



Is community-based conservation a feasible option for sea turtles in Sal, Cape Verde Islands?

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ABSTRACT

Cape Verde is one of the most important nesting sites for loggerhead turtles *Caretta caretta*, with the island of Sal having the second biggest population in the country. Loggerheads in Sal face a number of threats, from poaching to coastal development. The non-profit organisation SOS Tartarugas was founded in 2008 to ensure the conservation of the species. Community-based conservation (CBC) is one of the most popular strategies for carrying out wildlife conservation in Africa and even though the organisation employs international staff and volunteers, involving Cape Verdeans in the project is one of its main objectives. The implementation of CBC in Sal has however been very difficult. This study employed two different methods, a Delphi survey and semi-structured interviews, to describe the desirability and feasibility of a CBC approach in Sal and assess what challenges its implementation faces. Results strongly confirm the desirability of CBC in Sal, but also point out a number of challenges, from lack of education to the need for stable jobs for the Cape Verdeans involved in conservation.

RESUMO

Cabo Verde é um dos mais importantes locais de nidificação para as tartarugas cabeçadas *Caretta caretta*, tendo a ilha do Sal a segunda maior população do país. As tartarugas cabeçadas enfrentam uma série de ameaças na ilha do Sal, desde a caça ao desenvolvimento costeiro, e a organização sem fins lucrativos SOS Tartarugas foi fundada em 2008 para garantir a conservação da espécie. A conservação baseada na comunidade (CBC) é uma das estratégias mais populares para a realização de conservação da vida selvagem em África e apesar da organização mobilizar funcionários e voluntários internacionais, um dos seus principais objetivos é envolver cabo-verdianos no projeto. A implementação da CBC na ilha do Sal tem, todavia, apresentado muitas dificuldades. O estudo aqui descrito utilizou dois métodos diferentes, uma pesquisa Delphi e entrevistas semi-estruturadas, para descrever a desejabilidade e viabilidade de uma abordagem CBC na ilha do Sal, bem como para avaliar os desafios associados à sua implementação. Os resultados confirmam fortemente a desejabilidade da CBC na ilha do Sal, mas também apontam uma série de desafios, desde falhas ao nível da educação à necessidade de empregos estáveis para os cabo-verdianos envolvidos na conservação.

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INTRODUCTION

The loggerhead turtle *Caretta caretta* is listed by the International Union for Conservation of Nature (IUCN) as endangered (EN) and is protected worldwide by a number of national laws and international agreements (United States Congress 1973, CITES 1973, IUCN 1996, CMS 2001, Assembleia Nacional de Cabo Verde 2002, NOAA 2011). In coastal areas (which, by definition, make up their nesting areas), however, illegal harvest is a common threat to loggerheads, as sea turtles are often used by local communities as an additional food source (e.g. Mancini & Koch 2009, Senko *et al.* 2011). Cape Verde hosts five species of sea turtles. Loggerhead, green *Chelonia mydas*, leatherback *Dermochelys coriacea*, hawksbill *Eretmochelys imbricata* and olive ridley *Lepidochelys olivacea* turtles are all found in Cape Verdean waters and the islands are considered to be one of the most important nesting sites for loggerhead turtles (Assembleia Nacional 2002, Marco *et al.* 2011). All five species are protected under Cape Verdean law by Decreto Regulamentar N° 7/2002, but this is not properly enforced and the establishment of protected areas in the main nesting beaches of the archipelago has sometimes resulted in the creation of 'paper parks' (Cabrera *et al.* 2000, Assembleia Nacional de Cabo Verde 2002). Hunting sea turtles for protein can be considered a traditional activity in the islands, having been performed intensively by local communities for at least 500 years (Loureiro & Torrão 2008). Biological factors make sea turtles vulnerable to overexploitation (Scott *et al.* 2011, Senko *et al.* 2011) and by the 2000s poaching was threatening the survival of the loggerhead population of Cape Verde (Marco

et al. 2010). The sale of turtle meat is not a relevant part of the country's economy, but it has subsistence value for some families (Espírito Santo *et al.* 2010).

Besides poaching, sea turtles face a number of threats in Cape Verde, including habitat loss due to intense coastal development and predation. This caused a drop in local population numbers that inspired the foundation of many conservation initiatives in the archipelago (e.g. López Jurado *et al.* 2000, Marco *et al.* 2010). In the island of Sal, the conservation organisation SOS Tartarugas was founded to stop poaching of nesting females, but up until 2012 very few Cape-Verdeans have been involved long-term with the project (SOS Tartarugas 2013). Conversely, similar projects in other Cape Verdean islands can count on a great deal of community participation (e.g. Hancock *et al.* 2012). Simply deterring hunting is generally not considered enough to ensure the conservation of species hunted for meat and understanding the social context in which poaching takes place is often necessary to find a long-term solution (Milner-Gulland & Bennett 2003). Community-based conservation (CBC) projects aim at addressing this issue and are known to have higher chances of success, as the participation of the local community often results in higher long-term sustainability of conservation (Waylen *et al.* 2010).

