including harsher prison sentences) for poaching and all wildlife-related crimes should be enforced along with increased security in rhino sanctuaries. This strategy could work to some extent because some (25%) interviewees admitted that although the potential gains from poaching were indeed tempting, they fear being imprisoned and subjected to harsh prison life in the event they get caught, as such they will not be involved. However, some of them (20%) attested to the fact that if a poacher would approach them, asking for their help during the poaching and promising them a good amount of money in exchange for their services, they would gladly assist him. The remaining 55% said they would not, in any way, be involved in poaching not necessarily because they were afraid of being caught and its consequences, but because they are passionate about wildlife. They are very concerned about the ongoing poaching incidences, and the prevention of rhino poaching is of paramount importance to them.

Suggested strategies for increasing security included increasing surveillance and the frequency of patrols. Another 18% thought other

possible solutions could be to make efforts to reduce poverty levels in local communities by providing employment opportunities for residents. They believed this could make the potential quick income less attractive. Around 13% of respondents considered safe dehorning to be the best remedy, while 10% thought rhino horn poisoning to discourage the consumption of the horn should be considered, and 8% advocated for the education of the public about the importance of wildlife and its conservation. Also, 7% thought that the current ban on the sale of rhino horn should be maintained, 3% suggested that increased funding and donations could help, and 2% thought local initiatives could be another possible solution. One respondent mentioned that she did not care what happens to rhinos as they do not concern her. Respondents considered a militarized response to poaching to be ineffective on its own. They suggested that a militarized approach coupled with the other efforts such as educating communities, rhino horn poisoning, safe dehorning, and a continued ban on the sale of the horn would be more effective.

Opinions about trade in rhino horns

Respondents were asked about their opinion towards legalizing the sale of rhino horn mostly (73%) indicated that they are strongly opposed to the idea, whereas 12% said they were opposed to it, 5% were indifferent, 7% approved it, and 3% strongly approved it. Around 85% of the respondents said legalizing the sale of the horn is not likely to reduce profits in the black market. These are mostly the individuals who had said they were either vehemently opposed or opposed to the idea of legalizing the sale of the horn, and 15% believed legalizing the sale could somehow decrease these profits.

DISCUSSION

Our findings concur with those of others (Mehta & Heinen, 2001; Baral & Heinen, 2007; Vodouhê *et al.*, 2010) who noted that there is a strong correlation between benefits enjoyed by local people from parks and their positive perceptions towards conservation. Additionally, previous claims (Hulme & Murphree, 2001; Manfredo *et al.*, 2004) that local communities develop negative perceptions towards protected areas that do not benefit them are validated by our findings.

Gavrilets & Richerson (2017) noted that people can, without any problem, pay high amounts of

money to defend a specific cause they consider important. However, the unwillingness of some local people in our study area to pay for conservation causes shows that potential benefits that others in the community may realized are not clear to everyone. In the words of Brandon & Wells (1992), 'The achievement of conservation goals requires that 'people and parks' be good neighbours.'

The residents' responses to questions, such as their willingness to partner with poaching syndicates and their lack of knowledge of rhino charities and their campaigns, may reflect poor or nonexistent community-based conservation efforts, or that the benefits from poaching just outweigh the benefits of community conservation projects. Still, according to Muntifering (2017) such projects have been observed in other rhino range states like Namibia to be one of the effective strategies for the improvement of the results of other conservation efforts.

More than half of the respondents ascribed the drastic transformation of the poaching trends to the quick income potential associated with the successful sale of the horn in the black market. Such commercial wildlife crime is driven by a combination of economic wealth leading to demand from consumers and a lack of legitimate income sources in areas around protected areas (Harrison *et al.* 2015).

Considering the information obtained from the survey with communities close to Hlane Royal National Park, there is an urgent need of conservation policy reformation that would return to the people the rights over wildlife, including rhinos, or at least involve them in such a way that they will feel a sense of ownership and consequently a sense of responsibility for the resources. Otherwise, currently, it would seem that the policy in operation does not at all promote pro-conservation behavior in the residents.

Some responses from the residents showed that they have a tainted view of rhinos. There is, therefore, a great need for change in how rhinos are viewed by some of the community members. While the belief of some community members that rhinos are just one of the other species in the wild is true, they do, however, deserve special attention considering their uniqueness to Africa and the rate at which they are poached. We agree with Du Toit (2006) that conservation strategies that promote the perception of rhinos as museum species should be avoided. To ensure that public support for rhino conservation is fostered, it is necessary that rhinos be presented to communities as species that, if well taken care of, would play a very positive role in the improvement of the rural people's livelihood, particularly their economic development through revenues from tourism activities.

ACKNOWLEDGEMENTS

We would like to thank Fulbright Program for eSwatini for a fellowship for H.S.M. to pursue his graduate research.

