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Developing a theory of change for a community-based response to illegal wildlife trade

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Abstract: *The escalating illegal wildlife trade (IWT) is one of the most high-profile conservation challenges today. The crisis has attracted over US$350 million in donor and government funding in recent years, primarily directed at increased enforcement. There is growing recognition among practitioners and policy makers of the need to engage rural communities that neighbor or live with wildlife as key partners in tackling IWT. However, a framework to guide such community engagement is lacking. We developed a theory of change (ToC) to guide policy makers, donors, and practitioners in partnering with communities to combat IWT. We identified 4 pathways for community-level actions: strengthen disincentives for illegal behavior, increase incentives for wildlife stewardship, decrease costs of living with wildlife, and support livelihoods that are not related to wildlife. To succeed the pathways, all require strengthening of enabling conditions, including capacity building, and of governance. Our ToC serves to guide actions to tackle IWT and to inform the evaluation of policies. Moreover, it can be used to foster dialogue among IWT stakeholders, from local communities to governments and international donors, to develop a more effective, holistic, and sustainable community-based response to the IWT crisis.*

Keywords: community-based conservation, livelihoods, open standards, poaching, results chains, social learning

Desarrollo de una Teoría de Cambio para una Respuesta Basada en la Comunidad al Mercado Ilegal de Vida Silvestre

Resumen: *El creciente mercado ilegal de vida silvestre (MIVS) es uno de los obstáculos de más alto perfil para la conservación hoy en día. La crisis ha atraído más de US$350 millones en financiamiento por donadores y por el gobierno en los años recientes, principalmente dirigido a un aumento en la aplicación de la ley. Existe un reconocimiento creciente por parte de los practicantes y quienes hacen las políticas de la necesidad de hacer partícipes a las comunidades rurales que colindan o viven con la vida silvestre como compañeros clave para aplacar el MIVS. Sin embargo, se carece de un marco de trabajo para guiar dicha participación comunitaria. Desarrollamos una teoría de cambio (TdC) para guiar a quienes hacen las políticas, los donadores y los practicantes en el asociamiento con las comunidades para combatir el MIVS. Identificamos cuatro vías para*

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las acciones a nivel comunitario: fortalecer los impedimentos para el comportamiento ilegal, incrementar los incentivos para la adopción de la vida silvestre, disminuir los costos de vivir con la vida silvestre y apoyar los sustentos que no están relacionados con la vida silvestre. Para tener éxito, todas las vías requieren fortalecer la activación de las condiciones, incluyendo la capacidad de construcción y de gobernanza. Nuestra TdC sirve para guiar las acciones que impidan el MIVS y para informar a la evaluación de las políticas. Además, puede utilizarse para fomentar el diálogo entre los accionistas del MIVS, desde las comunidades locales hasta los gobiernos y los donadores internacionales, para desarrollar una respuesta basada en la comunidad más efectiva, holística y sustentable a la crisis del MIVS.

Palabras Clave: aprendizaje social, cadenas de resultados, caza furtiva, conservación basada en la comunidad, estándares abiertos, sustentos

Introduction

Illegal wildlife trade (IWT) is a global conservation crisis that attracts international attention and donor support (Challender & MacMillan 2014; Sutherland et al. 2014; Roe et al. 2015*b*). The sudden and rapid escalation of IWT on the international agenda has been driven by a drastic increase in poaching of Africa's iconic elephants and rhinoceroses and concerns for other already endangered taxa such as tigers and pangolins. Unlike earlier poaching crises, the high level of attention to the current spate of IWT has also been driven by the security implications of IWT, in particular its links to global organized crime, armed insurgency groups, and illegal trade in small arms (Small Arms Survey 2015).

The IWT has attracted over US$350 million in funding since 2012 (Duffy & Humphreys 2014), and a primary emphasis has been on law enforcement and demand reduction (Roe et al. 2015*b*). There is, however, increasing recognition of the importance of engaging communities as part of the solution. The Global Tiger Recovery Plan, African Elephant Summit, London Declaration, Kasane Statement, Brazzaville Declaration, UN General Assembly Resolution 69/314 (2015), and UN Sustainable Development Goals (target 15.c) are evidence of this recognition.

