

Conservation of African wildlife: Implementing scientific best practice for a sustainable future

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Numerous scientific studies are demonstrating that wildlife and biodiversity are in decline across Africa; large herbivore numbers in most regions have declined greatly, migrations are lost, forests and woodlands are depleted, rangelands degraded, ecosystems fragmented and biodiversity lost. This is despite a growing and extensive network of protected areas (PAs) and militarisation of anti-poaching units within conservation agencies. It is becoming increasingly recognised that PAs embedded in larger human-dominated landscapes are too small, not covering sufficient habitats and different resource types distributed across the larger landscape. A key point not recognized by many is that wildlife ecosystems are not merely ecological systems, driven only by ecological factors, but in reality are social-ecological systems where social and political forces play a major role in determining the character and sustainability of wildlife populations and their associated habitats. Thus conservation of wildlife in Africa, if it is going to be sustainable and successful, must be managed under the social-ecological systems (SEs) framework developed by Nobel Prize winner, Elinor Ostrom and her colleagues. In the past, both wildlife and local communities (LCs) were able to move over large landscapes and gain access to the required seasonal resources but can no longer do so because resources within PAs are not accessible to people and resources outside PAs are not accessible to wildlife.

With explicit planning and implementation of conservation activities being predominantly inside PAs, critical habitats and biodiversity outside PAs are largely ignored, while at the same time the livelihood activities of LCs, are focussed and intensified outside PAs. With little thought and planning given to the spatial and temporal distribution of different land uses in the landscape (including PAs), large landscapes become fragmented and less functional. Fragmentation is further intensified by growing resentment against conservation by LCs, who receive little of the substantial financial income generated by tourism within PAs but are the ones carrying the costs of living with wildlife. Costs include

livelihood opportunities forgone in ancestral lands now within PAs and intense human-wildlife conflict in the form of livestock depredation by carnivores (dibatana) and crop damage by a massive elephant population. Thus the cost-benefit ratio of wildlife conservation in Africa is strongly skewed in favour of the international community and national governments, violating key principles underlying the sustainability of natural resource management, as outlined in the SESs framework of Elinor Ostrom. At this point it is essential to explain to readers what research has found about management of natural resources and wildlife by LCs and how the SESs framework informs us about scientific best practice for policy decisions for conservation management.

The SESs framework is one of sciences success stories, composed of robust and rigorously tested theory, refined over 30 years of intensive theoretical and observational work by various collaborators, winning a Nobel Prize for Elinor Ostrom. LCs will manage resources, such as wildlife, sustainably, when, among other points, they: (1) are devolved autonomy of management and decision-making rights over a clearly-defined area of sufficient size (an area that they can call their own); (2) are able to form institutions to develop rules about how to manage the resource sustainably; (3) have strong traditional leadership and social norms of working in institutions; and (4) are able to derive sufficient benefits from the resource to outweigh the costs of damage caused by the resource (e.g. wildlife damage to people, crops, livestock and property), as well as the costs of managing and monitoring the resource. These four factors form the main cornerstones of a community conservation framework for policy makers and conservationists. It is critical that conservationists and policy makers fully appreciate the importance of these four cornerstone factors when implementing policy decisions and conservation strategies. Unfortunately, this has not been the case across much of Africa, hence the large declines in African wildlife now observed across the continent.

Knowing that PAs are too small to effectively conserve wildlife it is now increasingly recognized in science that conservation strategy needs to shift its emphasis from isolated PAs to larger landscapes. The first point to note here is that LCs are the key to the future of conservation in Africa because (1) they control large areas of potential wildlife habitat and wildlife migration corridors outside PAs, (2) even within PAs, excessive poaching is likely if LCs do not benefit from wildlife, as is currently being observed with the large bush meat trade and rising elephant poaching in Botswana and (3) LCs often conserve wildlife more effectively than government agencies when they are included in decision making processes

and management of wildlife and derive large benefits from wildlife (i.e. the four cornerstone factors of the SES framework noted earlier). LCs live with wildlife while government agencies are often stationed in big urban centres away from wildlife areas.

For example, LCs in most parts of rural Africa have strong traditional norms of leadership and community discussion forums, such as the chief (kgosi) and village elders (kgosana) who interact with the community through traditional village institutions, such as the kgotla in Botswana. These institutions enable all individuals in the community to voice an opinion and contribute to the development of rules and for the chief to implement and enforce rules. All these people, leadership positions, institutions and social processes are known as social capital. This indicates that there is sufficient social capital for sustainable use of natural resources and community conservation initiatives by LCs in sub-Saharan Africa provided that the other three cornerstone factors are attended to. Where the four cornerstone factors have been well integrated into community conservation initiatives, LCs have generally been observed to sustainably manage natural resources and wildlife.