The aim of this study was to assess whether CBC is a feasible option for loggerhead turtles in Sal. We present a number of challenges that its implementation currently faces on the island and we discuss several strategies that can be used to overcome them.

METHODS

Two different methods were used in the study, an internet-based Delphi survey with international experts and semi-structured interviews with local respondents in the field. The Delphi survey was carried out between March and June 2012; the field-based interviews were completed between June and October 2012. Given the complexity of the social aspect of conservation in Sal, a qualitative approach was chosen (e.g. Mehta & Heinen 2001, Macys & Wallace 2003, Gadd 2005, Campbell *et al.* 2009, Fuentes & Cinner 2010).

The Delphi method is a forecasting tool that uses the information available to a heterogeneous group of experts in order to achieve a forecast on uncertain matters. Surveys are carried out in two or more rounds and the results of the earlier rounds are aggregated and then fed back into the following questionnaires. This allows the panel to anonymously assess the same matters multiple times until consensus is reached (Preble 1983, Rowe & Wright 1999). Under Delphi, having a small expert panel is not considered an issue, as having representative

views has priority over numbers (Gupta & Clarke 1996, Rowe & Wright 1999, Stewart 2001).

The island of Sal has a very diverse ethnic composition. Besides the local population, expatriates from mainland Africa, Europe, China and the Americas are a consistent part of the island demographics (World Bank 2012). To complicate things further, until 2012 conservation activities have been carried out virtually exclusively by international staff and volunteers. It was concluded that this diversity needed to be represented in our sample and that involving both local and international experts could better describe the distribution of knowledge of conservation issues in Sal. To compose the panels, a preliminary list of 192 potential respondents was compiled based on their knowledge and awareness of conservation issues in Sal. Respondents were then divided in groups according to nationality and occupation (research, business owners, the media, nature conservation, civil society groups). Fifty Cape Verdean and thirty-nine international respondents were then randomly selected. Questionnaires were sent out with an introductory letter to the respondents to be

completed online. Besides respondent demographics, questions were open-ended and focused on sea turtle conservation, awareness, international and local participation and tourism.

The need to carry out face-to-face interviews became apparent when the Cape Verdean response rate stayed low compared to the international one. Key informants were identified using snowball sampling. While snowball sampling is sometimes regarded as producing a not representative sample (Bernard 1995), the use of key informants has been widely used in conservation research (Macys & Wallace 2003, Gadd 2005, Campbell *et al.* 2009, Fuentes & Cinner 2010) and was considered appropriate for this study. Eleven Cape Verdean respondents were contacted and agreed to participate in the survey. In order to promote truthfulness, respondents remained anonymous. Face-to-face interviews were carried out in the towns of Santa Maria (n=9) and Espargos (n=2) in Sal. Respondents were presented with the results of the Delphi survey and asked to comment on the main themes identified; each interview was carried out in Portuguese and recorded with the permission of the respondent.

RESULTS

a) *Delphi survey* (Table 1)

The first round of the Delphi survey received a response rate of 18%; a total of 16 respondents completed the questionnaire. 8% of the contacted Cape Verdean (n=4) and 30.7% of the contacted international experts (n=12) responded to the questionnaire. Cape Verdean was the most represented nationality (25%; n=4), followed by British and Italian (18.8%; n=3), Spanish (12.5%; n=2), American, French, Portuguese and Brazilian (6.2%; n=1). Concerning profession, the larger groups of respondents worked in research or were business owners (37.5%; n=6). Of the informants that took part in the first round of surveys, 31.2% (n=5) responded to the second round.

A large majority of the panel (81.2%; n=13) agreed that awareness of local conservation issues is low and more than half (68.7%; n=11) added that there still is the need for more

awareness campaigns. The totality of the panel stated that increasing local participation is desirable and a large majority (68.7%; n=11) stated that at the moment the level is low. Regarding the challenges to local participation, the majority of the panel (81.2%; n=13) mentioned financial reasons, such as the need of stable jobs all year round. Large percentages of respondents mentioned lack of ownership of the conservation project and a high international presence (56.2%; n=9) and lack of awareness of conservation issues (37.5%; n=6). A large majority (87.5%; n=14) of respondents stated that the participation of international volunteers and staff is desirable, as they provide skills and knowledge. The majority of the panel (62.5%; n=10) agreed that conservation should be led by whoever is most qualified, with three respondents adding that Cape Verdeans should be in a leadership position, provided that they gain the necessary skills and knowledge.