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Responsible Editor: M.W. Hayward

Supplementary material to:

H.S. Mamba, T.O. Randhir & T.K. Fuller

Community attitudes and perceptions concerning rhinoceros poaching and conservation: A case study in eSwatini

African Journal of Wildlife Research 50: 1–7 (2020)

RESEARCH TITLE:

Community attitudes and perceptions concerning rhinoceros poaching and conservation: a case study in eSwatini

Southern Africa is home to over 90% of the world's African rhinos. As such, it has become a destination for many poachers who come armed and ready to track down, kill and pluck off the pricey rhino horn to sell in the black market. The poaching incidences are always on the rise and are seriously decimating the populations. At the current rate, hopes to have rhinos still roaming the African wild in the future are slowly vanishing.

In this study, we aim to find the perceptions of community members living near Hlane Royal National Park towards rhino poaching and conservation. This information will help park managers to join efforts with local communities to address the poaching problem.

We request your assistance in this study by answering a few questions about rhinos and their conservation. Your participation is entirely voluntary. Please be assured that all information you supply in the questionnaire will be strictly confidential and all responses will be kept anonymous. We will not ask for any personal information. If, for any reason, you are unable to participate in this study, please feel free to not proceed further.

Thank you in advance.

Hlelolwenkhosi Mamba Graduate Student, University of Massachusetts

IN ALL PARTS PLEASE TICK THE BOX NEXT TO ANSWER THAT BEST DESCRIBES YOUR OPINIONS, THOUGHTS AND BELIEFS

PART A - ATTITUDES TOWARDS RHINO POACHING AND CONSERVATION

1. In a scale of 1 to 5, 5 being most passionate, how would you rate your love for wildlife?

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|----|---|
| | | 5 | ГТ | 5 |

- 2. How would you describe your attitude towards rhino poaching incidents?
 - Not concerned
 - Moderately unconcerned
 - Indifferent
 - Moderately concerned
 - Very concerned
- 3. How important is the prevention of rhino poaching to you?
 - Very important
 - Not important
 - Indifferent
 - I don't care about rhinos
- 4. How would you describe the frequency of your coming across situations involving rhinos?

| | Very high | High | Medium | Low | | Not at all |
|--|-----------|------|--------|-----|--|------------|
|--|-----------|------|--------|-----|--|------------|

5. Do you believe that rhino poaching is an issue that needs to be addressed?

| Yes | No | |
|-----|----|--|
|-----|----|--|

- 6. In your opinion, who are the potential poachers?
 - ____ Residents of my area close to the park
 - Citizens of my country from areas away from the park
 - Poachers are from other countries

Other (please specify)

- I do not know.
- 7. In your opinion, what factors have caused the increase in rhino poaching incidents?

| Poverty |
|--|
| Unemployment |
| Quick income potential |
| Poaching for entertainment |
| Lack of public awareness on the impact of poaching |
| Other (please specify) |

PART B – OPINIONS ABOUT TRADE IN RHINO HORNS

- 8. What is your opinion on legal sale of rhino horns?
 - Strongly oppose
 - Oppose
 - Indifferent
 - Approve
 - Strongly approve
- 9. Do you think legalizing the sale of the horn would reduce the profits in the black market?

| Yes | | No | |
|-----------------|-----------|----|--|
| If yes, how so? | | | |
| | | | |
| | | | |
| | ••••• | | |

PART C - STRATEGIES FOR RHINO PROTECTION

10. With rhinos facing the poaching threat, what do you think can be done to save them? (Please check as many as you want).

| 0.0 | 4.1 | 1 1 | |
|------|-------|------|--------|
| Safe | rhino | dehc | orning |
| | | | |

- Harsher prison sentences
- ____ Educating people
- Increased funding and donations
- Selling off horns from rhino who died of natural causes
- Rhino horn poisoning
- Local initiatives
- Going Social
- Bans on rhino horn sale
- Other (please specify)
- 11. Are you aware of the following rhino charities? (please check those you know of or have heard about, you can choose more than one)
 - ____ The Rhino Orphanage
 - World Wildlife Fund (WWF)
 - Save The Rhino
 - International Rhino Foundation
 - Rhino Ark

....

- 12. Have you seen, heard or read any of their campaigns?
 - Yes

- No
- 13. Have the campaigns of those you know of influenced you in anyway? E.g. made you conscious of the plight of the rhino due to poaching, made you sign up to the campaign, sponsor or feel willing to help in the fight against poaching etc.

| If yes, how? | |
|--------------|--|
| | |
| | |

14. If a poacher would offer you money in exchange for your help during poaching or to keep silent about his poaching activities, would you take the offer?

Yes No

15. How much would you be willing to contribute towards a rhino conservation project?

| E10 - E50 | | |
|--|------------------------------------|----------------|
| E100 – E200 | | |
| E300 – E400 | | |
| E 500 – 600 | | |
| E 700+ | | |
| 16. Do you have any other opinion on poa | ching? Is there anything you would | d like to add? |
| | | |
| PART D - BACKGROUND | | |
| 17. Gender: | | |
| Male | Female | Other |
| 18. Which range below includes your age | in years? | |
| 18-21 | | |
| 22-29 | | |
| 30-39 | | |
| 40-49 | | |
| 50+ | | |
| | | |

19. Which range includes the distance from your home to Hlane Royal National Park?

- 1km or less
- 1.5 3km
- ______ 3.5 5.5km
- 6km+

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