For example, the importance of participation of LCs in decision-making processes for PAs was demonstrated in an analysis of 55 case studies where it was shown that participation of LCs in decision-making processes for PAs was the only variable significantly influencing the level of compliance of LCs with PA conservation policies. In the Luangwa Valley of Zambia, devolving some form of autonomy of decision-making rights to LCs, creating good financial returns from trophy hunting and tourism and other benefits, such as meat from wildlife, resulted in improved attitudes to conservation and a large decline in poaching (Lewis 1990). Where the LC had previously tolerated and encouraged poaching, they were given explicit orders by the chief no longer to do so and to report the presence of poachers. In addition, wildlife scouts from the LC were shown to clock more working hours and arrest more poachers than government scouts. Consequently, poaching levels fell tenfold. The Kruger National Park in South Africa, where LCs have not been devolved any autonomy in wildlife management decision making, nor receive much of the massive annual income from tourism (in the billions), is experiencing an unstemable flood of poaching of rhino, despite the presence of a massive anti-poaching force. By contrast, the Royal Chitwan National Park in Nepal, which has devolved ownership of wildlife to LCs in buffer zones around the park and allows LCs to directly benefit from wildlife through tourism ventures in their region of the park, has not had one incidence of rhino poaching in the last seven years. A similar example of no incidences of rhino poaching may be found with a community conservancy in

Namibia where LCs benefit from wildlife and have autonomy of decision making rights over the conservancy, with the traditional authorities playing a significant role in conservancy governance.

The key points to take away from these examples is that LCs resist conservation objectives when their views and needs are not considered by government and when they do not see the substantial benefits from wildlife but instead carry the costs of living with wildlife and all the associated conflict. Where national governments enforce decisions and policies about resource use at the national scale, such as implementing a hunting ban or hunting suspension, thereby overriding the wishes of LCs dependent upon or affected by those resources/wildlife at the local scale, it is referred to as command and control pathology (Holling & Meffe 1996). Command and control pathology has long been recognized to be a destructive and backward approach to conservation management that results in LCs turning against conservation, thereby undermining its effectiveness and its sustainability. Experience shows that under such circumstances, government conservation agencies and even armies are unable to stem poaching, as is currently the case with massive bush meat poaching in northern Botswana and massive rhino poaching in Kruger National Park. By contrast, LCs more effectively conserve wildlife than government conservation agencies when they have decision-making and management rights over community concessions and receive direct financial benefits from wildlife i.e., when the four main cornerstone factors are properly incorporated by policy and conservation strategy.

Clearly then, several points emerge with large relevance to conservation policy in Botswana. First, many LCs around the Okavango Delta, such Maun, Komana, Toteng, Sehitwa, Tsau, Habu, Nokaneng, Gumare, and Etsa have not been allocated any sizable concessions in the Okavango Delta, from which they can benefit from wildlife tourism, collection of veldt products and fishing. Instead, big wildlife management areas on the southern and western side of the Delta such as NG26, NG29, NG30 and Moremi Game Reserve (and many others across northern Botswana), belong to the State and all the vast tourism earnings from these concessions and game reserves goes to the State, not to LCs directly adjacent to these areas. On the one hand, the LCs are the ones who must bear the costs of loss of livestock to predators, elephant damage to crops and property and even killing of people, as well as FMD from wildlife rendering cattle production in Ngamiland of little or no value, yet they are not empowered by policy to get any benefits from wildlife. This is a direct violation of a key cornerstone factor in the SESs framework. Why then should LCs

around the Delta have any will to conserve wildlife? Similarly, even where LCs have concessions in wildlife areas, they have no autonomy of management over those areas, they are told with whom they can partner in tourism, they cannot even receive direct payments from their partners and they were until recently told that they could not have trophy hunting - thankfully the hunting ban has now been lifted! In this regard, the recent lifting of the hunting ban by president Masisi is to be applauded! His decision is based on scientific best practice and pragmatic, objective wisdom, in stark contrast to the naïve and emotional error of the international community, who have criticised the lifting of the hunting ban; critics of the lifting of the hunting ban are clearly the ones in error, not understanding the science nor the complexities of conservation practice in Africa. In other words, from the point of view of scientific best practice and plain sound wisdom, president Masisi is absolutely correct in his decision to lift the hunting ban. The dissenting voices out there are not conservation scientists, most have not even been to Africa, and clearly have no knowledge of the complexities of conservation and massive human-wildlife conflict facing LCs – an unsustainable situation for conservation in the long term.

