First line of defence?

A review of evidence on the effectiveness of engaging communities to tackle illegal wildlife trade

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The aim of the Natural Resources Group is to build partnerships, capacity and wise decision-making for fair and sustainable use of natural resources. Our priority in pursuing this purpose is on local control and management of natural resources and other ecosystems.

Illegal wildlife trade (IWT), and particularly the poaching of high value iconic species such as elephants, rhinos and tigers, is at the top of the international conservation agenda. Despite increasing recognition that engaging local communities in conservation efforts is a key component of strategies to tackle IWT, there is no 'one size fits all' approach. Based on a review of published literature, as well as case studies submitted to IIED's Conservation, Crime and Communities database, this issue paper assesses evidence on the effectiveness of community engagement approaches. It highlights some encouraging success stories but, more significantly, demonstrates the paucity of the current evidence base and the urgent need for better documentation and analysis (of what works and what doesn't, where and why) if we are to scale up efforts to tackle IWT.

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Summary

Illegal wildlife trade (IWT) in wild species and products is at the top of the international conservation agenda. But it is not just a concern for conservationists – it also has implications for economic and social development, and security.

The level of international concern about IWT is reflected by the level of investment that has been made in tackling it – more than US$1.3 billion since 2010 (Wright *et al.* 2016). It is well recognised that tackling IWT requires a multi-pronged approach and that, beyond reducing demand for illegal products and increasing anti IWT law enforcement along the entire wildlife value chain, a third critical strategy is engaging local communities in conservation. By virtue of their proximity to and knowledge of wildlife, local people are well placed to participate in or support poaching and IWT. The same characteristics mean, however, that they are equally well placed to detect, report on, and help prevent it – if the appropriate incentives are in place. But community engagement has received far less attention and investment than law enforcement or demand reduction to date. Only about 15 per cent of the US$1.3 billion has been allocated to initiatives intended to support sustainable use and alternative livelihoods.

Part of the problem is that there is no blueprint approach. While global and regional policy commitments to engaging communities abound, details of how these should be implemented and how they impact IWT remain vague. This report attempts to take a first step in addressing that vagueness. It does so by reviewing existing evidence on the effectiveness of different approaches to engaging communities in efforts to tackle IWT.

Through a literature review and through submissions to IIED's Conservation, Crime and Communities (CCC) database (www.communitiesforwildlife.iied.org), we identified 49 different examples of community-based initiatives for tackling illegal wildlife trade from Africa (25 initiatives), Asia (18 initiatives) and Latin America (6 initiatives).

The most common approach to community engagement in the 49 initiatives was direct involvement in anti-poaching activities – as guards/rangers or informants. Another common approach was the introduction of alternative livelihoods (both wildlife and non-wildlife based). Wildlife tourism development was the most common form of livelihood support activities deployed specifically to engage poachers in one case, but more commonly used to generate conservation incentives for the broader community. Human wildlife conflict mitigation was also employed in over 20 per cent of the initiatives. Very few (four) initiatives involved community members benefiting from sustainable harvesting and legal trade as a conservation incentive.

Of the 49 initiatives identified, only 26 (53 per cent) reported on their effectiveness (either in terms of reducing poaching or maintaining or increasing wildlife populations), although a further six noted that the initiatives were at too early a stage in their development to report on effectiveness. For the 26 that reported on effectiveness, 19 (73 per cent) reported that they were effective – although in four cases effectiveness was partial (it varied over time or was site specific); two were not effective; and five were unclear (either they did not provide an assessment of the community engagement component of a broader anti-IWT initiative, or they showed contradictory results).

Of the 26 initiatives with a reported impact on poaching/wildlife numbers, only seven (8 per cent of the total dataset) provided details of how this impact had been assessed – including through interviews with local community members, through analysis of records on reported poaching incidents, and through visual assessments. Of these seven, four found that illegal activities (poaching, logging, illegal plant collection) had declined and one found no change; one found that target populations had increased and one found no change.

The initiatives we identified reveal a number of best practice lessons – for example the importance of i) locally driven initiatives that are responsive to the local context; ii) local 'ownership' of wildlife – whether de jure or de facto; iii) long term relationships between project implementers and local people; and iv) multi-stakeholder partnerships. However beyond these broad commonalities, it is hard to point to clear best practices from a small but diverse set of case studies.

Exploring the extent to which the case studies align with current theory on community engagement, and the preconditions that are associated with success sheds more insights. A Theory of Change (ToC) for engaging communities in tackling IWT has been developed by IIED and partners. The ToC identifies four pathways for community-level actions: A) strengthening disincentives for illegal behaviour; B) increasing incentives for wildlife stewardship; C) decreasing costs of living with wildlife; and D) supporting non-wildlife related livelihoods.

Overall we found that all the initiatives we identified aligned with one or more of the ToC pathways. By far the most common pathways followed were A) strengthening disincentives for illegal behaviour (33 initiatives) and B) increasing incentives for wildlife stewardship (29 initiatives). Often these two pathways were combined together and/or with one of the two other pathways C) decreasing costs of living with wildlife or D) supporting non-wildlife related livelihoods. Initiatives that followed the same pathway typically used similar activities and outputs. For pathway A, many of the initiatives involved actions that led to better trained and better equipped local community rangers/guards and/or strengthened collaboration between community and professional anti-poaching response units. For

pathway B very few initiatives that involved activities to generate financial and/or non-financial benefits from wildlife made these incentives conditional on reducing poaching activities.

Five initiatives included a focus on community education and awareness raising which has not been an explicit element of our ToC to date – although could potentially be considered as an enabling activity. Overall, however, the case studies identified in our literature review reveal a strong alignment with our ToC and suggest that the pathways we have described, and the assumptions/preconditions associated with them provide a good indication of best practice.

Overall our literature review shows, however, that there is no blueprint approach to engaging local communities and that a diverse range of initiatives have been developed. What it shows more clearly, is that there has been very little documentation of these efforts and even less evaluation of their effectiveness in any kind of systematic way.

What is needed now is a concerted effort to build the body of evidence on what works and what doesn't in efforts to tackle IWT in general as well as in community engagement initiatives specifically. We hope the CCC database can be a first step in this endeavour. We therefore encourage project implementers, funders and researchers (including those associated with case studies identified in this review where information may be missing, out of date, or incorrect as well as those who are aware of additional initiatives that have not been captured in our review) to write up their experiences and submit case studies to the database as a contribution to that effort.

Introduction

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Illegal wildlife trade (IWT) in wild species and products – ranging from rhino horn and elephant ivory, to medicinal plants, timber, shark fins and pangolins – is at the top of the international conservation agenda (Challender and MacMillan 2014; Sutherland *et al.* 2014). It is also high on the development agenda: many of the iconic species that are in the sights of poachers are in poor countries who depend on them as the basis for tourism industries or to support the livelihoods of rural communities. And on the security agenda IWT is associated with organised crime syndicates, illegal arms trafficking and, in some cases, armed militant groups (Carlson *et al.* 2015).

"Beyond the immediate impacts of liquidating wildlife that otherwise could serve as a vehicle for public and private sector investment in rural areas – think nature-based tourism – wildlife crime is leading to the proliferation of guns in exactly those areas that need less conflict, not more; it is providing money for corruption, in exactly those countries in which corruption has already stalled all pro-poor decision making and doing business legitimately is already hard enough; and it is oiling the engine of crime and polluting efforts at good governance, democracy and transparency in exactly those communities that need more voice not more silence. It is anti-worker, anti-women and anti-poor."
Valerie Hickey, World Bank, 2013. See http://blogs.worldbank.org/voices/Fight-to-End-Wildlife-Crime-Is-Fight-for-Humanity

The surge in IWT and associated poaching started in the mid-2000s and since then it has been brought to the attention of a wide range of international policy actors from the UN Secretary-General to UK royalty, the US presidency and a whole host of celebrities. It has also attracted hundreds of millions of dollars of funding from international donors, both public agencies and private philanthropists. Analysis by the World Bank shows that over US$1.3 billion was committed to combat illegal wildlife trade between 2010 and June 2016, equivalent to approximately US$190 million per year and peaking at US$316 million in 2014 (Wright *et al.* 2016). The emphasis of policy debates and funding allocations has, to date, been primarily allocated to reducing the demand for illegal goods in consumer countries and to strengthening law enforcement to reduce IWT in source countries. For example, the World Bank analysis shows that approximately 46 per cent of the funding was allocated to protected area management to help prevent poaching, and a further 19 per cent went to law enforcement including intelligence led operations and transnational coordination.

In many cases this law enforcement strengthening has occurred through the use of military tactics, personnel and equipment (Duffy 2014). A recent example is the US Global Anti-Poaching Act (HR 2494), which focuses heavily on building enforcement capacity in wildlife source countries, including providing defence equipment and training to security personnel.

It is well recognised that tackling IWT requires a multi-pronged approach and, beyond increasing enforcement and reducing demand, a third critical strategy is to engage local communities in conservation. By virtue of their proximity to and knowledge of wildlife, local people are well placed to participate in or support poaching and IWT. The same characteristics mean, however, that they are equally well placed to detect, report on and prevent it – if the appropriate incentives are in place. But community engagement has received far less attention and investment than law enforcement or demand reduction to date (IUCN SULi 2011). The World Bank analysis shows that only about 15 per cent of US$1.3 billion spent on IWT to date has been allocated to initiatives intended to support sustainable use and alternative livelihoods. Part of the problem is that there is no blueprint approach. Communities are diverse. Socio-economic, political, legal and environmental factors influence the nature of their interactions with wildlife and hence different perceptions of and attitudes towards IWT (Biggs *et al.* 2015). This will in turn influence the types of community engagement interventions that are likely to be effective. Thus, while global and regional policy commitments to engaging communities abound (Table 1), details of how these should be implemented and how they impact IWT remain vague.

This report attempts to take a first step in addressing that vagueness. It does so by reviewing existing evidence on the effectiveness of different approaches to engaging communities in efforts to tackle IWT. The report is based on a keyword-driven literature review as well as a series of case studies that have been submitted to the Conservation, Crime and Communities (CCC) online database hosted by IIED (www.communitiesforwildlife.iied.org). The report documents the type of evidence that is currently available, including its geographic scope and the species/resources that have been studied. It also explores the types of community engagement strategies that have been employed and the reported effectiveness of these in tackling IWT. The report concludes by assessing the evidence against an existing Theory of Change (ToC) developed by IIED and partners (Biggs *et al.* 2016).

Table 1. International policy commitments on communities and IWT

LONDON DECLARATION (2014)	Increase capacity of local communities to pursue sustainable livelihood opportunities and eradicate poverty. Work with, and include local communities in, establishing monitoring and law enforcement networks in areas surrounding wildlife.
KASANE STATEMENT (2015)	Promote the retention of benefits from wildlife resources by local people where they have traditional and/or legal rights over these resources. We will strengthen policy and legislative frameworks needed to achieve this, reinforce the voice of local people as key stakeholders and implement measures which balance the need to tackle the illegal wildlife trade with the needs of communities, including the sustainable use of wildlife.
BRAZZAVILLE DECLARATION (2015)	Recognise the rights and increase the participation of indigenous peoples and local communities in the planning, management and use of wildlife through sustainable use and alternative livelihoods, and strengthen their ability to combat wildlife crime.
UN GENERAL ASSEMBLY (2015)	Support…the development of sustainable and alternative livelihoods for communities affected by illicit trafficking in wildlife and its adverse impacts, with the full engagement of the communities in and adjacent to wildlife habitats as active partners in conservation and sustainable use, enhancing the rights and capacity of the members of such communities to manage and benefit from wildlife and wilderness.
SUSTAINABLE DEVELOPMENT GOALS TARGET 15.C (2016)	Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities.
HANOI STATEMENT (2016)	Recognise the importance of supporting and engaging communities living with wildlife as active partners in conservation, through reducing human–wildlife conflict and supporting community efforts to advance their rights and capacity to manage and benefit from wildlife and their habitats; and developing collaborative models of enforcement. Sustainable livelihoods are most likely to be secured with the engagement of relevant community groups and the appropriate retention of benefits from wildlife for local people surrounding protected areas. The active participation of local people is critical to effective monitoring and law enforcement as well as sustainable socio-economic development.

1.1 Methodology

Our search for evidence on the effectiveness of community engagement initiatives as a strategy for tackling wildlife crime was undertaken using the bibliographic database Scopus and search engine Google Scholar, as well as through call outs for evidence and case studies issued through the Poverty and Conservation Learning Group and the IUCN Sustainable Use and Livelihoods (SULi) Specialist Group. The search strings used are detailed in Appendix 1.

Literature review results

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2.1 Number and types of studies identified

Overall we identified 49 different examples of community-based initiatives for tackling illegal wildlife trade. This number was considerably smaller than we had anticipated and there are several reasons for this.

First, much of the literature on community-based interventions is descriptive in nature and lacks a specific focus on international illegal wildlife trade. For example, our forestry related searches were swamped with literature on drivers and trends in deforestation/illegal logging; international and national governance responses; extraction of non-timber forest products and associated impacts; and the welfare/livelihood and household impacts of forest conservation based interventions. Similarly, the fisheries literature included search results that focused on the status and trade of fish as well as interventions that seek to prevent overfishing including no take zones, or the introduction of alternative fishing methods.

We expected to capture many more examples of initiatives to tackle illegal wildlife trade within the community-based natural resource management (CBNRM) literature. However, we found few concrete examples of initiatives that were specifically targeted at IWT. Much of the literature is focused on the following broad themes: history and evolution of CBNRM; comparisons of CBNRM approaches across countries; subsistence natural resource use and CBNRM; governance issues related to CBNRM (eg related to power, equity and rights); effectiveness/impacts on livelihoods (eg through poverty alleviation or improvements to food security or health); and case studies of tourism ventures or opportunities. Appendix 2 provides an overview of the key (non-IWT) themes that we found in our literature search. Many of these themes are relevant in providing an understanding of the enabling conditions that are necessary for engaging communities in tackling IWT but do not themselves count as evidence on the effectiveness of community-based approaches.