The 2015 Kasane Statement outlines the need to identify situations where, and the mechanisms by which, actions at the local level can reduce IWT. However, a clear framework to guide, monitor, and assess such actions is lacking. Such guidance is essential to facilitate the transition from recognition of the need for community involvement in policy declarations to appropriate implementation on the ground. With some exceptions (e.g., Kahler et al. 2013; Kahler & Gore 2015), however, the role of rural communities in combatting escalating IWT and the conditions under which community engagement does and does not work have received little attention.

To address this gap, we developed a theory of change (ToC) for engaging communities as key players in combatting IWT. Our ToC specifically accounts for key enabling and disabling conditions for interventions to achieve meaningful outcomes and articulates the assumptions that underlie their likely success. We incorporated into the ToC the extensive research on common-pool resource management (e.g., Ostrom 2005, 2009; Cox et al. 2010) and community-based conservation interventions (Garnett et al. 2007; Waylen et al. 2013) that highlight the complex mix of different conditions under which community-based natural resource management is likely to succeed or fail. A novel contribution of our ToC is that it brings together the underlying assumptions and enabling conditions for engaging communities to combat IWT in an explicit, transparent, and logical framework.

Illegal Wildlife Trade and Communities

Illegal wildlife extraction and trade cover a wide range of activities. Informal subsistence hunting and other forms of wildlife use by indigenous people and local communities are at one end of the continuum and highly organized and transnational trafficking of illicitly sourced products at the other end. These different forms and scales of IWT require nuanced responses. For example, many local people may consider subsistence use and extraction of wildlife as legitimate—on the basis of longstanding tradition, customary law, or livelihood need—even if it may be technically illegal. The widespread criminalization of customary wildlife use by colonial and postcolonial administrations, however, has been problematic (Marks 2014). It can lead to the disenfranchisement of local communities from their land and natural resources and foster resentment of conservation efforts and authorities (Walters et al. 2015). We use the term IWT to refer specifically to the high-value, transnational trafficking of wildlife rather than subsistence or customary use of wildlife–whether legal or not.

The communities that are close to wildlife are keys to combating IWT. By virtue of their proximity to and knowledge of wildlife, they are well placed to participate in and support IWT. The same characteristics mean, however, that they are equally well placed to detect, report on, and help prevent IWT. Such communities are diverse. Socioeconomic, political, legal, and environmental factors influence the nature of interactions with wildlife; hence, perceptions of and attitudes toward IWT differ

(Biggs et al. 2015). These differences affect the types of community-engagement interventions that are likely to be effective.

A Theory of Change Defined

A ToC is a decision support tool that illustrates the causal links and sequences of events needed for an activity or intervention to lead to a desired outcome or impact and articulates the assumptions underlying each step in the chain. Theories of change map the missing middle between what an activity or intervention does, what impact it has, and how this leads to the achievement of desired outcomes and impacts (Center for Theory of Change 2013).

Theories of change have been used widely in international development because they provide a useful framework for planning activities and for evaluating whether desired outcomes and impacts have been achieved (e.g., Vogel 2012; Piggot-Irvine et al. 2015; Valters 2015). For example, the humanitarian agency Oxfam uses ToCs to help project partners' target beneficiaries and agree on a joint vision of what they want to achieve and how. Oxfam recognizes that ToCs are useful as a foundation for monitoring, evaluation, and decision making (James 2011). The UK Department for International Development (DFID) also uses ToCs for program design, monitoring, evaluation, and learning. As part of a stronger focus on outcomes and impacts based on evidence, all DFID departments and country programs commissioning work or seeking funding now include a ToC analysis to underpin their planning and monitoring and strengthen program design, evaluation, and learning (James 2011).