	Delphi round 1 (%)	Delphi round 2 (%)	Interviews (%)
Awareness of conservation issues			
<i>Awareness of conservation issues is low</i>	81.2	100	45
<i>Awareness of the legally protected status of sea turtles is high</i>	25	/	/
<i>Education and outreach are necessary</i>	68.7	100	100
Participation in conservation activities			
<i>Higher local participation is desirable</i>	100	/	90.9
<i>Local participation is currently low</i>	68.7	/	54.5
<i>International participation is desirable</i>	87.5	100	100
Challenges to local participation			
<i>Economic reasons (stable jobs etc.)</i>	81.2	80	18.2
<i>Lack of ownership and strong international presence</i>	56.2	20	18.2
<i>Lack of awareness of conservation issues</i>	37.5	100	72.7
<i>Hard working conditions</i>	18.7	/	/
<i>Lack of enforcement of conservation laws</i>	12.5	/	27.3
Tourism			
<i>Sea turtles can support ecotourism</i>	100	/	36.4
<i>Ecotourism is desirable</i>	43.7	100	/
<i>Ecotourism can fund conservation</i>	37.5	100	/
<i>Ecotourism can raise awareness</i>	31.2	/	/
<i>Ecotourism can disturb turtles</i>	31.2	100	/

Table 1. Themes mentioned by respondents (%) during the Delphi survey and semi-structured interviews.

The totality of the respondents stated that conservation can bring benefits to the local population, with a large majority (75%; n=12) mentioning benefits of a financial nature. A smaller percentage stated that conservation can give tourists cultural benefits (18.7%; n=3), with one respondent adding that this is only true for tourists and not locals. The entire panel stated that sea turtles have the potential to generate tourism in Sal, with large groups of respondents stating that tourism can be used to fund conservation (37.5%; n=6) and to increase awareness of conservation issues (31.2%; n=5).

The second round largely confirmed the results of the first one. The entire panel agreed that awareness of conservation issues in Sal is low, but increasing. The panel agreed that in order to increase community participation awareness programmes are desirable and that the target of these programmes should be fishermen (60%; n=3), children and young people, civil society groups and politicians (40%; n=2). Four respondents (80%) stated that in order to increase participation, providing stable jobs will be necessary.

The entire panel stated that international participation in conservation is desirable and

four respondents (80%) added that even a strong international presence will not result in locals not feeling ownership of conservation, thus disproving the results of the first round. The whole panel also agreed that having Cape Verdean staff in position of responsibility might help in encouraging participation, but that at the moment locals do not possess the necessary scientific knowledge and skills to lead conservation projects and that training programmes are therefore desirable.

b) *Semi-structured interviews* (Table 1)

Eleven Cape Verdean respondents were interviewed in the field. Respondents worked in civil society groups, conservation and the environment and tourism (27.3%; n=3). Other respondents worked in education (9.1%; n=1) or represented the local authorities (9.1%; n=1).

When asked about awareness of sea turtle conservation issues in Sal among the local population, half the panel stated it was increasing and mentioned the awareness campaigns carried out on Sal. Respondents mentioned the general public (63.6%; n=7), fishermen (36.4%; n=4), children (18.2%; n=2) and lower-class people

(9.1%; n=1) as the priority targets of education activities.

Concerning the level of local participation in conservation activities, the majority of the panel (54.5%; n=6) stated it was low and an increase in local participation is desirable (90.9%; n=10). The majority of the panel (72.7%; n=8) mentioned lack of awareness as the main challenge to local participation. When asked

about international participation in conservation activities, the entire panel stated it is desirable. Regarding leadership of conservation activities, the panel stayed divided. Some respondents mentioned a partnership between stakeholders (45.4%; n=5), while others suggested that Cape Verdean leadership is desirable (36.4%; n=4). A smaller group of respondents (27.3%; n=3) stated that local authorities should be in charge.

DISCUSSION

Some observations on the level of community participation in conservation can already be made from the response rate, as the local response rate was significantly lower than the international one. Respondents confirmed these observations and stated that local participation is, indeed, low. The totality of the panel expressed complete support of increasing local participation and stated that conservation should focus on the local community. Responses generally supported the theories of CBC, and suggested that a participatory approach is not only desirable and appropriate, but also the best strategy to achieve sustainable conservation (Hulme & Murphree 1999, Adams & Hulme 2001a, Barrow *et al.* 2001, Hulme & Infield 2001).