Second, of the literature specifically focused on IWT, in many cases it was difficult to determine whether the species of focus were destined for the local market versus the international market. We specifically did not search for case studies of illegal bushmeat trade since this is notoriously difficult to separate into different types of markets and also hard to separate out the merely unsustainable from the actually illegal. But we also experienced problems with the illegal timber and fisheries literature where we had expected to find multiple case studies.

Third, much of the practical experience of engaging communities to tackle IWT has not been formally documented, or is buried in project reports and other documents that are not easily accessible. Others have experienced related challenges when attempting to review similar literature, for example, Mossaz *et al.* 2015 found different lion conservation initiatives in the published literature versus field visits to audit initiatives – with the latter capturing more community-based approaches. The CCC database is intended to help address this problem by encouraging the development of a growing body of evidence.

The 49 relevant initiatives that we did find were captured in 27 formal 'scientific' publications (24 journal articles and 3 book chapters), and 25 'grey literature' case studies – the full list of initiatives and their sources is provided in Appendix 4.

The majority (19) of the published studies were in conservation journals. Only two studies were captured from development related journals (Manyema *et al.* 2013 and Jones *et al.* 1999). One document was captured from a tourism journal (Sebele 2010) and one from an unanticipated source, *Bulletin of the Society of Cartographers* (Vitos *et al.* 2013).

Sources of grey literature included the UNDP Equator Initiative's Case Study Series, IIED's previous work on IWT and community engagement (Roe *et al.* 2015), and project documents provided by the UK Government's IWT Challenge Fund.

2.2 Geographical location and land use types

Twenty five of the initiatives we captured in the literature review were located in Africa, 18 in Asia and 6 in Latin America. Regionally, more initiatives were captured in Kenya (6 examples), Indonesia and Nepal (4 examples each) than in other countries. Two of the community-based approaches were based in more than one country; (1) Vicuña management in Argentina, Bolivia, Chile and Peru (Lichtenstein 2015, Stølen *et al.* 2009); and (2) The Greater Kilimanjaro Landscape Project in Tanzania and Kenya (Fitzgerald and Muruthi 2015).

Within case studies the community-based approaches were typically undertaken on state managed land inside or outside a protected area (PA) – with 26 examples, 18 within a PA, 7 outside a PA and one across both categories. In addition we found 11 initiatives implemented on communal land, and one on private land. Another six involved multiple land management types, such as the Ruvuma Elephant Project which includes village managed land, government managed forest reserves, and game reserve and wildlife

management areas (Lotter and Clark 2014). One further project, the Mali Elephant project, involved land under traditional systems of management as well as unmanaged land (Susan Canney, see www.communitiesforwildlife.iied.org/mali-elephant-project). The land management type was unspecified or not clear for five examples.

2.3 Focus on illegal wildlife trade

Twenty five of the initiatives captured in the literature review were established specifically to address poaching and/or illegal wildlife trade, while a further 15 had illegal wildlife trade as one of a number of objectives. For example, we found three initiatives that were intended to address human wildlife conflict as a primary objective but also included actions to tackle poaching of snow leopards (Wilkie *et al.* 2016, Simms *et al.* 2011, Mischa *et al.* 2003). We also found initiatives responding to multiple threats such as land degradation including the communal areas management programme for indigenous resources (CAMPFIRE) in Zimbabwe (Manyema *et al.* 2013), the Makuleke Ecotourism Project in South Africa (UNDP 2012a) and the Northern Rangelands Trust, Maasai Wilderness Conservation Trust, and Il Ngwesi Group Ranch, all located in Kenya (King and Craig 2015, UNDP 2013a, UNDP 2012b).

Two initiatives did not have tackling illegal wildlife trade as a stated objective when they were established. The Chunoti Co-management Committee in Bangladesh, for example, was formed to reduce overexploitation of the forest including non-timber forest products. However, over time, the Committee has established all-women anti-poaching patrols to discourage illegal timber logging and wildlife poaching (UNDP 2013b). Similarly, the Mali Elephant project was initially established to find sustainable solutions to managing land and natural resources that benefit both local communities and elephants. Only recently, in response to changing threats with increasing destabilisation in the region, did illegal wildlife trade become a problem and subsequent focus of the project (Susan Canney, see www.communitiesforwildlife.iied.org/mali-elephant-project).

For seven of the initiatives we captured there was no information on the specific objectives for their establishment.

2.4 Types of poachers and their targets

The majority of initiatives (25) captured in the literature review were concerned about poaching of African elephants or rhinos, or both. A number of the initiatives targeted multiple species but those which were the primary focus were:

- Timber (six initiatives of which one also covered African grey parrot and white tailed hornbill)

- Tigers (five initiatives of which two also covered leopard, sloth bear, pangolin, gaur and samba)

- Snow leopards (three initiatives of which one also covered argali sheep and ibex)

- Tortoises (two initiatives)

- Pangolins (two initiatives)

- Cacti (one initiative)

- Crocodiles (one initiative)

- Mountain Gorillas (one initiative)

- Vicuna (one initiative)

- Lesser Adjutant, Oriental Darter and Sarus Cranes (birds) (one initiative)

- Arapaima (fish) (one initiative)

We were surprised at the limited range of species covered and the lack of studies on some species which are traded illegally (eg lions for bone trade). However, the list reflects species that have been studied from a community engagement angle rather than other IWT issues.

Of the 49 initiatives covered, poachers came from both inside and outside the local community (Table 2), although in many cases there was no detailed information about who the poachers were and how the initiative was expected to target them. Additionally, for 14 initiatives the type of poacher was unclear or not specified.

Table 2. Types of poachers

TYPE OF POACHER	NO. OF STUDIES	EXAMPLES
Local	14	The Arapaima fish is highly prized for its meat and is among the most sought after fish species in South America. Local harvesters from the Rupununi communities of Guyana sell the fish to buyers in Brazil at a low value, who then trade it on at much higher values (Fernandes 2006).
Outsider	7	Typically, individuals from inside and/or outside the local community can act as the first link in the supply chain of the illegal wildlife trade. For example, local community members collect and sell tortoises, or turn a blind eye to poachers from outside the community (Randrimanampisoa *et al.* 2015).
Mixed	14	In Nepal, army and ex-army individuals as well as gangs of tribal people contracted by external traders have been implicated in rhino poaching activities (Martin and Martin 2010). In Mexico, a local community member alleged that external Japanese buyers come to Barranca de Metztitlán Biosphere Reserve to hire local community members as day labour in order to illicitly harvest cacti (Pulido and Cuevas-Cardona 2013). Elephant poachers in the rainforests of the Congo operate from small dispersed camps and are normally armed with shotguns, Kalashnikovs and rifles. They operate with relative impunity as they bribe ecoguards or other law enforcers and are often part of larger networks supported by local elites who also profit. Ecoguards looking for easier targets frequently visit the Mbendjele hunters and other local communities where they resort to violence and abuse (Vitos *et al.* 2013).
Not specified or unclear	14	Researchers investigating the CAMPFIRE initiative asked stakeholders to identify 'who is an elephant poacher?' - to which government representatives, traditional chiefs, NGOs and community groups levelled allegations and counter-allegations against each other (Manyema *et al.* 2013).

2.5 Community engagement strategies

The most common approach to community engagement in the 49 initiatives was direct involvement in anti-poaching activities, as guards/rangers or informants (Table 3). We found 22 initiatives where local people gained paid employment as guards/rangers, and a further seven where they were involved on a voluntary basis (although sometimes receiving non-financial incentives including uniforms (Kock *et al.* 2010), food (Monks Community Forest in UNDP 2012d) or one-off joining rewards (eg UNDP 2013b). Another seven of the initiatives involved the provision of financial rewards to community members for intelligence on illegal poaching activities but in some cases the incentive for local involvement was not clear. For example, the Aceh

Forest and Environment Project involves the use of a community informant network to report incidences of illegal logging where the only reward appears to be mobile phone airtime credit (Linkie *et al.* 2014).

A total of 22 out of 49 cases included the introduction of alternative livelihoods (both wildlife-based and non-wildlife based) as part of their community engagement approach. Examples include aquarium fish trading as an alternative to arapaima fishing (Fernandes 2006), and value addition to wool based handicrafts as an alternative to poaching snow leopards and their prey (Mishra *et al.* 2013).

Wildlife tourism development was the most common form of livelihood support activities, featuring in 17 of the 49 examples. In one case (Shaw *et al.* 2014), tourism was proposed specifically to engage poachers in an alternative, legitimate form of income generation. In

the other cases tourism was not specifically targeted at poachers as an alternative livelihood but used to generate conservation incentives for the broader community. Often these cases involved revenue sharing with local communities, but in two cases there was also clear community ownership over the tourism enterprise (eg Maasai Wilderness Conservation Trust in UNDP 2013a and Il Ngwesi Group Ranch in UNDP 2012b). Where there was revenue sharing from tourism, this money was frequently used for wider community projects related to infrastructural development (eg irrigation channels, health clinics, orphanages, roads, or school buildings), community development (eg access to education bursaries, access to mobile health workers, or new sources of income generation such as mushroom cultivation) and human wildlife conflict (eg introduction of non-palatable cash crops and electric fencing). In many of the examples a committee comprised of local community members was responsible for deciding how tourism revenue was used.

Human wildlife conflict mitigation was employed in 11 of the 49 initiatives. In the Ruvuma Elephant Project in Tanzania for example, crop raiding by elephants has been linked to revenge killings by local farmers or by support (turning a blind eye if not active encouragement) for poaching. The human-elephant mitigation programme has involved the use of chili pepper fences and beehive fences which both act as a deterrent to elephants and also provide a source of income generation (Clark and Lotter 2014). Similarly in Nepal, communities living in the buffer zone of Bardia National Park have been supported to grow crops that are unpalatable to rhinos and other wildlife—such as mint, citronella and camomile—but have the potential to generate income (Martin and Martin 2010).

We found only four initiatives that involved community members benefiting from sustainable harvesting and legal trade in target species as a conservation incentive. These examples were: certification of sustainable timber (Waldhoff and Vidal 2015); cactus nurseries (Pulido and Cuevas-Cardona 2013), vicuña capture and shearing (Lichtenstein 2015) and crocodile management (ASOCAIMAN in Roe *et al.* 2015).

Typically, the initiatives we reviewed employed more than one type of community engagement strategy (on average three approaches were used), the most common being involvement in anti-poaching activities, engagement in alternative livelihood initiatives and development of tourism as a conservation incentive. A novel approach used as part of one community engagement strategy introduced a soccer tournament to raise awareness of poaching amongst young people and give them the opportunity to discuss and share their views (Matumizi Bora ya Malihai Idodi na Pawaga in UNDP 2015). Three initiatives used more than five types of community-based approach. The Maasai Wilderness Conservation Trust (UNDP 2013a), the Greater Kilimanjaro Landscape initiative and the Olderekesi Wildlife Conservancy (Cottar 2015) all involved employment for community wildlife guards/rangers, compensation for livestock killings by wildlife, tourism related employment and/or revenue sharing as well as the associated social benefits (eg from community investment of revenues in education or medical services). The Greater Kilimanjaro Landscape initiative also included provisions for resource harvesting and revenue sharing from trophy hunting. The Olderekesi Wildlife Conservancy additionally allowed livestock grazing during the wet season and the initiative rewarded community members for intelligence on poachers. Both the The Olderekesi Wildlife Conservancy and the Maasai Wilderness Conservation Trust used lease payments for conservancy zones and introduced livelihood alternatives. In addition, the Maasai Wilderness Conservation Trust provided training and capacity building on sustainable natural resource management for a new generation of leaders within the community.

Table 3. Types of community engagement strategies employed

Case Study Title	Guard/ranger	Volunteer guard/ranger	Reward(s) for intelligence	Trophy hunting	Tourism	Resource harvesting	Alternative livelihood(s)	HWC	Social benefits	Sustainable use	Payments	Education/awareness raising	Total
AFRICA													
Olderekesi Wildlife Conservancy (Kenya)	✓		✓		✓	✓	✓	✓	✓		✓		8
Maasai Wilderness Conservation Trust (Kenya)	✓				✓		✓	✓	✓		✓	✓	7
The Greater Kilimanjaro Landscape (Kenya and Tanzania)	✓			✓	✓	✓		✓	✓				6
Il Ngwesi Group Ranch (Kenya)	✓				✓	✓	✓		✓				5
Ruvuma Elephant Project (Tanzania)	✓		✓			✓	✓	✓					5
The Kasigau Corridor REDD Project (Kenya)	✓						✓		✓		✓		4
Northern Rangelands Trust Conservancies (Kenya)	✓				✓		✓		✓				4
Mali Elephant Project	✓	✓				✓					✓		4
Makuleke Ecotourism Project (South Africa)	✓				✓		✓		✓				4
MBOMIPA Wildlife Management Area (Tanzania)	✓			✓	✓				✓				4
Khama Rhino Sanctuary Trust (Botswana)					✓	✓			✓				3
Breaking the chain: combatting the illegal trade in ploughshare tortoises (Madagascar)	✓						✓		✓				3
The Ploughshare Tortoise Protection Project (Madagascar)	✓						✓		✓				3
Anti-poaching in Kunene (Namibia)	✓				✓				✓				3
Lupande Development Project (Zambia)	✓			✓					✓				3
CAMPFIRE (Zimbabwe)				✓	✓				✓				3
Protecting wildlife by linking communities and conservation in Mozambique					✓		✓						2
The Rhino Rangers Incentive Programme (Namibia)	✓				✓								2
Rhino Custodianship Programme (Namibia)	✓				✓								2
Gorilla intervention, National Volcanoes Park in Rwanda					✓				✓				2
The Black Mambas (South Africa)	✓											✓	2
Tackling illegal wildlife trade in Chad		✓											1
Fight against illegal international trade of African giant pangolins (Democratic Republic of Congo)	✓												1
Biodiversity Action Plans for the Gilli Gilli Forest Reserve (Nigeria)							✓						1
Community mapping by Mbendjele hunter-gatherers (Republic of Congo)		✓											1