To maximize the likelihood of LCs sustainably managing wildlife and natural resources it is essential that these resources are made extremely valuable to LCs, a key cornerstone of the SESs framework. Consequently, every effort has to be made by conservationists and policy makers to maximize the value of wildlife and their supporting habitats/landscapes to LCs. Value is a multi-dimensional concept to LCs, not solely financial, including a “sense of place” and ownership of land and wildlife/natural resources, supply of game meat and veldt products and income from tourism and trophy hunting.

With regards the generation of financial income from wildlife for LCs, both trophy hunting and photographic tourism are likely to play a critical role. Trophy hunting may not be necessary to maximize income in exceptionally high-value photographic areas, such as core areas of the Serengeti-Mara system or core areas of the Okavango Delta, but becomes essential for maximizing income for LCs in many other wildlife areas around the core areas, which is generally where LCs live. For example, the community-based natural resource management (CBNRM) program in many community wildlife areas in southern Africa, including the Zambezi valley and areas around the Okavango Delta, has been strongly dependent on trophy hunting to generate income; In Zimbabwe, trophy hunting brought in 89.5% of the income for CBNRM (Campfire) in comparison to only 2.3% of the income generated by photographic tourism (Frost & Bond 2008). Similarly, in Botswana, prior to its

ban in 2014, trophy hunting generated 45.6% of the income for CBNRM compared with only 14.7% generated by photographic tourism, and since the ban photographic tourism has failed to replace that lost income (Mbaiwa 2018). In Namibia, hunting and photographic tourism contribute equally to overall income to communal conservancies, if salaries are also considered (Naidoo et al. 2016). Hunting, however, brings in much more income than photographic for newly established conservancies, a key point for the development of large landscape approaches to conservation, especially when large parts of landscapes are not suitable for photographic safaris. In addition to monetary income, hunting brings in game meat to LCs from trophy animals, a highly valued aspect and benefit of wildlife to LCs. LCs can maximize income by spatially separating their trophy hunting and photographic safari operations by allocating the most scenic areas (e.g. along wetlands and rivers where most wildlife concentrates) to photographic and the backcountry drylands to trophy hunting, as has been done very successfully in the Chobe Enclave and Khwai, Sankuyo, and Mababe community areas in Botswana prior to the hunting ban.

An excellent economic analysis of wildlife versus agriculture in Kenya demonstrates why maximizing income to LCs is so essential if wildlife is to survive in large landscapes (Norton-Griffiths & Said 2010). Kenyan wildlife policy has banned trophy hunting and essentially made wildlife much less valuable than agriculture in the lands surrounding key wildlife areas, thereby precipitating large-scale conversion of rangelands and wildlife seasonal grazing areas to cropland (Norton-Griffiths & Said 2010). Essentially, the hunting ban made it much more profitable to LCs to grow crops than have wildlife on their lands. This has resulted in a large decline in Kenya's wildlife. The anti-hunting lobby has also missed the key point that trophy hunting supplies a large amount of meat to LCs. Currently, a large bush meat trade in northern Botswana (Rogan et al. 2017) is likely to be driven by LCs: (1) having a well-recognised liking for game meat and (2) resisting conservation objectives because they have been excluded from all decision making and benefits from wildlife. The resounding message portrayed to these LCs by current policies that exclude them from decision-making and key benefits from wildlife is that the resource is obviously not theirs to conserve; they therefore deliberately encourage and support poaching. Finally, trophy hunting can have another key positive effect for LCs by strategically focussing hunting in areas of intense human-wildlife conflict, thereby creating a landscape of fear for elephants or other problem animals in areas where they are not wanted (see Crooms et al. 2013). Elephants very quickly learn to recognise and avoid areas where they are regularly hunted. So clearly

then introducing focussed trophy hunting or just hunting for elephant meat around villages will have a large positive effect on reducing human- wildlife conflict, while at the same time supplying meat and income to LCs.