The majority of the respondents stated that conservation should be led by whoever is more qualified; a joint effort between local and international actors has been suggested as a suitable option, which again supports the theory that participatory approaches are suitable in natural resource management (Hulme & Murphree 1999, Adams & Hulme 2001b, Berkes 2004). While various respondents stated that Cape Verdeans should ideally be in a leadership position, it was suggested that Cape Verdeans in Sal do not have, at the moment, the skills and knowledge to do so and that education is therefore a priority. Lack of awareness of conservation issues was also mentioned; respondents however stated that awareness is currently increasing, which can be related to the educational programmes currently in place in Sal. Education and awareness campaigns have been identified as one of the key features of CBC (Hulme & Murphree 1999, Adams & Hulme 2001a, Hulme & Infield 2001).

Both international and local respondents strongly suggest that international participation is desirable for several reasons as well; the benefits

of international participation in conservation volunteering have indeed been noted in previous studies on conservation tourism (Campbell 2002, Campbell & Smith 2005). Respondents also suggested that the fact that conservation is currently mainly in the hands of foreigners could result in lack of ownership by Cape Verdeans. This would mirror what has been said by previous studies that suggested that strong international presence can result in the alienation of locals and resentment towards conservation (Hulme & Murphree 1999, Barrow *et al.* 2001, Adams & Hulme 2001b, Berkes 2004, Bajracharya *et al.* 2006). However, this was not entirely confirmed during the second round of questionnaires or the interviews. The panel stayed divided on whether international presence can inhibit local participation and further research is recommended.

A large majority of the panel mentioned the need of providing stable jobs in conservation as the biggest challenge to CBC in Sal. Sea turtle conservation work is largely seasonal. Loggerhead turtles nest in Sal from June to October, and there are fewer opportunities in the remaining months of the year. The fact that respondents identified the need of providing jobs to establish conservation perfectly fit with the CBC framework, as it is generally believed that in order to avoid resentment and alienation in the local community it is necessary to compensate locals for the losses caused by conservation (Adams & Hulme 2001a, Hulme & Infield 2001, Mehta & Heinen 2001, Bajracharya *et al.* 2006). Especially in sea turtle conservation, it would appear that providing jobs to locals significantly improved the chances of success (Kutty 2004, Muir & Abdallah 2006). Even before they were directly asked about the desirability and feasibility of developing ecotourism in Sal, multiple respondents mentioned it as the best option to generate job opportunities. The totality

of the panel agreed that sea turtles have the potential to generate tourism in Sal, which is what is generally believed for charismatic vertebrates, and that tourism might be the only option to fund conservation (Scheyvens 1999, Tisdell & Wilson 2002, Brightsmith *et al.* 2008).

During the first round of questionnaires, some respondents suggested that sea turtles can provide cultural benefits to the tourists that have the chance to observe the nesting process. This is reported by various studies on wildlife tourism, that confirm that observing wild animals in their natural environment is usually much appreciated

by Western tourists (Wilson & Tisdell 2001, Ballantyne *et al.* 2009, Meletis & Harrison 2010). Respondents seemed to hint at the fact that this is not true for the local population, which would also conform to the general belief that this is a prerogative of people who do not directly depend on their environment for their survival (Gibson & Marks 1995, Akama 1996, Tambiah 2000, Kutty 2004, Muir & Abdallah 2006). This was however not confirmed in the second round of questionnaires. The issue was discussed during the field interviews, but again it was not possible to get to a conclusive result.

CONCLUSIONS

This study aimed at investigating the desirability and feasibility of a community-based approach for sea turtle conservation in the island of Sal, Cape Verde Islands. The desirability of CBC has been confirmed by the data collected. Virtually every respondent strongly supported increasing community participation in conservation activities. The panel however also confirmed that this faces several challenges in Sal, from lack of education to the need for stable jobs for Cape Verdeans involved in conservation. Respondents strongly suggested that ecotourism is the best option to provide new job opportunities and therefore support the implementation of CBC.

This being said, the majority of the panel

also stated that international participation is positive for many reasons, including bringing knowledge and skills. Lack of technical knowledge in the Cape Verdean community has in fact been mentioned as a challenge to Cape Verdean leadership of conservation, and the need for education, awareness campaigns and training has been indicated as one of the main priorities for conservation in Sal.

It was not possible to reach conclusive results on whether intense foreign presence can inhibit ownership of conservation by locals and whether sea turtles can provide cultural benefits to Cape Verdeans. Further research on these issues is therefore recommended.

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