Case Study Title	Guard/ranger	Volunteer guard/ranger	Reward(s) for intelligence	Trophy hunting	Tourism	Resource harvesting	Alternative livelihood(s)	HWC	Social benefits	Sustainable use	Payments	Education/awareness raising	Total
ASIA													
Buffer Zones, Nepal			✓		✓		✓	✓	✓				5
Terai Arc Landscape (Nepal)	✓	✓					✓	✓				✓	5
Tmatboey Community Protected Area Committee Ecotourism and Bird Nest Protection Programme (Cambodia)					✓		✓		✓		✓		4
Rhino Conservation, West Bengal (India)					✓		✓	✓	✓				4
Surviving Together (Myanmar – Thailand)	✓						✓	✓				✓	4
Snow Leopards in the Wakhan Corridor (Afghanistan)	✓				✓			✓					3
Monks Community Forest (Cambodia)		✓				✓			✓				3
Rhinoceros, Grassland and Public Engagement (Nepal)		✓					✓	✓					3
Chunoti Co-management Committee (Bangladesh)		✓					✓						2
Mapping of poaching communities, understanding customs and providing livelihoods (India)							✓		✓				2
Safeguarding Sumatran Tigers (Indonesia)	✓		✓										2
Citizen Ranger Wildlife Protection Programme (Kyrgyzstan)	✓		✓										2
Snow Leopard Enterprises (Mongolia)							✓				✓		2
Collaborating to Conserve Large Mammals in South East Asia (Thailand)	✓					✓							2
Goats for Hope (Indonesia)								✓					1
Aceh Forest and Environment Project (Indonesia)			✓										1
Alam Sehat Lestari Reforestation Project (Indonesia							✓						1
Community-based Pangolin Conservation (Nepal)												✓	1
LATIN AMERICA													
Community-based management of the Arapaima (Guyana)		✓					✓						2
Vicuña management in the Andes (Argentina, Chile, Bolivia, Peru)										✓			1
Illegal logging of Mahogany (Brazil)										✓			1
Community Association of Agricultural and Forest Products (Brazil)										✓			1
ASOCAIMAN Cooperative (Colombia)										✓			1
Cactus Nurseries and Conservation in Mexico										✓			1

Are community based approaches effective in tackling IWT?

3

Of the 49 initiatives identified, only 26 reported on their effectiveness (either in terms of reducing poaching or maintaining or increasing wildlife populations), although a further six noted that the initiatives were at too early a stage in their development to report on effectiveness. For the 26 that did, 19 reported that they were effective, although in four cases effectiveness was partial (ie it varied over time or was site specific). In the case of the Northern Rangelands Trust, for example, community conservancies were unable to contain the massive spike in poaching levels from 2009 to 2012, but following this they increased their investment in community patrols and informants as well as their collaboration with the Kenya Wildlife Service and police. As a result, poaching levels have declined since 2012 (King and Craig 2015). The Mali Elephant Project also reported success in containing poaching but from 2015 they have experienced a deterioration in security (in the form of a jihadist insurgency) and an escalation in poaching. Nevertheless, the project suggested that even the limited anti-poaching activities that have undertaken since 2015 would have been impossible without the local intelligence supplied by community members (Canney 2015). In the Surviving Together project (Galster *et al.* 2010) tiger poaching decreased in the immediate target area but moved to a different area where there was less protection, while in the Saving Sumatran Tigers initiative (Linkie *et al.* 2015) snare detection rates increased in the project area and tiger prey populations stabilised, but tigers and their prey continued to be poached in the wider Kerinci Seblat landscape.

In a further five initiatives the effectiveness was not clear. For the Alam Sehat Lestari Reforestation Project in Gunung Palung National Park, for example, interviews with community members revealed that some thought that the project had greatly helped to reduce illegal logging, but interview responses to other questions suggested that community members were conflating the impact of the initiative with the impacts of external influences. In the Cactus Nurseries project in Mexico, interviewees reported that the introduction of nurseries had enhanced local residents support for cacti conservation, but this appeared to be contradicted by a large increase in the number of plants seized from illegal trafficking in 2012 (Pulido and Cuevas-Cardona 2013). In other cases the assessment of community-based approaches was not disaggregated from broader anti – IWT strategies (eg Buffer Zones and Terai Arc Landscape in Martin *et al.* 2013, and Martin and Martin 2010; and Rhino Conservation, West Bengal in Martin and Vigne 2012).

Two initiatives were reported as ineffective: a recent report on the CAMPFIRE programme in Zimbabwe (Manyema *et al.* 2013) provided anecdotal evidence that poaching had increased; and a review of the Aceh Forest and Environment Project (Linkie *et al.* 2014) which found that despite arrests and prosecutions as a result of intelligence from community informants, illegal logging still persisted at apparently similar levels by the project's end.

The remaining 17 initiatives did not provide any assessment of effectiveness, with the majority (15) being purely descriptive (see Figure 1).

Figure 1. The reported effectiveness of the 49 initiatives
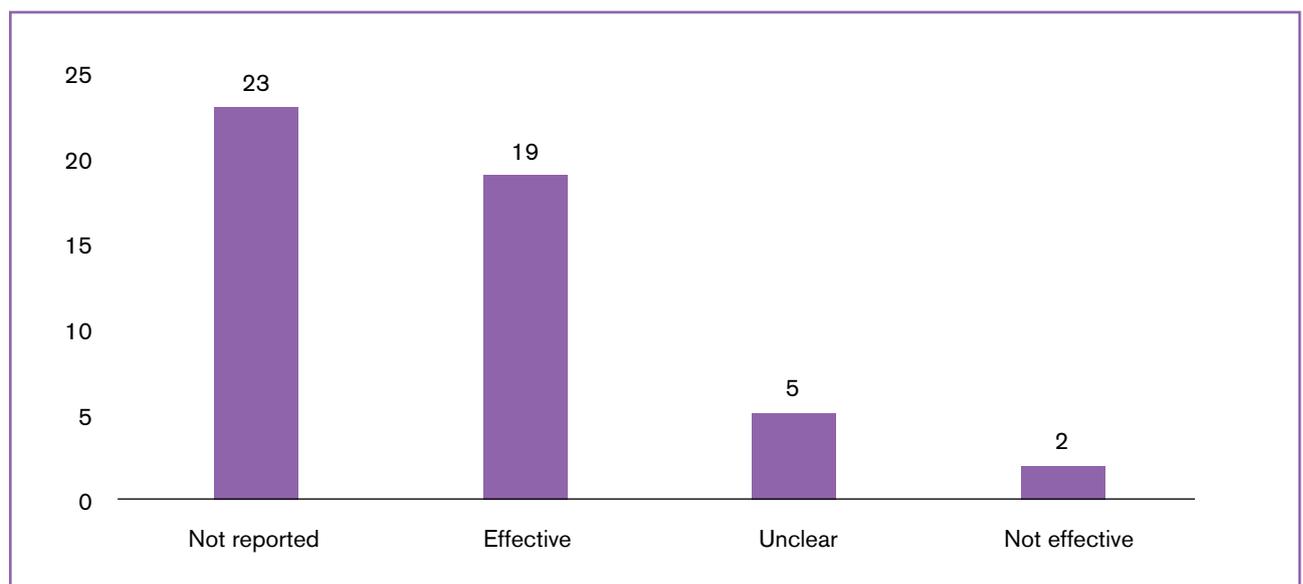
Table 4. Reported effectiveness of community engagement initiatives

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
AFRICA				
Khama Rhino Sanctuary Trust (Botswana)	Effective	Wildlife numbers	Personal communication with game warden	At the start of the project, 14 rhinos were translocated to the sanctuary (between 1993–1999). At the time of data collection (2004) there were 27 (Sebele 2010).
The Kasigau Corridor REDD project (Kenya)	Effective	Poaching levels	Not clear	The current REDD+ revenue-sharing plan for carbon credit rewards has led to reduced poaching of elephants (Dinerstein et al. 2012).
The Greater Kilimanjaro Landscape (Kenya and Tanzania)	Effective	Poaching levels	Not clear	Between 2013 and 2014 the Kenyan area of the project recorded a 54% decrease in elephant poaching, while there has been no known elephant poaching on the Tanzanian area of the project since 2012 (Fitzgerald and Muruthi 2015).
The Rhino Rangers Incentive Programme (Namibia)	Effective	Wildlife numbers and poaching levels	Ranger patrol data	Focused rhino patrols as well as confirmed, individually identified rhino sightings by community appointed rangers have increased from 0 in 2011 to 727 ranger rhino sightings in 2014. While around 40% of the region's rhinos live within Communal Rhino Custodian land, only 22% of the confirmed poaching cases in 2014 have occurred in these areas (Muntifering 2015a).
Ruvuma Elephant Project (Tanzania)	Effective	Poaching levels	Ground and aerial surveys of elephant carcass numbers	Data from project patrols and aerial surveillance show a substantial annual decrease in the number of elephant carcasses observed over the 24 month period of operation… the local elephant population should remain stable if current anti-poaching input levels can be maintained (Lotter and Clark 2014).

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
Lupande Development Project (Zambia)	Effective	Poaching levels	Reported number of poaching events (presumably by village scouts) and anecdotal evidence	Annual mortality from the illegal poaching of elephants and black rhino decreased at least tenfold from 1985 to 1987 (Lewis *et al.*1990).
Northern Rangelands Trust Conservancies (Kenya)	Partially effective	Wildlife numbers and poaching levels	Anecdotal evidence, carcass data and aerial survey data	Conservancies were unable to contain the massive spike in poaching levels from 2009 to 2012, but poaching levels did decline in 2013 and 2014. Reports from rangers suggest that the number of elephant sightings are stable on conservancy land, in spite of overall population decline (King and Craig 2015).
Mali Elephant Project	Partially effective	Poaching levels	Not clear	Poaching was contained for the first three years but 2015 saw a deterioration in security and an escalation in poaching. The military have only been able to undertake anti-poaching patrols because of the local intelligence that has enabled them to target their meagre resources (Canney and Ganamé 2015).
CAMPFIRE (Zimbabwe)	Not effective	Poaching levels	Key informant interviews	Anecdotal evidence from key informant interviews revealed perceptions that poaching has increased (Manyema *et al.* 2013).
Olderekesi Wildlife Conservancy (Kenya)	Too early to tell			(Cottar 2015)
Breaking the chain: combatting the illegal trade in ploughshare tortoises (Madagascar)	Too early to tell			(Terry *et al.* 2013)
The Ploughshare Tortoise Protection Project (Madagascar)	Too early to tell			(Randrimanampisoa *et al.* 2015)
Protecting wildlife by linking communities and conservation in Mozambique	Too early to tell			(Shaw *et al.* 2014)

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
The Black Mambas (South Africa)	Too early to tell			(Reuter and Bisschop 2016)
Tackling illegal wildlife trade in Chad	Not reported			(Waya 2016)
Fight against illegal international trade of African giant pangolins (Democratic Republic of Congo)	Not reported			(Iflankoy 2013)
Maasai Wilderness Conservation Trust (Kenya)	Not reported			(UNDP 2013a)
Il Ngwesi Group Ranch (Kenya)	Not reported			(UNDP 2012b)
Anti-poaching in Kunene (Namibia)	Not reported			(Jones *et al.* 1999)
Rhino Custodianship Programme (Namibia)	Not reported			(Muntifering *et al.* 2015b)
Biodiversity Action Plans for the Gilli Gilli Forest Reserve (Nigeria)	Not reported			(Isikhuemen 2016)
Community Mapping by Mbendjele hunter-gatherers (Republic of Congo)	Not reported			(Vitos *et al.* 2013)
Gorilla intervention, National Volcanoes Park in Rwanda	Not reported			(Kinani and Mudakikwa 2016)
Makuleke Ecotourism Project (South Africa)	Not reported			(UNDP 2012a)
MBOMIPA Wildlife Management Area (Tanzania)	Not reported			(UNDP 2015)

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
ASIA				
Chunoti Co-management Committee (Bangladesh)	Effective	Wildlife numbers	Not clear	Anecdotal observations report an increase in the number of elephants within the sanctuary (UNDP 2013b).
Tmatboey Community Protected Area Committee Ecotourism and Bird Nest Protection Program (Cambodia)	Effective (relates only to the Bird Nest Protection Programme)	Wildlife numbers	Monitoring of protected nests and non-protected nests (outside of the project area) and their relative success rates	The success rate of protected nests was 88.5% 2009–2011, in comparison with a success rate of 36.9% for unprotected controls of the same species during the same period. Breeding populations of Lesser Adjutant and Oriental Darter increased significantly (Clements *et al.* 2013).
Goats for Hope (Indonesia)	Effective	Poaching levels	Not clear	Community members are now willing to halt retaliatory killing of tigers. Rather than helping professional hunters, they now provide actionable intelligence to the Wildlife Crime Unit (Wilkie *et al.* 2016).
Snow Leopard Enterprises (Mongolia)	Effective	Poaching levels	Not clear	No reports of snow leopards being killed in any of the project sites since the programme was initiated (compared to three cases of snow leopards being poached between 1994 and 1998 before the project) (Mishra *et al.* 2003).
Community-based Pangolin conservation (Nepal)	Effective	Poaching levels	Not clear	Before the project began, villagers who came across a pangolin by chance would more likely than not have killed it. Now there is a growing number of cases where locals come across a live pangolin and bring it to the attention of conservation sub-committee members (Khatiwada 2015).
Rhinoceros, Grassland and Public Engagement (Nepal)	Effective	Poaching levels and wildlife numbers	Rhino census	Poaching has ceased in Bardia National Park over the project's lifetime (Kock *et al.* 2010).