Theories of change have been used in conservation, primarily in the form of results chains (Margoluis et al. 2013). The Conservation Measures Partnership and the Open Standards for the Practice of Conservation (Schwartz et al. 2012) software program, Miradi, allows conservation practitioners to develop, test, and continually refine results chains for different interventions (Margoluis et al. 2013). Results chains, however, are not always explicit about underpinning assumptions––which is a core component of ToCs as they are used in international development. Moreover, proponents of ToCs in international development focus to a greater extent on the stakeholder process of generating a participatory ToC that enables a better understanding of context and underlying assumptions than is reflected in the discussion on results chains in the conservation literature (Valters 2014). This distinction is important because a ToC is intended to be a process-oriented tool that enables the questioning of assumptions that are often sidelined and consideration of the contexts in which activities and interventions take place (Valters 2015). The complex reality of IWT means a great deal of emphasis on validating assumptions, understanding context, and managing actions and interventions adaptively over time is required (Challender et al. 2015).

Developing a ToC for Combatting IWT

We initially developed our ToC in preparation for an international symposium on communities and IWT (Roe et al. 2015*b*). The symposium was structured so that the 70 participants representing donors, governments, and nongovernmental organizations active in IWT could provide multiple iterations of feedback into a draft version of the ToC (Biggs et al. 2015) based on their experiences. Following the symposium, a discussion paper was prepared (Biggs et al. 2015) and widely disseminated (Supporting Information).

The ToC describes 4 pathways for engaging communities and, ultimately, reducing IWT (Fig. 1). A series of enabling conditions underlie all the pathways. These conditions relate to the 6 dimensions of governance (sensu Kaufmann et al. 2011): voice and accountability, political stability and absence of violence and terrorism, government effectiveness, regulatory quality, rule of law, and control of corruption. Countries that experience high levels of IWT are often characterized by poor governance (www.govindicators.org) (Smith et al. 2003; Burn et al. 2011). Similarly, governance quality, in particular corruption control, is a good predictor of the status of populations of key species targeted by IWT, such as the African elephant (*Loxodonta Africana*) and the black rhinoceros (*Diceros bicornis*) (Smith et al. 2003; Burn et al. 2011). Therefore, the ToC describes a number of enabling actions to strengthen governance from the local, to national, to regional, and to international scales, including supporting the institutional framework to enforce against IWT; increasing the perceived fairness of wildlife laws; strengthening laws for community management of and benefit from wildlife; and fighting corruption. In addition, underlying all the actions in the ToC is the need for enhancing community capacity (Fig. 1).

Pathways to Impact

Strengthening disincentives for illegal behavior (pathway A in Fig. 1) is a key element of the response to escalating IWT (Challender & MacMillan 2014; Duffy & Humphreys 2014; Bennett 2015). Pathway A includes increasing law enforcement, strengthening penalties, and increasing the social stigma of the illegal activity (Keane et al. 2008). Communities contribute to strengthening disincentives for illegal behavior informally–through applying social sanctions against poachers-and formally-through employment as game guards and scouts. Due to the increasingly militarized nature of poaching gangs, many communities will be reliant on support from

