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Special Issue Article

Human–Wildlife Conflict 10 Years Later: Lessons Learned and Their Application to Cheetah Conservation

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Cheetah (Acinonyx jubatus) conservation is interconnected to social, economic, and environmental factors. Since the 2003 World Parks Congress, cheetah conservation practitioners have been applying human-wildlife conflict resolution strategies throughout Sub-Saharan Africa. Future Farmers of Africa training has taught farm management skills to over 3,000 rural Namibian farmers and is being used in other range countries. Capacity building for conservation scientists and extension officers has been conducted using a “train the trainer” approach. The use of livestock-guarding dogs has expanded and eco-labels have been established to assist communities to coexist with cheetahs. Awareness building and government “buy-in” has occurred in many of the cheetah range countries. The conservancy program of Namibia is spreading into other areas of Africa, providing a basis for developing large-scale, transboundary land management plans. However, the continuation and development of such programs is ongoing, and no single program is likely to reduce human-cheetah conflict alone.

Keywords cheetah, conservation, human–wildlife conflict

Introduction

In 2003 at the World Parks Congress, conservation practitioners from around the world agreed there was a need for community ownership and responsibility over assessing and addressing human–wildlife conflict (HWC). There was a need for political, legal, and international institutional support to address HWC, and guidance manuals, processes, and systems needed to be developed. Improved communication on a local level between stakeholders and on a global level between experts, practitioners, local communities, and international conservation organizations was required.

Since 2003, there have been significant efforts made to address these needs and requirements for the conservation of cheetahs *Acinonyx jubatus*. Cheetah numbers throughout their range have declined due to the loss and fragmentation of habitat and a declining

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prey base. Large numbers of cheetahs live outside protected areas and, therefore, come into conflict with humans for predating on livestock. As landscapes continue to become more fragmented, causing continuous and greater problems with HWC, we need a large-scale, regional design to mitigate and reduce this conflict. To develop these regional strategies, conservation professionals from across the cheetahs' range (including government representatives, non-governmental organizations [NGOs] and the IUCN Species Survival Commission's Cat Specialist Group) came together in meetings in 2007 and 2012 to develop regional strategies for the survival of cheetahs (International Union for Conservation of Nature Species Survival Commission [IUCN/SSC], 2007a, 2007b, 2012). Regional conservation strategies have since been developed for the southern region, the eastern and north region, and the west and central region of Africa. The Range Wide Conservation Plan (RWCP) is a joint initiative of the Wildlife Conservation Society (WCS) and the Zoological Society of London (ZSL), in partnership with the Cat and Canid Specialist Groups of the IUCN/SSC. The program, funded by the Howard G. Buffet Foundation, was in partnership with the National Geographic Big Cats Initiative. These strategies generated a governmental structure under which national programs could be developed. Subsequently, National Action Plans have been developed for 13 cheetah range countries, in order that the responsibility for conservation action is taken on at the national level.

Since 2003, in addition to the established cheetah research and conservation programs in Namibia, Tanzania and South Africa, additional cheetah-focused NGOs have developed in Botswana, Zimbabwe, Kenya, and Iran (where the last pocket of Asiatic cheetahs lives). Furthermore, cheetah research and training has been conducted in countries such as Algeria, Angola, Benin, Ethiopia, Mozambique, Niger, and Zambia.

Lessons Learned

Over the last 10 years, considerable research has been conducted into human–cheetah conflict and cheetah ecology outside of protected areas. This scientific research acts as the foundation for a variety of conservation and education programs that integrate human needs with cheetah management. For example, social studies show that how farmers perceive the damage caused by predators has deeper and more complex roots than can be simply understood by the monetary implications of depredation (Dickman, 2010; Madden, 2004). Predators have long been perceived as vermin and were hunted in many African national parks and reserves as late as the 1970s (Linnell, Swenson, & Anderson, 2001). Sustainable conservation must therefore develop conflict resolution and prevention approaches that address these deeper attitudes, conflict patterns and relationships toward predators. As a result, conflict mitigation techniques, which address just the financial aspect of conflict such as compensation, are rarely successful in reducing conflict alone (Gusset, Swarner, Mponwane, Keletile, & McNutt, 2009), and attention has moved from short-term solutions to encouraging long-term coexistence. The important difference between current conservation efforts and the efforts of conservation in the past is the focus on the “bigger picture.” This bigger picture encourages community participation in finding solutions to conflict, developing a global perspective, and encouraging a multispecies, integrated approach to species conservation.

Conservation Programs to Address Human–Cheetah Conflict

Throughout Sub-Saharan Africa, carnivore–livestock conflict has been exacerbated by a change in husbandry during the past century. In recent decades, domestic livestock is

no longer herded or guarded by dogs, and as such, it is more vulnerable to predation (Woodroffe, Frank, Lindsey, Ole Ranah, & Romañach, 2006). Furthermore, stockmen have lost the tradition of coexistence with large predators and modern protective legislation of carnivores is not matched by positive cooperative attitudes by livestock communities. As a result, education and economic development have been highlighted as two of the most important tools to reduce HWC (Marker, Mills, & Macdonald, 2003; Strande-Straube, 2013). These tools are being applied in cheetah conservation through the training of future farmers and agricultural officers, through the promotion of conservancies and livestock management techniques and by addressing governmental policies.