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
Safeguarding Sumatran Tigers (Indonesia)	Partially effective	Poaching levels and wildlife numbers	Numbers of snares and camera trap data	Patrols were significantly more likely to detect snares (increase of 40%). Camera trap data showed a stable population of tiger prey species. However, despite these positive results tigers and their prey continue to be poached in the Kerinci Seblat landscape (Linkie *et al.* 2015).
Surviving Together (Myanmar – Thailand)	Partially effective	Poaching levels	Not clear	In one focal community in Myanmar the number of poachers was reduced, but for others, the lure of easy money from poaching was too strong and they simply shifted their attention to parks with less protection (Galster *et al.* 2010).
Aceh Forest and Environment Project (Indonesia)	Not effective	Illegal logging levels	Numbers of reports of illegal timber logging and the numbers of subsequent arrests and prosecutions	Successful collaboration between law enforcement and community stakeholders led to high levels of prosecution and punishment for those caught. However, the high prevalence of illegal logging at the study end indicates that the project did not act as an effective deterrent to rule breaking behaviour (Linkie *et al.* 2014).
Alam Sehat Lestari Reforestation Project (Indonesia)	Not clear	Illegal logging levels	Interviews	Interviewees believe that the reforestation programme has greatly helped to reduce illegal logging in Gunung Palung National Park. However, contradictory responses suggest that respondents may have conflated the impacts of the reforestation activities with the impacts of other external influences, such as increased patrolling efforts by national park staff and the development of an oil palm plantation (Pohnan *et al.* 2015).

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
Buffer Zones, Nepal	Not clear (no disaggregated analysis of the community component)	Poaching levels and wildlife numbers	Interviews and unpublished census data	Cumulative increase of 99 rhinos in the Chitwan and Bardia National Parks and the Suklaphanta Wildlife Reserve from 2008 to 2011. From an average of nearly 10 rhinos poached a year in Nepal from 2008 to 2010, the number dropped to only 1 a year in 2011 and 2012 (Martin *et al.* 2013).
Terai Arc Landscape (Nepal)	Not clear (no disaggregated analysis of the community component)	Poaching levels and wildlife numbers	Interviews and unpublished census data	(As above)
Rhino Conservation, West Bengal (India)	Not clear (no disaggregated analysis of the community component)	Poaching levels and wildlife numbers	Interviews and unpublished census data	Between 1975−2011 the number of rhinos increased from 23 to 149 at Jaldapara Wildlife Sanctuary, and between 1978 and 2011 from 8 to 43 at Gorumara National Park The last known rhino death due to poaching at Gorumara National Park was in 1992. There has been a reduction in poaching at Jaldapara Wildlife Sanctuary from eight in the 1990s to five in the 2000s (Martin and Vigne 2012).
Citizen Ranger Wildlife Protection Programme (Kyrgyzstan)	Too early to tell			(Mishra *et al.* 2014)
Snow Leopards in the Wakhan Corridor (Afghanistan)	Not reported			(Simms *et al.* 2011)
Monks Community Forest (Cambodia)	Not reported			(UNDP 2012d)
Mapping of poaching communities, understanding customs and providing livelihoods (India)	Not reported			(Shah 2016)
Collaborating to Conserve Large Mammals in South East Asia (Thailand)	Not reported			(Steinmetz *et al.* 2006)

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES
LATIN AMERICA				
Illegal logging of Mahogany (Brazil)	Effective	Illegal logging levels	Personal observations and anecdotal evidence	The people of A'Ukre have controlled mahogany logging on their land, including the exclusion of trespassing loggers and prohibition of logging within the 8000 ha Pinkaití research reserve. In 1998, the community stopped the attempted sale of mahogany logs in the research reserve by one of its members (Zimmerman *et al.* 2001).
ASOCAIMAN Cooperative (Colombia)	Effective	Wildlife numbers	Not clear	Studies have shown that crocodile numbers are rising to the point where there is a stable and viable population that can be exploited on a sustainable basis (Delago and Diaz 2015).
Community-based management of the Arapaima (Guyana)	Effective	Wildlife (fish) numbers	Reconstruction of population data from technical reports	Annual Arapaima surveys have provided empirical evidence to support local claims of Arapaima recovery with the total count of adult and juvenile Arapaima increasing from 425 in March 2001, to 1,200 in December 2003 (Fernandes 2006).
Cactus Nurseries and Conservation in Mexico	Not clear	Wildlife (cacti) numbers and poaching levels	Interviews with nursery owners and biosphere managers, and government data on seizures	Interviews revealed that previously whole areas were stripped of plants but as a result of the project local residents now understand that removing cacti is a federal offence and report it. However, unpublished data taken from the environmental protection still showed a large increase in the number of plants seized in 2012 in comparison to the previous seven years (Pulido and Cuevas-Cardona 2013).
Vicuña management in the Andes (Argentina, Chile, Bolivia, Peru)	Not reported			(Lichtenstein 2015)
Community Association of Agricultural and Forest Products (Brazil)	Not reported			(Waldhoff and Vidal 2015)

CASE STUDY TITLE	REPORTED EFFECTIVENESS	EFFECTIVENESS MEASURE	ASSESSMENT METHOD	NOTES

Of the 26 initiatives where there was a reported impact on poaching and /or wildlife numbers, only seven initiatives provided a clear description of the assessment method. These included:

- Visual assessments such as nest monitoring (Bird Nest Protection Programme in Clements *et al.* 2013); camera trap data (Safeguarding Sumatran Tigers in Linkie *et al.* 2015); field data recorded from ranger patrol logbooks (Safeguarding Sumatran Tigers in Linkie *et al.* 2015 and Ruvuma Elephant Project in Lotter and Clark 2014); and aerial surveys (Ruvuma Elephant Project in Lotter and Clark 2014).

- Interviews with local community members (Alam Sehat Lestari Reforestation Project in Pohnan *et al.* 2015 and Cactus Nurseries and Conservation in Mexico in Pulido and Cuevas-Cardona 2013).

- Reported poaching incidents and related law enforcement measures (ie number of arrests and firearm confiscations) (Lupande Developmental Project in Lewis *et al.* 1990).

- Secondary information including using technical reports and information from NGOs (Community-based management of the Arapaima in Fernandes 2006); and information from government bodies (Cactus Nurseries and Conservation in Mexico in Pulido and Cuevas-Cardona 2013).

For the remaining studies the assessment method and/or source of the information was not specified. For example, the Greater Kilimanjaro Landscape (Fitzgerald and Muruthi 2015) highlighted a 54 per cent decrease in elephant poaching; the Chunoti Co-management Committee (in UNDP 2013b) noted an increase in elephant numbers; and Goats for Hope (Wilkie *et al.* 2016) described a positive change in attitudes towards poaching tigers and their prey. In all cases no information was provided on how these results had been determined.

Of the seven initiatives where effectiveness had been assessed using a clearly reported methodology, five were assessed for their effectiveness in terms of reducing poaching, illegal logging or plant collection, and two for their effectiveness in maintaining, restoring or increasing wildlife populations (Linkie *et al.* 2015 and Fernandes 2006). Four found that illegal activities (eg poaching, logging or illegal plant collection) had decreased (Lotter & Clark, 2014, Clements *et al.* 2013, Pulido and Cuevas-Cardona 2013, Lewis *et al.*1990) and one found no change (Pohnan *et al.* 2015). In terms of changes to wildlife populations, one paper found no change in the occupancy status of the tiger prey base (Linkie *et al.* 2015), while another found an increase in the population of Arapaima (Fernandes 2006).

EXAMPLES OF SUCCESSFUL INITIATIVES

Since 2011, the Ruvuma Elephant Project in Tanzania has supported game scouts and rangers, provided financial rewards for informants, introduced income generating activities and acted to reduce human wildlife conflict. Data from project patrols and aerial surveillance showed that over a 24 month period of operation (December 2011 to November 2013) there was a substantial annual decrease in the number of elephant carcasses observed – a total of 216 elephant carcasses were observed in year one, and 68 in year two (Lotter & Clark, 2014).

The Bird Nest Protection Programme in Cambodia started in 2003 to provide conditional payments to local people to protect nests from the collection of eggs and chicks. Nest monitoring revealed high success rates for community protected nests versus unprotected control nests of the same species, and subsequent increases in the breeding populations of Lesser Adjutant, Oriental Darter and Sarus Cranes (Clements *et al.* 2013).

The Lupande Development Project began in Zambia's South Luangwa National Park in 1986 and introduced a game management area where the manpower requirements were drawn from the local community and issues of wildlife management were dealt with

in collaboration with village leaders through wildlife subcommittees for each chiefdom. Annual mortality from before (1985) and after (1987) the project found that the illegal poaching of elephants and black rhino decreased at least tenfold. There was also an increase in the number of firearms confiscated and arrests, as well as anecdotal evidence suggested a changing tolerance for poaching. For example, in March 1987, Chief Malama convened a meeting of all headmen and instructed the village not to cooperate with poachers (Lewis *et al.*1990).

The Arapaima Management Project in Guyana, which started in the early 2000s, created fishermen groups, introduced a community imposed harvesting ban and initiatied aquarium fish cultivation as an alternative livelihood, as well as running community education and awareness campaigns. Based on technical reports and information from NGOs, the author reconstructed the Arapaima population and suggested that from 2001 to 2003 the population increased. Interview data from former Arapaima fishers found that the main factors that contributed to local support of the harvest ban included changed attitudes, fear of penalty, availability of alternative fish species and a desire to access future benefits through the project (Fernandes 2006).

Lessons for best practice

4

The case studies identified in the review illustrate a wide diversity of contexts for illegal wildlife trade, from high value iconic species such as elephants, rhinos and tigers, to birds, fish and cacti. They also highlight the challenges associated with the sheer scale and value of the illegal wildlife trade, and the pressure that this places on both wildlife and local communities as a result. Escalating prices for illegal commodities such as ivory and rhino horn have attracted a scale of operation and organisation that is way beyond the potential reach of community engagement approaches on their own. At the same time the scale of benefits that can be derived from sustainable wildlife management and the number of people that are likely to benefit from such initiatives can be very limited. Where this is the case it is hard to counter the temptation to engage in illegal but lucrative activities.

But the case studies show that motivation to tackle, rather than engage in, IWT does not only revolve around financial benefits and costs. Where local people identify that IWT is a problem themselves (and therefore the conservation interventions are demand driven rather than externally imposed) they are likely to be more successful. Local demand for action against IWT is most likely to arise when local people feel some kind of ownership over wildlife resources. This sense of ownership can be developed through voice and authority in decision making over how wildlife should be managed and how benefits from wildlife management should be generated and distributed. It can also be developed through encouraging a sense of pride in wildlife, building on cultural traditions, religion and other long standing practices. Indeed the point that non-financial benefits should not be overlooked was a strong message from many of the initiatives.
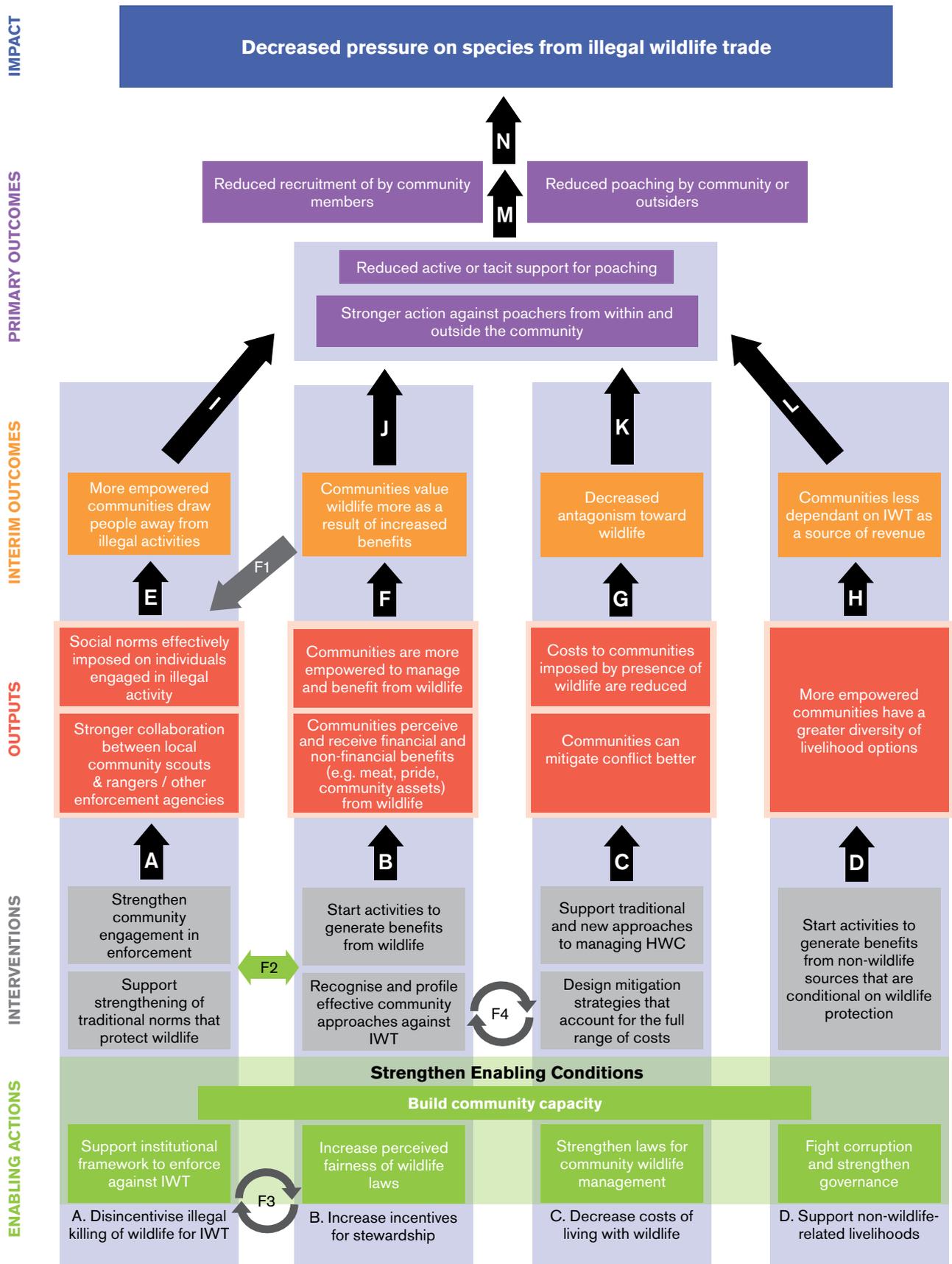
A common feature of the studies that we identified was that their success was based on developing initiatives that were locally driven and responsive to the local context. Involving communities in actually defining solutions, not just engendering a culture of passive reliance on externally provided financial benefits, was seen to be key. As part of this, case study authors highlighted the importance of third party project implementers such as conservation NGOs having long term relationships with local people based on shared objectives, trust and reciprocity. Community engagement should be seen as a long term process, not something that can easily be achieved within a typical two to five year one-off project.