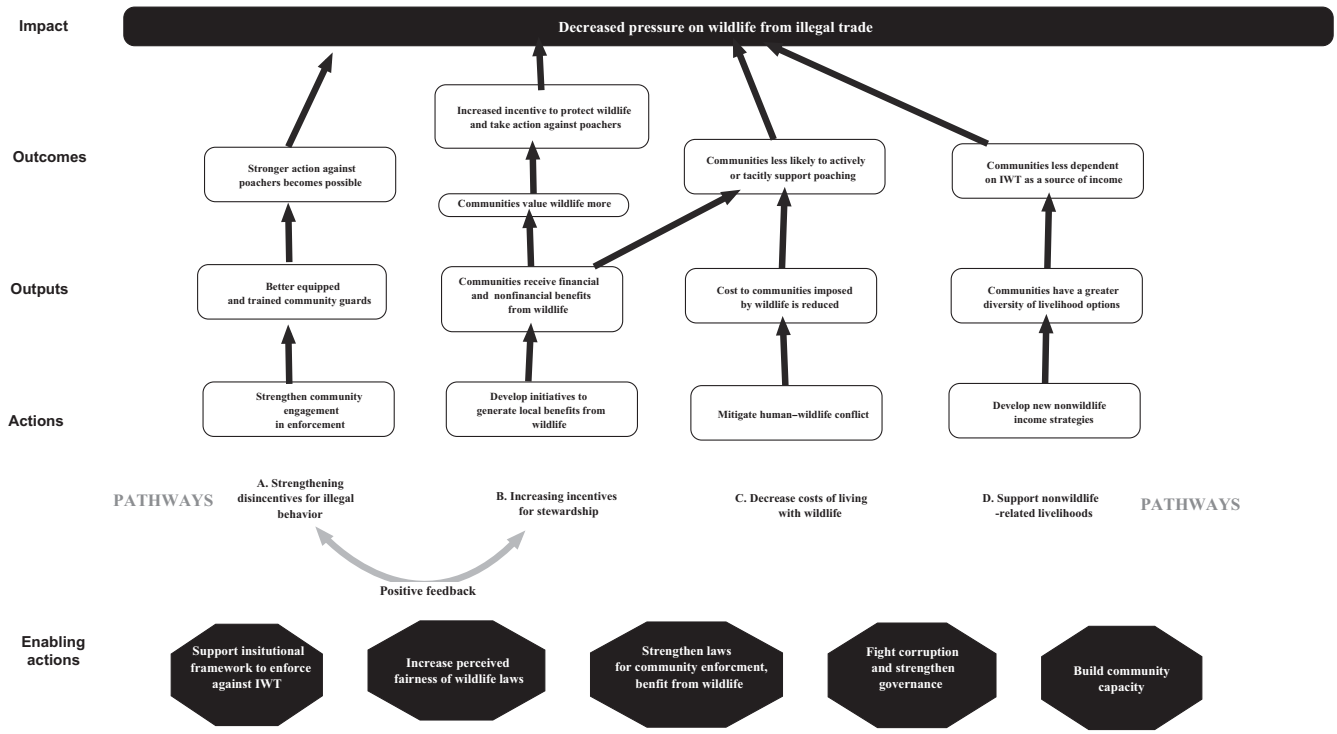

Figure 1. A simplified theory of change for community-based actions against illegal wildlife trade. There is positive feedback between pathways A and B because communities with increased incentives for stewardship will have more resources to combat poaching and will be more likely to do so. See Supporting Information for details on the theory of change and the assumptions it is based on.

external enforcement agencies to effectively counter better-equipped poachers (Small Arms Survey 2015).

Increasing incentives for stewardship of wildlife (pathway B in Fig. 1) is a key element in tackling IWT (Child 2012; Biggs et al. 2013; Ihwagi et al. 2015). The actions in pathway B aim to develop or support initiatives or enterprises that can generate local benefits from wildlife and build individual and community capacity to benefit from these initiatives. An example in the first category is developing a community tourism enterprise and in the second training local people to become nature-tourism guides. The outputs are that communities are able to capture greater financial and nonfinancial benefits from wildlife. The outcomes of this are that the community will value wildlife more and have greater incentive to protect wildlife and to not engage in IWT (e.g., Frost & Bond 2008) (see Table 1 & Supporting Information for assumptions underlying this results chain). Enabling ownership and use rights of wildlife in and of itself is considered by some scholars to be critical to communities playing a strong role against IWT (Child 2012; Roe 2015). Ownership of natural resources and the ability for communities to actively participate in their management is a critical ingredient of sustainable natural resource management more broadly (Ostrom 1990, 2005; Cox et al. 2010).

Living alongside or with wildlife can entail a variety of costs including livestock predation, crop raiding, and attacks on people (Woodroffe et al. 2007; Dickman 2010). It can also result in opportunity costs if the potential for other land uses is restricted (Woodroffe et al. 2007). All of these can cause resentment toward wildlife.

Table 1. Examples of assumptions in the theory of change for community-based actions against illegal wildlife trade.*

Pathway	*Assumption*
A. Strengthen disincentives for illegal behavior	Community rangers use equipment and training to combat illegal wildlife trade and do not use them to poach themselves or for other purposes.
B. Increase incentives for stewardship	Benefit sharing within communities is sufficiently equitable, and capture of benefits by elites does not undermine success.
C. Decrease costs of living with wildlife	Compensation does not lead to perverse behavior (e.g., damage from wildlife is not actively induced to receive payments).
D. Support nonwild life-related livelihoods	The value of wildlife products poached or traded in illegal markets is not so high that all other forms of income cannot come close to competing.