Sound wisdom and the principles of scientific best practice outlined in this paper clearly point to putting the decision over trophy hunting into the hands of LCs; some LCs may elect to have trophy hunting in their areas, others may not, as it was the case with Okavango Community Trust communities before the 2014 hunting ban, but whatever the decision, it's the best decision when it is made by those whom it will directly affect. Yet, these decisions continue to be made by national governments in Africa, as is evidenced by the hunting ban in Kenya and until recently in Botswana, instituted by national governments, not allowing LCs to make their own decisions - a command and control pathology that ultimately backfires on conservation. Conservation policy must be based on pragmatic and objective scientific best practice, in line with the needs of LCs and the overall best interests of conservation, not on the emotion-based, uninformed wishes of the international community who are disconnected from the challenges facing LCs and conservation in Africa. The key point is that scientific best practice is for national government policies to make wildlife as valuable as possible to LCs and that means that trophy hunting is a critical conservation tool that must be made available to LCs. Much damage has been done to conservation in Botswana by the hunting ban instituted from 2014-2019 (thankfully now lifted), because it minimized the financial value of wildlife to LCs, took away a much revered source of meat, severely damaged CBNRM programs and took away autonomy of decision-making rights from LCs, all of which violate the key cornerstones of the SESs framework discussed earlier. Consequently, the attitudes of LCs have been turned against conservation, likely causing the large rise in bush meat poaching, now prevalent in northern Botswana.

In conclusion, current trends in the state of biodiversity and wildlife populations in Africa, indicate that conservation strategy in Africa requires major transformation to ensure a successful and sustainable future. Transformation will require “out of the box thinking”, involving a shift in focus from wilderness-based PAs to a more inclusive and integrated large landscape approach to conservation in which LCs become the key actors on the conservation stage at the local scale, including anti-poaching, natural resource harvesting and tourism development. Centralised government conservation agencies and ministries at local, regional and national levels need to shift focus from command and control activities, such as anti poaching and law enforcement, to “bigger picture” activities, such as coordinating multi-

stakeholder dialogue for planning coordinated and cohesive management of large landscapes, as well as, facilitation of community conservation activities by creation of enabling policies and providing support and advice to LCs. In other words, transformation means that conservation strategies that merely attempt to pacify LCs with some financial benefits, gifts and outreach activities, or even half-hearted CBNRM programs where LCs are still told how they are going to manage their wildlife in their own concessions, rather than allowing them to make management decisions through their own institutions, are invalid and unsustainable. The current practice of CBNRM in Botswana deviated from the initial practice where LCs were given Head Leases for their community concessions, had decision-making powers and were at the fore-front of selecting their own joint venture partners. These powers were usurped from the LCs when the community concession area leases were taken by the Ministry of Lands and Housing, decision-making on joint venture partnership was mandated to a Technical Advisory Committee, and instead joint venture agreements were made between the safari operator and government, consequently with rental and resource use fees accruing to government. This violated the autonomy of decision making cornerstone and the maximization of the value of a resource cornerstone, thereby strongly reducing the chance of LCs wanting to cooperate with conservation objectives. For effective and successful community conservation, there must be a link between the benefits and the resource being conserved, otherwise 'hand-outs' without any link will not work. During the first decade of CBNRM implementation in Botswana, communities were able to link the benefits accruing to them to wildlife conservation, and hence their attitudes towards conservation and wildlife changed as they no longer perceived the latter as nuisance but rather as a resource worth conserving as it contributed to their livelihoods.

Sound wisdom and scientific best practice clearly points to the following steps to be implemented in policy and practice by the Botswana government: (1) Each LC (as a village) around the Delta and Makgadikgadi must be allocated its own concession area of sufficient size and wildlife tourism potential to provide sufficiently large financial benefit flows to the LC; (2) Each LC must be devolved autonomy of decision-making rights over that concession to provide a "sense of place" and ownership sentiment to the LC as it was at the beginning of CBNRM; (3) The value of wildlife to the LC must be maximized by allowing both photographic tourism and trophy hunting (only if the LC wants trophy hunting); (4) Government and NGOs will work in partnership with LCs to provide advice, help with management of finances, securing international funding, and assessment of wildlife natural

resources within the concession. Research has shown that the most successful community conservation projects are where LCs have strong networks linking to various government departments and ministries and to NGOs and conservation organizations at regional, national and international scales. LCs left isolated as lone rangers in the globalised world of conservation and tourism, are likely to fail. Thus LCs need critical support, they cannot just be thrown into a concession and be expected to make a success of a highly complex system, including institutional and ecological management, wildlife and natural resource assessments, tourism partnerships, tourism development and marketing, funding acquisition, legal advice, financial management, human resource development and management. Such a diverse and complex field requires a diverse set of skills and expertise best attained through networks and linkages to a diverse field of partners at various scales. The final point for consideration in the governance of large landscapes is that they are usually made up of several autonomous LCs and many other stakeholders, creating additional complexity. Consequently, an integrated, cohesive and overarching management framework for the entire large landscape will have to create multi-stakeholder forums and dialogue where activities among the various stakeholders of the large landscape are coordinated in a manner that facilitates the overall integrity and functioning of the large landscape and achieves the overall vision of all stakeholders, including government. Let the new improved and sustainable conservation era begin!