Multi-stakeholder partnerships were often central to successful initiatives, not just to get the necessary support for community engagement (eg through government endorsement) but also to generate the necessary mix of skills, science, technical and financial support, transparency and accountability.

Beyond these broad commonalities, however, it is hard to point to clear best practices from a small but diverse set of case studies. Perhaps more informative is to explore the extent to which the case studies align with current theory on community engagement and the preconditions associated with success. One of the obstacles to widespread adoption of community-based approaches to tackling IWT has been the lack of a framework to guide such interventions. In response, IIED together with the International Union for the Conservation of Nature (IUCN) and partners have developed a Theory of Change (ToC) that seeks to better understand the different incentives and disincentives that influence whether local people engage in IWT or help to prevent it (Biggs *et al.* 2016). The ToC identifies four pathways for community level actions: A) strengthening disincentives for illegal behaviour; B) increasing incentives for wildlife stewardship; C) decreasing costs of living with wildlife; and D) supporting non-wildlife related livelihoods. A series of enabling governance conditions underlie all four pathways. The ToC therefore includes a number of 'enabling actions' to strengthen governance from the local to national to regional and to international scale 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. The ToC which has been developed iteratively through various workshop processes is summarised in Figure 2. Each of the causal pathways described in the ToC is underpinned by a series of key assumptions, or preconditions indicated by arrows. These assumptions, and several feedback loops, are described in Appendix 3.

It was beyond the scope of our research to test each of the initiatives against the ToC and the documents that we identified in our literature review would not have been sufficient to do this anyway. However, we can draw some general conclusions with respect to the overall fit of the initiatives we identified with the ToC.

Figure 2. A 'Theory of Change' for engaging local communities in tackling illegal wildlife trade

IMPACT

Decreased pressure on species from illegal wildlife trade

N

PRIMARY OUTCOMES

Reduced recruitment of by community members

M

Reduced poaching by community or outsiders

Reduced active or tacit support for poaching

Stronger action against poachers from within and outside the community

INTERIM OUTCOMES

I

More empowered communities draw people away from illegal activities

J

Communities value wildlife more as a result of increased benefits

K

Decreased antagonism toward wildlife

L

Communities less dependant on IWT as a source of revenue

F1

E

F

G

H

OUTPUTS

Social norms effectively imposed on individuals engaged in illegal activity

Stronger collaboration between local community scouts & rangers / other enforcement agencies

Communities are more empowered to manage and benefit from wildlife

Communities perceive and receive financial and non-financial benefits (e.g. meat, pride, community assets) from wildlife

Costs to communities imposed by presence of wildlife are reduced

Communities can mitigate conflict better

More empowered communities have a greater diversity of livelihood options

A

B

C

D

INTERVENTIONS

Strengthen community engagement in enforcement

Support strengthening of traditional norms that protect wildlife

F2

Start activities to generate benefits from wildlife

Recognise and profile effective community approaches against IWT

Support traditional and new approaches to managing HWC

Design mitigation strategies that account for the full range of costs

F4

Start activities to generate benefits from non-wildlife sources that are conditional on wildlife protection

ENABLING ACTIONS

Strengthen Enabling Conditions

Build community capacity

Support institutional framework to enforce against IWT

F3

Increase perceived fairness of wildlife laws

Strengthen laws for community wildlife management

Fight corruption and strengthen governance

A. Disincentivise illegal killing of wildlife for IWT

B. Increase incentives for stewardship

C. Decrease costs of living with wildlife

D. Support non-wildlife-related livelihoods

Note: Each of the four causal pathways (A, B, C and D) is underpinned by a series of assumptions or preconditions indicated by arrows labeled A to N. These assumptions, and several feedback loops indicated by arrows labeled F1-F4, are described in Appendix 3.

Overall we found that these initiatives aligned with one or more of the ToC pathways. Of the 49 initiatives, 24 followed just one of the ToC pathways, and 25 used more than one of the ToC pathways (ie 10 initiatives used 2 pathways, 13 used 3 pathways and 2 used all 4 pathways).

By far the most common pathways followed were A) strengthening disincentives for illegal behaviour (33 initiatives) and B) increasing incentives for wildlife stewardship (29 initiatives). Often the two pathways were combined together and/or with the one of the two other pathways: C) decreasing costs of living with wildlife or D) supporting non-wildlife related livelihoods. For example, The Kasigau Corridor REDD project's wildlife premium mechanism (Dinerstein *et al.* 2012) followed pathways A), B) and D). The project strengthened disincentives by funding training and employing unarmed wildlife rangers, increased incentives by providing carbon payments to local landowners and supported non wildlife based livelihoods by subsidising a clothing factory and financing the establishment of community-based plant nurseries.

Initiatives that followed the same pathway typically used similar activities and outputs. For pathway A) strengthening disincentives, many of the initiatives involved actions that led to better trained and better equipped local community rangers/guards and/or strengthened collaboration between community and professional anti-poaching response units. The Black Mamba Initiative (in Reuters and Bisschop 2016), for example, provided training and employment for 26 unarmed intelligence gatherers from the local community and introduced intelligence sharing and collaboration between the intelligence gatherers and a team of 23 armed response rangers. Less common initiatives that followed this pathway include a community-based Pangolin initiative in Nepal (in Roe *et al.* 2015) which set up two pangolin conservation focused Village Development Committees and sub-committees in 18 wards. Community representatives were expected to strengthen disincentives for illegal behavior by exerting their influence and authority over neighbours, relatives and friends who may have been knowingly engaged in illegal activities.

Few of the initiatives that followed pathway B) and started activities that generated financial and/or non-financial benefits made these incentives conditional on reducing poaching activities. Three different initiatives that *did* use conditionality include Olderekesi Wildlife Conservancy (Cottar 2015) the Bird Nest Protection Programme (in Clements *et al.* 2013) and Snow Leopard Enterprises (in Mischra *et al.* 2003). The Olderekesi Conservancy paid lease payments to Maasai community leaders with an agreement that in the event of poaching, the lease payments should be reduced and the community leaders should be responsible for making up the loss by fining the culprits. For the Bird Nest Protection Programme, monitoring staff investigated all cases of nest failure to determine the cause and payments were not made if nests failed due to human disturbance or collection. The Snow Leopard Enterprise initiative drew up contracts with participating communities where the initiative guaranteed purchase of handicrafts in exchange for herders committing to a complete ban on poaching.

Just 11 of the initiatives captured followed pathway C), decrease the costs of living with wildlife. Seven of these initiatives supported activities that mitigated conflict through the use of living fences (eg MBOMIPA in UNDP 2015) or growing of unpalatable crops (eg Buffer Zone Management in Martin and Martin 2010). Four other initiatives reduced the costs of wildlife killings by providing compensation or insurance schemes. The Goats for Hope initiative financially compensated herders for loss of livestock due to wildlife predation in exchange for their full participation in wildlife protection activities (Wilkie *et al.* 2016). The Snow Leopards in the Wakhan Corridor programme (Simms *et al.* 2011) piloted an insurance scheme designed and managed by the community whereby all families in the village pooled money to create a core savings fund and decided upon livestock insurance and compensation rates.

Five initiatives included a focus on community education and awareness raising which has not been an explicit element of our ToC to date, although could potentially be considered as an enabling activity. Overall, the case studies identified in our literature review reveal a strong alignment with our ToC and suggest that the pathways we have described and the assumptions/preconditions associated with them provide a good indication of best practice.

Looking forward

Community-based approaches to tackling illegal wildlife trade are not the silver bullet that is going to end the current poaching crisis. The sheer scale of the illegal wildlife trade, not to mention the involvement of highly organised, heavily armed criminal gangs points to the need for effective law enforcement on the ground. However, top down (and particularly militarised) enforcement strategies, unless carefully managed, can produce a range of other (sometimes unanticipated) impacts that can collectively undermine local incentives to protect wildlife. Community-based interventions can complement formal law enforcement efforts if local people have a motivation (whether financial or non-financial) to protect wildlife. Our literature review shows, however, that there is no blueprint approach to engaging local communities and that a diverse range of initiatives have been developed. It is also clear that there has been very little documentation of these efforts and even less evaluation of their effectiveness in any kind of systematic way.

The 'Beyond Enforcement' initiative led by IUCN's Sustainable Use and Livelihoods Specialist Group (SULi) in collaboration with IIED, TRAFFIC and partners has provided a series of opportunities for case studies to be aired at regional workshops. The CCC database (www.communitiesforwildlife.iied.org) represents an effort to start to pull such case studies together into one central repository but, as this literature review notes, the number of documented case studies is currently limited. The Conservation Evidence project (www.conservationevidence.com) is a great example of how evidence as to what works and what doesn't can be compiled and analysed for different types of conservation intervention, but to date this has not tackled IWT.

What is needed now is a concerted effort to build evidence of projects tackling IWT in general, as well as using community engagement initiatives specifically. We hope the CCC database can be a first step in this endeavour. We therefore encourage project implementers, funders and researchers (including those associated with case studies identified in this review where information may be missing, out of date or incorrect, as well as those who are aware of additional initiatives not captured in our review) to write up their experiences and submit case studies to the database as a contribution to that effort.

Acronyms

CAMPFIRE	Communal Areas Management Programme for Indigenous Resources
CCC	Conservation, crime and communities
CBNRM	Community-based natural resource management
IIED	International Institute for Environment and Development
IUCN	International Union for Conservation of Nature
IWT	Illegal wildlife trade
PA	Protected area
ToC	Theory of change

Related reading

Beyond enforcement: engaging communities in tackling wildlife crime: Dilys Roe, Rosie Cooney, Holly Dublin, Dan Challender, Duan Biggs, Diane Skinner, Max Abensperg-Traun, Nick Ahlers, Roland Melisch, Mike Murphree. See http://pubs.iied.org/17293IIED/

Beyond enforcement: communities, governance, incentives and sustainable use in combating wildlife crime. Symposium Report. IUCN CEESP/SSC SULi, IIED, Austrian Ministry of Environment, ARC CEED University of Queensland, TRAFFIC. See http://pubs. iied.org/G03903/

Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade, see Dilys Roe, http://pubs.iied. org/14648IIED/

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Appendix 1. Search Strings

Scopus Search

Crime, trafficking and smuggling

- Crime **+** conservation
- Crime **+** forest, wildlife
- Crime **+** species
- Traffick*, smuggl* **+** conservation)
- Traffick*, smuggl* **+** forest, wildlife
- Traffick*, smuggl* **+** species

Illegal, international trade

- illegal W/5 trade, international W/5 trade **+** wildlife
  - community
- illegal W/5 trade, international W/5 trade **+** species (*endangered, protected, rare, threatened*)
  - community
- illegal W/5 trade, international W/5 trade **+** pet, ornamental, aquarium
- illegal W/5 trade **+** forest, plant
- international trade **+** forest, plant
  - CITES
  - *legal
  - Community
- illegal w/5 trade, international w/5 trade **+** fish

Livelihoods

- community (*based*, *development, engagement, participation, project),* local (*participation, support)* **+** wildlife
- community (*based*, *development, engagement, participation, project),* local (*participation, support)* **+** species (*endangered, protected, rare, threatened*)
- community (*based*, *development, engagement, participation, project),* local (*participation, support)* **+** timber, plants
  - trade
  - *legal
  - conservation
- poverty alleviation, economic (*development, empowerment*), rural development, **+** wildlife
- poverty alleviation, economic (*development, empowerment*), rural development, **+** species (*endangered, protected, rare, threatened*
- poverty alleviation, economic (*development, empowerment*), rural development, **+** forest, plants **+** trade
- poverty alleviation, economic (*development, empowerment*), rural development, **+** forest, plants **+** sustainable use or harvest

Sustainable use, harvest

- Species (*endangered, protected, rare, threatened*) **+** sustainable use, sustainable harvest
- Wildlife **+** sustainable use, sustainable harvest
- Forest, plants **+** sustainable use, sustainable harvest
  - *Trade*
  - *Endangered*
- Fish **+** sustainable use, sustainable harvest

Incentives

- Incentive, benefit, revenue **+** trade, crime **+** wildlife

- Incentive, benefit, revenue **+** trade, crime **+** species **+** community

- Incentive, benefit, revenue **+** trade, crime **+** species (*endangered, protected, rare, threatened*)

- Incentive, benefit, revenue **+** trade, crime **+** species

  – *Community*

  – *Poach*

- Incentive, benefit, revenue **+** trade, crime **+** timber, plants

  – *Community*

- Incentive, benefit, revenue **+** trade, crime **+** fish

- Incentive, benefit, revenue **+** trade, crime **+** conservation

  – *Community*

- Payment **+** crime, trade **+** conservation

- Lease **+** land **+** conservation

- Contract **+** crime, trade **+** conservation

Intelligence gathering

- ranger, *guard, guide + conservation **+** poach*, exploit, hunt*

- ranger, *guard, guide + conservation **+** trade, crime

- custodian, community outreach **+** community

Governance

- natural resource management, conservancy, communal land, wildlife management **+** poach*

- natural resource management, conservancy, communal land, wildlife management **+** *legal **+** poach*, hunt*, exploit*

- natural resource management, conservancy, communal land, wildlife management **+** sustainable use, sustainable harvest

- decentrali?ation, decentrali?e, empowerment, engagement, autonomy **+** hunt*, poach*

- decentrali?ation, decentrali?e, empowerment, engagement, autonomy **+** wildlife (289)

- decentrali?ation, decentrali?e, empowerment, engagement, autonomy **+** species (*endangered, protected, rare, threatened*)

- decentrali?ation, decentrali?e, empowerment, engagement, autonomy **+** plant, forest **+** conservation

- decentrali?ation, decentrali?e, empowerment, engagement, autonomy **+** fish

- community W/5 governance, community W/5 management **+** poach*, hunt*, exploit*

- community W/5 governance, community W/5 management **+** wildlife **+** conservation

- community W/5 governance, community W/5 management **+** species (*endangered, protected, rare, threatened*) **+** conservation (113)

- community W/5 governance, community W/5 management **+** forest, plant **+** exploit*, illegal use

- community W/5 governance, community W/5 management **+** fish **+** conservation

- ownership, rights **+** wildlife **+** trade, crime

- rights, tenure **+** land **+** trade, crime **+** conservation

Google Scholar

(searched top 100 results)

1. Community conservation "illegal wildlife trade"

2. Community conservation "sustainable use"

3. Conservation incentive "wildlife crime"

4. Conservation incentive "illegal trade"

5. "Community conservation" poach "wildlife crime"

6. "Community conservation" timber "illegal trade"

7. CITES community conservation

8. "community based natural resource management" poach

9. fish "illegal trade" "community conservation"

Appendix 2. Key (non-IWT) themes featured in searches

After recognising gaps in our search results in particularly related to missing species (ie lion, timber, and fisheries) and approaches (ie community based natural resource management) we conducted further targeted searches and made note of the non-relevant IWT themes that dominated the search results.