* *See Supporting Information for details on the theory of change and assumptions it is based on and Fig. 1 and for interactions between the pathways.*

Decreasing the costs of living with wildlife (pathway C in Fig. 1) is therefore another critical mechanism for discouraging communities from engaging in IWT (Kahler et al. 2013). An example of an action in this pathway is providing a community with better fences for their livestock to reduce stock losses to predators and thereby decrease antagonism toward wildlife and ultimately reduce the resultant poaching (Fig. 1, Table 1, & Supporting Information).

Creating alternative sources of income (pathway D in Fig. 1) is a strategy often advocated to reduce local engagement in IWT. For example, in the Ruvuma Elephant Project implemented by the PAMs Foundation, local people are supported to grow chillies that not only act as a deterrent for elephants and so help reduce human–wildlife conflict but also provide an income-generating opportunity through the development of small enterprises selling chili jam (Lotter & Clark 2014; Roe 2015). Such alternative-livelihood interventions are focused on reducing livelihood dependency on wildlife (also known as decoupling) (Roe et al. 2015*a*; Wright et al. 2015). A wide variety of such interventions have been used in conservation initiatives, including tailoring and barbering, rickshaw pulling, and bicycle repairing (Roe et al 2015*a*). The intended output (Fig. 1) is that the community has a greater diversity of livelihood options. The anticipated outcomes are that communities depend less on wildlife as a source of revenue and so have less need to poach (Fig. 1 & Supporting Information). However, the evidence base for the effectiveness of such alternative-livelihood interventions is patchy and weak (Roe et al 2015*a*).

Incorporating Complexity

IWT is a dynamic and complex process and strategies to address it need to reflect this complexity (Challender et al. 2015). Engaging communities is only one part of a larger strategic approach to IWT that incorporates demand reduction and law enforcement along entire value chains for wildlife products. Within our ToC, there are interactions and feedback loops between the 4 pathways. For example, as success is reached in pathway B and communities gain ownership rights and incentives for stewardship and wildlife protection increase, pressure not to engage in IWT should also increase, which complements pathway A, providing stronger disincentives for IWT. Similarly, if success is reached in both pathways A and B, resulting in reduced IWT and increased wildlife populations, human–wildlife conflict may increase, resulting in an even greater need for the activities outlined in pathway C. Local communities' participation and colearning is an essential component of successful community-level actions and should be coupled with an ongoing process of adaptive management. The ToC should not be read as implying a series of activities imposed by external actors, but as a self-learning (a heuristic) guide to help partnerships of external actors and local communities think through activities to address IWT. The need for an iterative, adaptive process focused on learning is one of the key strengths of applying a ToC approach to address complex social issues such as IWT (Valters 2014; Challender et al. 2015; Valters 2015).

Challenges for Implementation

Governance Challenges

Adequate levels of governance are required for the actions indicated in our ToC to be effective. Governance challenges can exist at all levels and scales from a local village to the national and international levels (Smith et al. 2003; Balint & Mashinya 2006). Elite capture (where resources designated for benefit of the larger population are usurped by a few individuals of superior status) at the village through national levels is widely recognized as a challenge facing community-based conservation and community-based interventions more broadly (Platteau 2004; Iversen et al. 2006; Dasgupta & Beard 2007). Related to the challenge of elite capture is the tendency of some governments to resist decentralization of authority and community or individual ownership of wildlife as has been observed in Zimbabwe's CAMPFIRE program (Mutandwa & Gadzirayi 2007; Frost & Bond 2008). Because increasing incentives for wildlife stewardship (pathway B) often requires the devolution of use and ownership rights, this presents a serious challenge to the implementation of our ToC.

Corruption, defined as the abuse of public office for private gain, is understandably prevalent when dealing with high-value commodities such as wildlife products in low-income countries where the salaries of law-enforcement officials are low (Challender & MacMillan 2014; Smith et al. 2015). It contributes to a lack of trust in law enforcement authorities and represents a second key governance challenge facing community-engagement to combat IWT. Effective enforcement against IWT requires that corruption be addressed so that officials can be trusted to apply the law (e.g., arresting poachers and traders of illegal wildlife products). Likewise, such poachers and traders, if guilty, should also ultimately be subject to appropriate punitive measures.