Training

Cheetah conservation is interconnected to social, economic, and environmental factors, concerning the range nations throughout Sub-Saharan Africa. General education, in particular environmental knowledge, is often low across the region, and a higher level of education is often associated with a greater tolerance to predators (Naughton-Treves, Grossberg, & Treves, 2003; Selebatso, Moe, & Swenson, 2008), there is, therefore, a need to address this knowledge gap. To encourage the overall economic development and environmental sustainability of livestock farming in Africa, livestock–wildlife management training programs have been developed. Education programs are three tiered, addressing children (the next generation of farmers), current farmers, and conservation and agricultural professionals.

For example, in Namibia, Cheetah Conservation Fund (CCF) have instigated the Future Farmers of Africa program through which over 3,000 rural farmers have been given week-long training, including courses for both literate and illiterate farmers. Training courses cover all aspects of farm management, promoting tolerance of predators through restored habitat, through livestock management that encourages non-lethal predator control, and through healthy management of wild game populations. This integrated approach, often including working on demonstration/model farms, has the potential to impact not only the conservation of cheetah, but also all wildlife outside of formally protected areas, while assisting rural development (Baruch-Mordo, Reck, Wilson, & Broderick, 2011; Espinosa & Jacobson, 2012). To ensure the long-term success and continuation of this conservation message the coming generation of African conservation managers must be equipped with the best training available to empower them to protect their land and wildlife in an economically sound manner. To fulfill this need CCF has so far trained over 300 biologists and agriculture extension officers, from over 15 cheetah range countries, as part of its “Conservation Biology and Integrated Livestock, Wildlife and Predator” month-long training course. Individuals trained as part of this program have gone on to conduct farmer training workshops, showing the success and importance of “training the trainers.”

Similarly, teacher training programs are encouraging the incorporation of environmental teaching into each nation’s curriculum, with over 500 teachers having participated in teacher training workshops in Botswana alone (R. Klein, personal communication, September 21, 2014). Perceptions and attitudes towards predators begin to form at childhood and are influenced from the teachings and experiences that children receive from their family and schools (Hughes, 2013). In Namibia, over 300,000 students have participated in educational programs in the past 20 years, and in the last 10 years youth education programs have developed in many of the cheetahs’ range states. Raising of awareness has also been conducted through the medium of song and dance, conveying the conservation message beyond the reach of traditional educational methods. Live theatre productions

and the distribution of a short film entitled “Spirit of the Kalahari” produced by Cheetah Conservation Botswana told the story of two farmers—one who used livestock management techniques to protect his livestock from predators and one who did not.

Although the importance of education programs for altering human perceptions and the long-term reduction of HWC is recognized, few empirical studies of their success have been conducted (Baruch-Mordo et al., 2011). Recent social studies have shown that younger generations are more tolerant toward predators than their predecessors (Lindsey, Du Toit, & Mills, 2005); therefore, attitudes are changing, and some individual programs have been evaluated. For example, the behavioral intentions of community members to reduce bear conflict in Ecuador has increased after five years of educational training (Espinosa & Jacobson, 2012), and perceived livestock depredation decreased in 70% of respondents educated as part of a CCF training program (Rust & Marker, *in press*). However, the role of education is ongoing, and there is a need for iterative evaluation and development of education programs to be incorporated as a standard part of the program.

Livestock Guarding Dogs and Boma Design

Two of the traditional techniques that are particularly effective at deterring cheetahs are the protection of livestock within a fenced area known as a boma or kraal and the placement of a livestock-guarding dog (LGD) with smallstock herds. Bomas are commonly used; however, they are often poorly constructed. As a result, a “build a better boma” campaign has been implemented by Action for Cheetahs in Kenya (ACK). ACK works in communities to build improved bomas and to provide information about prevention of livestock loss to predators. Used in conjunction with an LGD to protect livestock inside and outside of the boma, losses to predators can be drastically reduced. LGDs become the guardians of the smallstock flock, and through loud barking and attentiveness to the herds, predators avoid these protected flocks. Active LGD programs are now in operation in Namibia, South Africa, Botswana, and Tanzania. Programs source or breed guarding dogs to place on livestock farms. Farmers receive training and assistance with the dog’s care and working life, and livestock losses and the dog’s behavior are closely monitored. In Namibia, CCF’s Livestock Guarding Dog program has bred and placed over 500 dogs since its inception (Potgieter, Marker, & Avenant, 2013). On farms where dogs are working, 73% of farmers reported a large decline in livestock losses (Marker, Dickman, & Macdonald, 2005). Similarly, the adoption of LGDs on farms in South Africa has resulted in financial savings of around US \$3,000 per farm (Rust, Whitehouse-Tedd, & MacMillan, 2013). Trials have also been conducted using LGDs with cattle (C. Stannard, personal communication, December 29, 2014). Encouraging all smallstock (and potentially cattle) farmers across the cheetahs’ range to use a LGD while improving boma design could dramatically reduce human–predator conflict.