Search: lion **+**'wildlife trade', traffick*
Search: lion **+** community **+** conservation
Results concerned:

- *Trophy hunting including more recently publications on Cecil*

- *Human wildlife conflict*

Search: timber **+** *legal **+** community
Results concerned:

- *Drivers and trends of deforestation / illegal logging*

- *Impacts of deforestation / illegal logging (economic, forest or species conservation, people's welfare)*

- *International and national responses to deforestation / illegal logging (such as FLEGT VPA)*

- *NTFP extraction and use, and impact on conservation*

- *Welfare/ livelihood and household impacts forest/ conservation based interventions*

- *Management and governance of forests (including CF)*

Search: forest + certification + community
Search: timber +certification + community
Results concerned:

- *Governance aspects of forest certification*

- *Welfare/ livelihood and household impacts of forest certification*

- *Papers related to agroforestry and coffee*

- *Biodiversity outcomes of forest certification*

- *Papers related to REDD+ and securing carbon stocks*

Search: timber, forest + FLEGT + community
Search: timber, forest + REDD / reducing emissions from deforestation and degradation + community
Results concerned:

- *Implementation of REDD and FLEGT*

Search: forest, timber + trade + *legal, international + community
Results concerned:

- *Impacts of deforestation / illegal logging (economic, forest or species conservation, people's welfare)*

- *Opportunities or challenges for forest management both national and international regimes (such as REDD, FLEGT, VPA)*

- *Governance processes and/or outcomes related to forestry interventions*

- *Welfare/livelihood and household impacts forest/ conservation based interventions*

- *NTFP extraction and use, and impact on conservation*

Search: timber, forest + enterprise + community
Results concerned:

- *Welfare/ livelihoods and household impacts forest enterprises*

- *Challenges for community management (governance, financial etc)*

- *Impact on forest / species conservation*

- *NTFP extraction and use, and impact on conservation*

- *Drivers of deforestation and degradation*

Search: Traffick*, smuggl* + forest, timber + trade, *legal
Results concerned:

– *Countries driving and affected by the illegal timber trade (eg what it looks like, challenges for tacking it, legal responses)*

– *Monitoring and technologies for tracking timber*

Search: forest, timber **+** poverty alleviation, economic (*development, empowerment*), rural development, **+** trade, 'sustainable use', 'sustainable harvest'
Results concerned:

– *NTFP extraction and use, and impact on conservation*

– *Welfare/ livelihood and household impacts forest/ conservation based interventions*

– *Governance processes and/or outcomes related to forestry interventions*

Search: forest, timber **+** governance, management **+** trade, use + community
Results concerned:

– *Implementation of REDD and FLEGT*

– *NTFP extraction and use, and impact on conservation*

– *Impacts of deforestation / illegal logging (economic, forest or species conservation, people's welfare)*

– *Species conservation & forestry projects / interventions*

Search: Fish + aquarium, pet, ornament + *legal
Search: Fish + aquarium, pet, ornament + community
Results concerned:

– *Invasive species- introduction and diseases*

– *Conservation strategies in response to marine ornamental trade – to ensure sustainability (not community based)*

– *Status of species involved in the trade and possible conservation responses*

Search: Fish + *legal **+** trade

Results concerned:

– *Non relevant interventions – legislation, trade measures*

– *Tracing fish using labelling, DNA and other related technologies*

– *Status and trade of fish*

– *Changing fishing practices – such as tackling destructive fishing methods*

Search: fish + use, harvest + community
Results concerned:

– *Subsistence harvesting of fisheries*

– *Sustainable yields and fisheries exploitation*

– *Marine management regimes – such as MPAs, no take reserves for conservation, traditional practices in response to improving fisheries conservation… overexploitation*

Search: community + governance, management **+** fish + *legal
Search: community + governance, management **+** fish + trade
Search: community + governance, management **+** fish + poach, smugg* or traffic*
Results concerned:

– *Community fisheries management case studies – not clear if any are in response to illegal trade of fish species vs. domestic or subsistence use*

– *Lessons from community based fisheries management – e.g. participation, changing attitudes and behaviour*

– *Status and trade of fish species*

– *Changing fishing practices – such as tackling destructive fishing methods*

Search: 'community based natural resource management'
Results concerned:

– *Effectiveness / impacts of CBNRM on poverty alleviation, livelihoods, food security, health (at the community and household level)*

– *Assessing participation and community in CBNRM*

– *Understanding social capital and relationships in CBNRM*

– *Governance and CBNRM including – power, institutions, equity, rights, conflict*

– *Comparing CBNRM practices across countries*

– *Utilisation of natural resources in CBNRM – hunting, fuelwood etc*

– *The history and evolution of CBNRM such as changes in the scale of decentralization*

– *Tourism and CBNRM – case studies of tourism ventures or opportunities*

– *Human wildlife conflict and CBNRM*

Appendix 3. Theory of Change – Feedback loops and assumptions

Feedback loops

FEEDBACK CODE	DESCRIPTION
F1	Communities with increased incentives to protect wildlife due to use rights and benefits from wildlife are more likely to support and positively engage in actions to strengthen enforcement.
F2	Local people can gain employment as community rangers.
F3	Communities with increased incentives to protect wildlife due to use rights and benefits from wildlife are more likely to support and positively engage in actions to strengthen enforcement.
F4	The enabling conditions support the pathways and vice versa.

Assumptions

CODE IN FIGURE 2	ASSUMPTION
A1	Community rangers will use equipment and training to combat IWT and not poach themselves or for other purposes (e.g. Community governance is at an adequate level and corruption is sufficiently controlled).
A2	Collaboration between communities and other enforcement agencies will lead to stronger action against IWT and not stronger collusion in IWT or other activities (e.g. Community governance is at an adequate level and corruption is sufficiently controlled).
A3	Communities are willing to enforce more strongly against IWT both within their communities and outside them.
A4	Communities are willing to collaborate with external enforcement agencies and that historical or existing tensions with the police force and/or park rangers are not excessively high.
A5	Formal sanctions are fair and are a deterrent.
A6	The community understands and agrees that there is a wildlife poaching problem.
A7	Social norms to mitigate against IWT exist.
B1	Local communities have some form of user rights over wildlife.
B2	Communities will be interested in and willing to exercise their user rights.
B3	There is a competitive market for wildlife products and services.

CODE IN FIGURE 2	ASSUMPTION
B4	Protected area authorities are willing to share revenues.
B5	Ownership/user rights leads to pride and a sense of importance.
B6	There is a sufficient understanding and appreciation of the link between wildlife and revenue that it generates.
B7	Resources and capacity for managing , including monitoring, of the target resource is in place.
B8	Elite capture does not undermine the revenue stream.
B9	Communities feel that costs and benefits are equitably and transparently distributed.
B10	Finance required for benefit generation is sustainable.
B11	Communities have sufficient information and power to resist third party interference.
C1	Traditional measures to manage HWC are insufficient and not viable.
C2	Funding is available for non-traditional mechanisms to manage HWC (eg compensation).
C3	The non-traditional strategies to mitigate human wildlife conflict actually work (including compensation).
C4	Intangible and indirect costs of living with wildlife (eg disease) are known and can be accounted for.
C5	Opportunities for land use planning and zoning to mitigate HWC exist and can be implemented.
D1	Elite capture does not undermine the revenue stream.
D2	Alternative livelihood schemes do not generate perverse incentives, e.g. money earned is not reinvested in poaching or other land uses that negatively affect wildlife.
D3	Adequate support is available to develop and maintain alternative livelihood schemes.
D4	Alternative livelihoods provide jobs or income to actual or potential perpetrators of wildlife crimes.
D5	Alternative livelihood schemes that are conditional on wildlife protection are adopted and are effective.
E1	Local people are willing to engage in law enforcement as scouts and informants.
E2	Better trained, better equipped guards do not use their more advanced equipment for poaching or other illegal purposes.
E3	Police and government rangers are not involved or linked to illegal activities.
F1	Communities that are more empowered to manage wildlife value it more.
F2	When communities receive benefits from wildlife (e.g. employment) they will value it more.
F3	The community has full knowledge about how benefits are being shared and distributed.
G	Communities who are better able to mitigate wildlife conflict feel decreased antagonism towards wildlife.
H1	IWT is not so high in value that that all other potential forms of income through tourism etc. cannot compete financially.
H2	Income from alternative livelihoods acts as a substitute for income from IWT.
I1	Collaboration between communities and other enforcement agencies leads to stronger action against IWT and not stronger collusion for IWT or other activities, (Governance and control of corruption is at an adequate level).
I2	Poachers continue to intimidate communities through better capacity and equipment.
J1	Communities are willing to enforce more strongly against IWT both within their communities and outside them.
J2	Poachers do not intimidate communities with fear to the level that they are too scared to take action against poachers from inside and outside the community, even when the benefits from wildlife increase. (Same as M2)

CODE IN FIGURE 2	ASSUMPTION
J3	Community has the sufficient levels of cohesion to take collective action against poachers from inside and outside the community.
K	Communities who experience a decreased cost of living with wildlife have a decreased incentive to actively or tacitly support IWT and are more willing to stand up to it.
L	The relative value of illegal wildlife products are not so high that communities participate in it anyway. (Same as M4)
M1	Communities are willing to enforce more strongly against IWT both within their communities and outside them.
M2	Poachers do not intimidate communities with fear to the level that they are too scared to take action against poachers from inside and outside the community, even when the benefits from wildlife increase. (Same as J2)
M3	The relative value of illegal wildlife products is not so high that new players enter into the system and negate the stronger action against poachers that has come into place (e.g. a powerful private security firm, or army unit, called into defend wildlife does not itself become an offender because the relative gains are so high).
M4	The relative value of illegal wildlife products are not so high that communities participate in it anyway. (same as L)
N	Poaching is reduced to within sustainable levels.

Appendix 4. Annotated bibliography

Africa

Botswana

1. Sebele, LS (2010) Community-based tourism ventures, benefits and challenges: Khama Rhino Sanctuary Trust, Central District, Botswana. *Tourism Managament*, 31: 136–146.

    Case Study Name: Khama Rhino Sanctuary Trust Status: Not specified

    Target species: Rhinoceros

    Description: The Khama Rhino Sanctuary Trust is a community-based organisation that was set up in 1992 to save rhinos and to bring about economic benefits for locals through tourism and the sustainable use of the available natural resources.

    Effectiveness for IWT: At the start of the project, 14 rhinos were translocated to the sanctuary (between 1993–1999). At the time of data collection (2004) there were 27.

Chad

2. Waya, E (2016) Fight against illegal international trade from Chad. Presentation at Beyond Enforcement Workshop, Cameroon 2016. Accessible online: https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/specialist-group-sustainable-use-and-livelihoods-suli/events/beyond-enforcement-workshop-limbe-cameroon-24-25-february-2016-0

    Case Study Name: Fight against illegal international trade from Chad

    Status: Ongoing

    Target species: Elephant, Rhinoceros

    Description: The four cantons bordering the Manda National Park created in 1993, a Village Monitoring Committee of Manda National Park. The objectives are to inform local communities about the importance of the park, raise awareness of poaching harms, insert local poachers into park management and monitor the park to combat poaching of wildlife. A surveillance committee has been established to tackle poaching and integrate local ex-poachers into park management and UNDP project is helping to further this work by providing surveillance technology and with support from a micro credit scheme.

    Effectiveness for IWT: Not reported.

Democratic Republic of Congo

3. Iflankoy, CK (2013) Fight against illegal international trade of African giant pangolins. Presentation at Beyond Enforcement Workshop, Cameroon 2016. Accessible online: https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/specialist-group-sustainable-use-and-livelihoods-suli/events/beyond-enforcement-workshop-limbe-cameroon-24-25-february-2016-0

    Case Study Name: Fight against illegal international trade of African giant pangolins

    Status: Ongoing

    Country: Democratic Republic of Congo

    Target species: Pangolin

    Description: Action Paysan – a local organisation involving traditional chiefs in Batere chiefdom – has been conducting anti-poaching activities since 2015. Poachers who had been commissioned to find pangolins have been recruited as members of a local patrol charged with protecting the caves where pangolins were living. Social media is used to report suspicious activities. The Project has established a permanent monitoring and consultation framework bringing together traditional authorities and local NGOs.

    Effectiveness for IWT: Not reported.

Kenya

4. Cottar, C (2015) Olderkesi Conservancy, Kenya in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

   Case Study Name: Olderkesi Conservancy

   Status: Ongoing

   Target species: Elephant

   Description: The scheme is based on lease payments that are competitive with alternative land use, such as agriculture and domestic livestock grazing. Infringements of the agreed land use, for example poaching, triggers deductions in lease payments to the Maasai community leaders who are then responsible for making up the deficit. If payments are reduced due to infringements it is up to the elders to police and fine culprits (who are usually members of their community or local area). The conservancy has a team of locally sourced scouts and runs a small undercover unit that liaises with rangers from the Kenya Wildlife Service (KWS) and the Mara Elephant Project when evidence of poaching is found. The Maasai community supports these operations which helps to ensure they get their full lease payments. The scheme includes provision for controlled livestock grazing during the wet season when tourism is low.