Challenges within Communities

Communities are composed of individuals engaged in a variety of income-generating and livelihood-supporting activities, some legal and some illegal. For individuals to switch from engaging in IWT, the alternatives on offer must generate comparable income levels if they are to be attractive–this can be challenging to achieve (Keane et al.

2008; Messer 2010; Knapp 2012). An additional challenge is that some of the benefits and costs from engaging in IWT or engaging in conservation are accrued at the community level and some are accrued at the individual level. The balance between individual and community benefits and costs and the governance and social characteristics within communities affect the choice and effectiveness of different strategies and interventions to engage communities in tackling IWT.

When community members become active in law enforcement against IWT, other challenges can arise. First, there is the immediate threat to personal security when community members–often unarmed–are confronted by armed poachers (Painter & Wilkie 2015). Second, when some community members are employed as game guards to counter IWT and others are still involved in poaching, there can be a breakdown in social cohesion; game guards are perceived as part of external law enforcement agents rather than member of the community (Painter & Wilkie 2015).

Third, the presence of other illegal trades (e.g., drugs, weapons, and human trafficking) in the same communities where IWT occurs will impact the likely success of community-based interventions to counter IWT because these other trades will affect the dynamics of engaging communities to counter IWT (Douglas & Alie 2014; Roe 2015).

Finally, if community-based enforcement against IWT is functioning well and households within such a community are receiving benefits from wildlife and conservation, there is a risk of in-migration by outsiders wishing to share in the benefits (Homewood et al. 2004). Such immigrants are less likely to feel attachment or a sense of ownership or responsibility over the wildlife and, thus, may be more likely to engage in IWT as a source of additional income. Communities that have participated successfully in Zimbabwe's CAMPFIRE program have been subjected to this type of in-migration (Mutandwa & Gadzirayi 2007).

Policy and Management Implications

Our ToC points to the need for greater recognition of the value of coproduced and cooperative strategies with communities as partners to combat IWT and can be used by policy makers, donors, and implementing agencies as a framework against which interventions can be evaluated. This ToC can be used as a framework in different contexts to evaluate whether the enabling conditions are in place; and the likelihood that the assumptions are valid to achieve reduced IWT through a particular intervention. For example, supporting nonwildlife-related livelihoods (pathway D in Fig. 1) is unlikely to be successful if the value obtained from the alternative activities does not come close to competing with a high-value IWT product such as rhinoceros horn (assumption D in Table 1).

Actions such as increasing enforcement against IWT are critical but can inadvertently have a negative effect on communities living with wildlife. Therefore, the impact on community livelihoods of stricter policies and greater enforcement against both legal and IWT requires consideration (Cooney & Abensperg-Traun 2013; Duffy 2014). This includes development and use of new enforcement technologies such as drones (Sandbrook 2015). Our ToC can help determine when these unintended negative consequences may occur and provide a mechanism for evaluating alternative courses (Table 1, Fig. 1, & Supporting Information). Actions or policies that affect the use rights of communities need to be carefully considered because the de facto or de jure weakening of use rights over wildlife is likely to reduce a community's willingness to combat IWT (Child 2012). For example, the indefinite suspension of the import of elephant sport trophies from Zimbabwe in 2015 by the United States (US Fish & Wildilfe Service 2015) effectively reduced the use rights of community groups that rely on income from elephant sport trophies to support their communities and fund conservation efforts (Frost & Bond 2008).

To gain genuine, long-term buy-in from local communities in efforts to reduce IWT, and to test our ToC across a broad range of sites and contexts, donors, implementers, and policy makers need to engage in open dialogue with local communities. In this way, the nuances of individual and community predicaments, and particular attitudes, challenges, and aspirations can be better understood. This will be required for the genuine buy-in of local communities to become active partners in the stewardship of wildlife and in the reduction of IWT.

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Supporting Information

A detailed ToC diagram (Appendix S1), a detailed list of assumptions for the ToC (Appendix S2), a description of the feedback loops in the ToC (Appendix S3), and a list of the individuals and organizations who provided input into the ToC (Appendix S4) are available online. The authors are solely responsible for the content and functionality of these materials. Queries (other than absence of the material) should be directed to the corresponding author.

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