Conservancies

Conservancies consist of adjacent farms that join together in broad units where natural resources, including wildlife, are cooperatively managed with livestock, using ecosystem-sensitive management plans. In general, conservancies are more likely to use livestock management techniques (Schumann, Watson, & Schumann, 2008), require less management of game animals, suffer less impact from predation (Romañach & Lindsey, 2008) and due to economies of scale incur less costs (Lindsey, Romañach, & Davies-Mostert, 2009).

Namibia has the largest number of conservancies within the cheetahs' range, with 76 communal conservancies and 20 commercial conservancies (Shaw & Marker, 2011; Shifeta, 2013). Communal conservancies give communities a vested interest in the welfare of local wildlife by giving them control over the economic benefits from wildlife populations and natural resources if managed under conservancy guidelines. Potentially, as a result of these advantages, conservancy members in South Africa and Namibia had more positive attitudes to predators than non-conservancy members (Schumann et al., 2008; Swanepoel, 2008; Lindsey et al., 2009). In addition, attitudes toward predators and conservancies were more positive where individuals perceived they received benefits from them (Rust & Marker, 2013). Successful examples of local conservancies provide a basis for developing large-scale, transboundary land management plans for the future, and the conservancy program of Namibia has been spreading into other areas of Africa.

Eco-Label

The future of the cheetah requires enhancing the livelihoods of the human communities that live alongside them. This includes developing alternative income sources for these communities, including the use of wildlife friendly eco-labels. Eco-labeling can enable producers who implement predator-friendly management practices to receive a premium for the meat or other animal products they sell (Marker, Dickman, Mills, & Macdonald, 2010). Increasingly, today's consumers are looking for eco-labels to help guide their purchases (Aquino & Falk, 2001), and are willing to pay extra for products that are healthy and good for the environment. This purchase power can steer businesses into adopting appropriate environmental standards. Predator-friendly meat, sourced from certified predator-friendly farms, is available in the United States and 66% of consumers expressed a willingness to pay above the normal premium for this environmentally friendly beef (Wong, 2009). Initiatives have been trialed in both South Africa and Namibia (Conservation International, 2014; Tjaronda, 2006) and "Cheetah Country," a brand developed and trade marked by CCF, is helping to conserve threatened wildlife while contributing to the economic vitality of rural communities (Marker et al., 2010).

In 2007, at the Summit on Wildlife Friendly Enterprise, representatives from eight countries formalized the Wildlife Friendly Enterprise Network (WFEN) to promote wildlife conservation through facilitation and certification of responsible production practices, enterprise development, education and branding. The Certified Wildlife Friendly label was developed, which is now setting the global standard for wildlife friendly enterprises while educating consumers on products that support good conservation. Certified Wildlife Friendly develops, certifies, and promotes products and practices that conserve threatened wildlife while contributing to the economic vitality of rural communities. Their predator friendly eco-labeling scheme can be adapted and applied to all the world's predators. CCF has been involved in helping the Wildlife Friendly eco-label gain traction and hopes to encourage other predator organizations into this scheme.

Government Policy

Often HWC is seen as a problem belonging to the environment ministry, and little support is received from other government sectors. In recent years there has been a shift to recognize the importance of land use planning and other governmental sectors in reducing the impact of HWC. Various organizations are now developing tools to promote

cross-sectorial collaboration and prioritization of HWC in all sectors. Government policies specifically on HWC reduction have been developed in some of the cheetahs range states, including Botswana (Centre for Applied Research [CAR], 2011) and Namibia (Shifeta, 2013). Working together with government and non-governmental organizations, CCF and other cheetah organizations are helping educate politicians internationally and in cheetah range countries on problems facing cheetah survival. These include issues around illegal trade, HWC resolution through livestock and wildlife management, and poverty alleviation programs.

Conclusion

Overall, lessons learned from cheetah research and conservation efforts have shown us that humans can live with cheetahs and other predators through appropriate livestock and land-use management strategies. The last 10 years showed an increase in collaboration and communication across the cheetahs' range with the implementation of the RWCP regional cheetah conservation strategies. The reach of education and coexistence programs has widened as new NGOs have developed and the conservation capacity of governments has increased. Guidance manuals and processes have been developed in many of the cheetahs' range states, and political and legal support through governmental policy is increasing. Similarly, a movement toward community ownership of wildlife is developing through conservancies and community projects. Through collaborative research and multidisciplinary approaches, both within protected areas and on private lands, it can be possible to maintain large, intact ecosystems for the cheetah, which is the most critical aspect of future conservation, both for cheetahs and for other large carnivores. However, conflict with humans remains one of the biggest threats to cheetah populations, and efforts to change people's perceptions of predators remains an ongoing scenario of education and poverty eradication. Within the framework of the world's current environmental crisis, conservationist, government, and businesses need to continue to work globally to develop solutions to enable humans and wildlife to coexist.

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