   Effectiveness for IWT: The referenced case study notes that it is too early to judge impact, but that "*positive early indicators include a rise in the game count in the conservancy area, and the halting of fragmentation, fencing and farming*".

5. Dinerstein, E *et al.* (2012) Enhancing Conservation, Ecosystem Services, and Local Livelihoods through a Wildlife Premium Mechanism. *Conservation Biology*, 27: 14–23.

   Case Study Name: The Kasigau Corridor REDD Project

   Status: Ongoing

   Target species: Elephant

   Description: The Kasigau Corridor REDD project in south-eastern Kenya was designed to bring direct financing for carbon emissions reduction to communities while securing the wildlife migration corridor between Tsavo East and Tsavo West National. Additional project goals are to alternative livelihoods for people in the surrounding areas to remove pressure on the forest, and maintain the high conservation values of the project area. The project has been generating an income since 2010.

   Effectiveness for IWT: The current REDD+ revenue-sharing plan for carbon credit rewards has led to reduced poaching of elephants.

6. Fitzgerald, KH and Muruthi, P (2015) The Greater Kilimanjaro Landscape in in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

   Case Study Name: The Greater Kilimanjaro Landscape

   Status: Ongoing

   Country: Kenya and Tanzania

   Target species: Elephant

   Description: The project started in 2001 and brought together communities, the African Wildlife Foundation (AWF), Big Life Foundation, Kenya Wildlife Service, Tanzania Wildlife Division and Tanzania National Parks. To date, it has involved joint trans-border patrolling, increased coordination amongst all parties involved, mobile units and sharing of intelligence. Throughout the area, community engagement in wildlife protection is integral to formal anti-poaching programmes. Training and coordination has been provided for some 200 community scouts that provide routine surveillance, anti-poaching and monitoring activities on community and private land. Transboundary wildlife protection is coordinated by AWF. Anti-poaching activities has been seen as one element in the programme which additionally has focused on developing community-based tourism, community capacity building, grazing management, livestock improvement and compensation schemes for loss from wild animal predators. The local communities themselves have fulfilled a number of roles including providing wildlife scouts and guards and serving on community committees as managers and leaders (e.g. on Group Ranch Committees and Wildlife Management Area Committees).

   Effectiveness for IWT: Between 2013 and 2014 the Kenyan area of the project recorded a 54 per cent decrease in elephant poaching, while there has been no known elephant poaching on the Tanzanian area of the project since 2012.

7. King, J and Craig, I (2015) Northern Rangelands Trust, Kenya in in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

Case Study Name: Northern Rangelands Trust

Status: Ongoing

Country: Kenya

Target species: Elephant, Rhinoceros

Description: The Northern Rangelands Trust (NRT) set up and support 19 conservancies in the north of Kenya. NRT's conservancy approach to tackling poaching is multi-faceted and has included training and employing community rangers. Other aspects of the NRT include a Livestock to Market Programme, an NRT trading company and support for women's empowerment and inclusion.

Effectiveness for IWT: Anecdotal evidence, carcass data and aerial survey data on elephants between 2002 and 2008 show that elephant populations increased by 27 per cent during this period, and the proportion elephants killed in the Northern Rangelands Trust conservancy areas was significantly lower than outside. Since 2009, better ranger based monitoring of elephant mortality shows a steady increase in poaching activity from 2009 to 2012. During this time, the percentage of carcasses found that had been killed illegally rose from 34 per cent to 81 per cent, and the overall elephant population between 2008 and 2012 declined by 14 per cent. However, over the past two years poaching has declined, to 59 per cent in 2013 to 43 per cent in 2014. Reports from rangers suggest that the number of elephant sightings are stable on conservancy land, in spite of overall population decline

8. UNDP (2013a) Maasai Wilderness Conservation Trust, Kenya. Equator Initiative Case Study. United Nations Development Programme, New York.

Case Study Name: Maasai Wilderness Conservation Trust

Status: Ongoing

Country: Kenya

Target species:

Description: Maasai Wilderness Conservation Trust (MWCT) was established in 2000 by the Maasai of Kuku Group Ranch as a grassroots conservation trust. The partnership between the Maasai

Wilderness Conservation Trust and the Maasai of Kuku Group Ranch is based around an ecolodge on Kuku Group Ranch land. The intention of the ecolodge is to create a tourism revenue stream that benefits the local community. The ecolodge, Campi ya Kanzi, was completed in 1998 and opened for business the same year. MWCT has developed a conservation programme the cornerstone of which is the trust's negotiation of lease payments for conservancy zones. These payments have compensated communities for their stewardship of the local ecosystem and have funded the creation of alternative livelihood options. MCWT's conservation programme also supports predator monitoring and the use of community wildlife rangers. Another important dimension of MCWT's efforts has been the initiative, Wildlife Pays, which financially compensates herders who lose livestock to wildlife predation in exchange for their full participation in wildlife protection activities.

Effectiveness for IWT: Not reported.

9. UNDP (2012b) Il Ngwesi Group Ranch, Kenya. Equator Initiative Case Study. United Nations Development Programme, New York.

Case Study Name: Il Ngwesi Group Ranch

Status: Ongoing

Country: Kenya

Target species: Rhinoceros, Elephant

Description: The Il Ngwesi Group Ranch in the central Kenyan district of Laikipia established an 8,645 hectares community-conserved area that aims to balance the needs of local pastoralists with wildlife conservation and the operation of a lucrative ecolodge. Il Ngwesi Lodge was opened in 1996, and caters to the high-end Kenyan tourism market, Il Ngwesi means 'People of Wildlife'. The bylaws established to protect the ranch's 6,500 hectares of conserved land include the outlawing of poaching or killing of animals in the conservation area. Il Ngwesi is not fenced, so nine security personnel have been employed, and given training and weapons by the government's reserve police force to enforce these bylaws. Alternative livelihood activities have been encouraged to decrease the Maasai's reliance on livestock and increase household incomes. Infrastructural projects, alongside health and education programs, have also improved the wellbeing of the group ranch's communities.

Effectiveness for IWT: Not reported.

Madagascar

10. Terry, A *et al.* (2013) Breaking the chain: combatting the illegal trade in ploughshare tortoises. Application form for the UK Illegal Wildlife Trade Challenge Fund 2014. UK Department for Environment, Food and Rural Affairs. Unpublished.

    Case Study Name: Breaking the chain: combatting the illegal trade in ploughshare tortoises

    Status: Ongoing

    Country: Madagascar

    Target species: Tortoise

    Description: Combatting the illegal trade in ploughshare tortoises is a new project funded by the Darwin Initiative's Illegal Wildlife Trade Challenge Fund. The project began in 2014 and will continue to 2017. The project involves delivering support to communities to tackle the illegal wildlife trade and related project objectives include improving the effectiveness of anti-poaching by involving local communities and social media marketing promoting implementation and application of local law (Dina) that covers poaching and reporting of information in local communities. Project co-funding is supporting projects to improve local human wellbeing through agricultural development and primary school education which will also contribute to reducing the habitat pressures on Baly Bay National Park and raising the profile of the species.

    Effectiveness for IWT: The referenced paper does not assess effectiveness (as it is too early to establish), but outlines the project proposal.

11. Randrimanampisoa, H *et al.* (2015) The Ploughshare Tortoise Protection Project, Madagascar in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

    Case Study Name: The Ploughshare Tortoise Protection Project

    Status: Ongoing

    Target species: Tortoise

    Description: The current project began in 2010 to give communities a stronger stake in tortoise protection. In partnership with the Madagascar National Parks and Baly Bay communities, the project supports community-led anti-poaching patrols which reinforce the park staff's own operations, and fits into national policy for community involvement in conservation. Rangers are selected from local villages, and trained in using GPS, radio-receivers and camera equipment.

    Effectiveness for IWT: The referenced case study does not assess effectiveness (as it is too early to establish), but describes the project.

Mali

12. Canney, S and Ganamé (2015) The Mali Elephant Project in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

    Case Study Name: The Mali Elephant Project

    Status: Ongoing

    Target species: Elephant

    Description: The Mali Elephant Project has mobilised local communities through facilitating the development of community-based natural resource management (CBNRM) systems that all can agree to. The CBNRM systems work along traditional resource management lines but includes all local ethnic groups and clans. The rules for resource use are set by a representative committee of elders, and enforcement is ensured by patrols of young men – eco-guardians – who can call on the support of government forest officials (when present) for enforcement.

    Effectiveness for IWT: Poaching was contained for the first three years but 2015 saw a deterioration in security and an escalation in poaching. The military have only been able to undertake anti-poaching patrols because of the local intelligence that has enabled them to target their meagre resources.

Mozambique

13. Shaw, J *et al.* (2014) Protecting wildlife by linking communities and conservation in Mozambique. Application form for the UK Illegal Wildlife Trade Challenge Fund 2014. UK Department for Environment, Food and Rural Affairs. Unpublished.

    Case Study Name: Protecting wildlife by linking communities and conservation in Mozambique

    Status: Ongoing

    Target species: Rhinoceros

Description: With funding from the UK Darwin Initiative, from 2015–2018, this project intends to address the threats to rhinos in Kruger National Park in South Africa by developing alternative wildlife-based sources of income, enhancing community governance structures and increasing awareness of new legislation in the Mangalane community across the border in Mozambique. Beneficiaries of this project will be the members of five villages of the Mangalane community living in the buffer area adjacent to the Sabi Game Park.

Effectiveness for IWT: The referenced paper does not assess effectiveness (as it is too early to establish), but outlines the project proposal.

Namibia

14. Jones, B (1999) Policy lessons from the evolution of a community-based approach to wildlife management, Kunene region, Namibia. *Journal of International Development*, 11: 295–304.

    Case Study Name: Anti-poaching in Kunene

    Status: Not specified

    Country: Namibia

    Target species: Rhinoceros

    Description: Described widely as the early template for community-based natural resource management from the 1980s. This initiative worked with local headmen to establish a community game guard system which restored to traditional leaders some of the authority over wildlife they had lost to the state. The initiative also worked to improve the impact of tourism on the local community in the region.

    Effectiveness for IWT: Not reported.

15. Muntifering, J *et al.* (2015b) Harnessing values to save the rhinoceros: insights from Namibia. *Oryx*, published online 28th September 2015. DOI: https://doi.org/10.1017/S0030605315000769

    Case Study Name: Rhino Custodianship Programme

    Status: Ongoing

    Target species: Rhinoceros

    Description: In 2005 the Rhino Custodianship Programme was established by Namibia's Ministry of Environment and Tourism with the aim of restoring the black rhinoceros to its historical

rangelands while meeting an emerging demand from local communities to engage in rhinoceros tourism. As part of the project the government has devolved power through the establishment of co-management institution and shared wealth through providing rights for local people to benefit from non-consumptive use of rhinoceroses.

Effectiveness for IWT: Not reported.

16. Muntifering, J *et al.* (2015a) The Rhino Rangers Incentive Programme, Namibia in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London

    Case Study Name: Rhino Ranger Incentive Programme

    Status: Ongoing

    Country: Namibia

    Target species: Rhinoceros

    Description: Already engaged under the Ministry of Environment and Tourism's Communal Rhino Custodians scheme, community leaders asked for help (in 2011) to raise the rhino monitoring capacity of appointed community rangers. This community driven demand led to the creation of the Rhino Ranger Incentive Programme. The first stage of the programme, which began in 2012, focused on improving overall monitoring effectiveness with state of the art equipment and on the job skills development through joint patrols with rhino specialists. Other incentives, such as new camping kit and performance-based cash bonuses, have dramatically improved the quality and quantity of community-based rhino monitoring. Stage two is now underway and involves delivering training that integrates the Rhino Rangers' work with rhino tracking tourism activities.

    Effectiveness for IWT: Focused rhino patrols as well as confirmed, individually identified rhino sightings by community appointed rangers have increased from 0 in 2011 to 727 ranger rhino sightings in 2014. While around 40% of the region's rhinos live within Communal Rhino Custodian land, only 22% of the confirmed poaching cases in 2014 have occurred in these areas.

Nigeria

17. Isikhuemen, EM (2016) Biodiversity Action Plan Project in Gilli Gilli Forest Reserve Presentation at Beyond Enforcement Workshop, Cameroon 2016. Accessible online: https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/specialist-group-sustainable-use-and-livelihoods-suli/events/beyond-enforcement-workshop-limbe-cameroon-24-25-february-2016-0

    Case Study Name: Biodiversity Action Plan Project in Gilli Gilli Forest Reserve

    Status: Ongoing

    Target species: African Grey Parrot, Black-and-White-Tailed Hornbill and Timber

    Description: Biodiversity Action Plan (BAP) was introduced to improve wellbeing, protect ecosystems and promote alternative livelihoods. Typically in Nigeria, forests are managed by the state with no community involvement. In this case the project was able to introduce a bylaw permitting community-based forest management. The BAP Project objective is to improve the wellbeing of forest dependent rural poor in communities, and to protect and conserve fragile ecosystems and associated life forms, and to promote alternative livelihood activities. Small loan scheme for poor persons in communities targeting young males (17 – 40y) engaged in logging and women that trade in non-forest wood products and live animals.

    Effectiveness for IWT: Not reported.

Republic of Congo

18. Vitos *et al.* (2013) Making local knowledge matter – Supporting non-literate people to monitor poaching in Congo. *Bulletin of the Society of Cartographers*, 46: 3–11.

    Vitos *et al.* (2013) Making local knowledge matter – Supporting non-literate people to monitor poaching in Congo. Third Annual Symposium on Computing for Development (ACM DEV 2013).

    Case Study Name: Community Mapping by Mbendjele hunter-gatherers in the rainforests of Congo

    Status: Ongoing

    Country: Republic of Congo

    Target species: Elephant

    Description: Since around 2012/13, Mbendjele hunter-gatherers in the rainforests of Congo have been collaborating with the ExCiteS Research Group at University College London to record their local knowledge about illegal poaching activities with the intention of improving the control of commercial hunters and reducing the harassment they often experience at the hands of 'eco-guards' who enforce hunting regulations. ExCiteS have built an anti-poaching application in collaboration with Mbendjele hunter-gatherers which can be used to log evidence of commercial poaching.

    Effectiveness for IWT: Not reported.

Rwanda

19. Kinani, JF and Mudakikwa, M (2016) Gorilla intervention, National Volcanoes Park in Rwanda. Presentation at Beyond Enforcement Workshop, Cameroon 2016. Accessible online: https://www.iucn.org/commissions/commission-environmental-economic-and-social-policy/our-work/specialist-group-sustainable-use-and-livelihoods-suli/events/beyond-enforcement-workshop-limbe-cameroon-24-25-february-2016-0

    Case Study Name: Gorilla intervention, National Volcanoes Park in Rwanda

    Status: Ongoing

    Target species: Mountain Gorillas

    Description: In Rwanda, 5 per cent of the revenue generated from tourism in protected areas is shared with the local community. Local people made vital contributions to the tourism industry, the establishment of porters associations being one example of how local people can earn income from conservation – these often involve ex-poachers. The Kabaho Ngagi Sabinyo cooperative was established by an ex poacher in 2002 and now has 298 members all of whom previously had some link with illegal activities.

    Effectiveness for IWT: Not reported.

South Africa

20. Reuter, E and Bisschop, L (2016) Keeping the Horn on the Rhino: A Study of Balule Nature Reserve. In Potter, GR *et al. The Geography of Environmental Crime: Conservation, Wildlife Crime and Environmental Activism.* Palgrave Studies on Green Criminology.

    Case Study Name: The Black Mamba Initiative

    Status: Ongoing

    Target species: Rhinoceros, Elephant

    Description: The main objective of the Black Mamba Initiative is to protect wildlife through creating strong bonds with local communities. All Black Mamba recruits are from local, previously disadvantaged communities and the initiative is intended as a social upliftment program. The Black Mamba Anti-Poaching Unit (APU) is primarily made up of women that undertake foot-patrols, observations, vehicle checks, road blocks and intelligence gathering from their communities, as well as educating their peers on wildlife conservation. In addition, the Black Mambas are dispatched to around 10 local schools as part of an awareness and educational programme called the Bush Babies programme.

    Effectiveness for IWT: The referenced paper does not assess effectiveness (as it is too early to establish), but describes the Balule Rhino Conservation Model.

21. UNDP (2012a) Makuleke Ecotourism Project – Pafuri Camp, South Africa. Equator Initiative Case Study. United Nations Development Programme, New York.

    Case Study Name: Makuleke Ecotourism Project

    Status: Ongoing

    Country: South Africa

    Target species: Rhinoceros, Elephant

    Description: Pafuri Camp is a community-led ecotourism initiative in the northern part of the Kruger National Park. The main objectives of the Pafuri Camp have been to protect the unique ecosystems and wildlife of the region and sustain a competitive ecotourism enterprise that provides the community with alternative livelihood opportunities and sustainable sources of income. Anti-poaching teams have also been established to identify and eliminate illegal poaching.

    Effectiveness for IWT: Not reported.

Tanzania

22. Lotter, W and Clark, K (2014) Community involvement and joint operations aid effective anti-poaching in Tanzania. *PARKS,* 20: 20–28.

    Case Study Name: Ruvuma Elephant Project

    Status: Ongoing

    Target species: Elephant

    Description: Starting in 2011, the aim of the Ruvuma Elephant Project (REP) has been to improve the status of elephant conservation in the area between Selous Game Reserve and the Niassa National Reserve. The primary project activities have included; training game scouts and rangers and implementing joint field patrols on an ongoing basis; providing incentives and rewards for ensuring good performance of patrols, as well as to finance an informer network; implementing a human wildlife conflict mitigation programme; and supporting income generating activities for the local communities.

    Effectiveness for IWT: The authors found from project patrols and aerial surveillance that over the 24 month period of operation (December 2011 to November 2013) there was a substantial annual decrease in the number of elephant carcasses observed – a total of 216 elephant carcasses were observed in year one, and 68 in year two.

23. UNDP (2015) Matumizi Bora ya Malihai Idodi na Pawaga Wildlife Management Area. Equator Initiative Case Study. United Nations Development Programme, New York.

    Case Study Name: Matumizi Bora ya Malihai Idodi na Pawaga (Sustainable Use of Wildlife Resources in Idodi and Pawaga) Wildlife Management Area.

    Status: Ongoing

    Target species: Elephant, Rhinoceros

    Description: A community-based organization of 21 villages, Matumizi Bora ya Malihai Idodi na Pawaga (MBOMIPA), works with 56,000 people living adjacent to Ruaha National Park in Tanzania on sustainable natural resource management and anti-poaching efforts. The association established a community-run wildlife management area (legally recognised in 2002) and is promoting wildlife-based livelihoods as a means to ensure biodiversity conservation. MBOMIPA employs a two-pronged approach to reducing poaching, which includes environmental education programs and the mobilization of village game scouts.

    Effectiveness for IWT: Not reported.

Zambia

24. Lewis, D *et al.* (1990) Wildlife Conservation Outside Protected Areas – Lessons from an Experiment in Zambia. *Conservation Biology,* 4: 171–180.

    Case Study Name: Lupande Developmental Project

    Status: Not specified.

    Target species: Rhinoceros, Elephant

    Description: The proposed game management area structure, designed and implemented from 1986, called for a wildlife management approach in which manpower requirements were drawn from the local village community, issues of wildlife management were dealt with in collaboration with village leaders and revenue generated by the Wildlife Conservation Revolving Fund was retained to support both wildlife management costs and local community benefits

    Effectiveness for IWT: Annual mortality from before (1985) and after (1987) the project found that the illegal poaching of elephants and black rhino decreased at least tenfold. There was also an increase in the number of firearms confiscated and arrests, and anecdotal evidence suggested a changing tolerance for poaching. For example, in March 1987, Chief Malama convened a meeting of all headmen and instructed the village not to cooperate with poachers.

Zimbabwe

25. Manyema, SB *et al.* (2013) 'Are You Serious to Ask Me about Who Owns Wildlife?' Politics of Autonomy over Wildlife Resources in the Zambezi Valley, Zimbabwe. *Forum of Development Studies,* 40: 1891–1765.

    Case Study Name: CAMPFIRE (Communal Areas Management Programme for Indigenous Resources)

    Status: Not specified

    Target species: Elephant

    Description: CAMPFIRE evolved from Wildlife Industries New Development for All (WINDFALL) that was initiated in 1978 by the then Department of National Parks and Wildlife Management, which has now become the National Parks and Wildlife Management Authority (NPWMA). Through WINDFALL, African communities bordering on game parks occasionally received meat from elephant culling and some revenue from trophy fees. CAMPFIRE was launched in 1988 in the Nyaminyami and Guruve Rural District Councils (RDCs) to conserve the ecosystem and sustain the economic viability of local communities through wildlife utilisation on a commercial basis.

    Effectiveness for IWT: Anecdotal evidence from key informant interviews revealed perceptions that poaching has increased.

Asia

Afghanistan

26. Simms, A *et al.* (2011) Saving threatened species in Afghanistan: snow leopards in the Wakhan Corridor. *International Journal of Environmental Studies,* 68: 299–312.

    Case Study Name: Snow Leopards in the Wakhan Corridor

    Status: Not specified

    Target species: Snow Leopard

    Description: In the early 2000s, with assistance from the Wildlife Conservation Society the community have developed a local governance structure, the Wakhan-Pamir Association (WPA). The WPA is mandated to oversee sustainable natural resource management and socioeconomic development in Wakhan. Since 2008, 59 rangers have been hired and trained from the local community and the teams carry out patrols and survey wildlife on a monthly basis. For mitigating predation, two corrals were constructed in the latter part of 2010 and another ten were planned for construction in 2011. In August 2010 a pilot insurance program was started in a small Wakhi village called Sarkand. Despite the troubles of Afghanistan, tourism offers real hope for livelihood improvement. Tourist numbers in Wakhan have been increasing rapidly since 2005 with the yearly total currently being between 200 and 250. This is providing a much needed cash stimulus to the local economy, and it is one of the few livelihood alternatives viable to the community that blends well with wildlife conservation.

    Effectiveness for IWT: Not reported.

Bangladesh

27. UNDP (2013b) Chunoti Co-management Committee. Equator Initiative Case Study Series. United Nations Development Programme, New York.

   Case Study Name: Chunoti Co-management Committee

   Status: Ongoing

   Target species: Elephant

   Description: n the early 2000s, local communities living adjacent to the Chunoti Wildlife Sanctuary began to work in cooperation with the Forest Department to promote co-management of the protected area. The process began quite organically, with the committee forming through community meetings and discussions and developing into an official Co-Management Committee in 2004–5. Chunoti Co-Management Committee (CMC) protects the once-degraded Chunoti Wildlife Sanctuary and mainly focuses on reducing the overexploitation of timber and non-timber forest products. Though, the committee does coordinate volunteer patrols to prevent and discourage illegal logging and wildlife poaching. Patrol teams are often comprised of women and poorer members of the community, and have received additional support for the creation of alternative income generating opportunities.

   Effectiveness for IWT: Anecdotal observations report an increase in the number of elephants within the sanctuary.

Cambodia

28. Clements, T *et al.* (2013) An evaluation of the effectiveness of a direct payment for biodiversity conservation: The Bird Nest Protection Program in the Northern Plains of Cambodia. *Biological Conservation*, 157: 50–59.

   UNDP (2012c) Tmatboey Community Protected Area Committee Ecotourism and Bird Nest Protection Program Equator Initiative Case Study Series. United Nations Development Programme, New York.

   Case Study Name: Tmatboey Community Protected Area Committee Ecotourism and Bird Nest Protection Program

   Status: Ongoing

   Target species:

   Description: Tmatboey Community Protected Area Committee evolved in the early 2000s from a pilot community-based ecotourism project in the village of Tmatboey. The community worked with WCS, through a participatory approach, to establish a locally-elected village committee which would govern all aspects of ecotourism and, importantly, all land management in the village area. Tourists contribute to the local economy directly, through payments to villagers for services such as accommodation, guiding, cooking and transportation, and indirectly through a USD 30 donation to the village development fund. Tmatboey Village's no-hunting policy is accompanied by a measure that pays community members not to collect the eggs or chicks of threatened bird species from their nesting sites, the 'Bird Nest Protection Program'. Under the program, nests were located by local people (usually resin-tappers or local farmers), or community rangers. For all species except Giant Ibises a permanent protection team of two people was established for each nest, or colony of adjutants or darters.

   Effectiveness for IWT (relates only to the Bird Nest Protection Programme): The success rate of protected nests was 88.5% 2009–2011, in comparison with a success rate of 36.9% for unprotected controls of the same species during the same period. Breeding populations of Lesser Adjutant and Oriental Darter increased significantly (Clements *et al* 2013).

29. UNDP (2012d) Monks Community Forest. Equator Initiative Case Study Series. United Nations Development Programme, New York.

   Case Study Name: Monks Community Forest

   Status: Ongoing

   Target species: Timber

   Description: In response to widespread deforestation, the monks of Samraong Pagoda acquired legal protection of the forest, established patrol teams, demarcated the Forest's boundaries, and raised environmental awareness among local communities. A co-management committee of villagers, government authorities and NGOs has been developed to manage what is now Cambodia's largest community forest. The monks have attracted external funding to assist village patrollers who currently volunteer their time and resources. The funds have provided emergency rice supplies for poor families, assisted them to bring non-timber forest products to market in more cost-effective ways, and provided them with food in exchange for patrolling services.

   Effectiveness for IWT: Not reported.

India

30. Martin, E and Vigne, L (2012) Successful rhino conservation continues in West Bengal, India. *Pachyderm*, January–June 2012, No. 51: 27–37.

Case Study Name: Rhino Conservation, West Bengal

Status: Not specified.

Target species: Elephant

Description: In the late 1990s, the West Bengal Forest Department established ecotourism infrastructure in Gorumara National Park and Jaldapara Wildlife Sanctuary to ensure local people benefit from wildlife conservation. The Forest Department trained local villagers as guides along with drivers to take tourists to see wildlife. From 1997 a 25 per cent share of the Forest Department's revenue from ecotourism (for entry fees and bed nights) at Gorumara National Park and Jaldapara Wildlife Sanctuary was shared with local communities. This money was given to eco-development committees who along with the Forest Department decide how the money should be spent through community development projects.

Effectiveness for IWT: Between 1975–2011 the number of rhinos increased from 23–149 at Jaldapara Wildlife Sanctuary, and between 1978–2011 from 8–43 at Gorumara National Park The last known rhino death due to poaching at Gorumara National Park was in 1992. There has been a reduction in poaching at Jaldapara Wildlife Sanctuary from eight in the 1990s to five in the 2000s. Though note, the assessment in the referenced paper does not disaggregate the community-based approaches from wider approaches to IWT.

31. Shah, S (2016) Mapping of Poaching communities, understanding customs and providing livelihood to buy conservation support. Case study submitted to IIED Conservation, Crime and Communities Database: http://communitiesforwildlife.iied.org/mapping-poaching-communities-understanding-customs-and-providing-livelihood-buy-conservation-support

Case Study Name: Mapping of Poaching communities, understanding customs and providing livelihood to buy conservation support

Status: Ongoing

Target species: Tiger, Leopard, Pangolin, Sloth bear

Description: The project is working specifically with people from the Mogiya community. This community has a rich knowledge of wildlife, traditional medicines from forests and animal behaviour and they have been frequently approached by villagers living nearby forests for retaliatory killing of tiger, leopard and ungulates, and by traffickers for demand of skins and bones and other derivatives. As earnings in the villages are low, people are often attracted to poaching of wildlife and its trade. This project will map all the poaching communities in the landscape and work with them to support alternative livelihoods through vocational trainings. Presently, the project is helping to provide water resources and solar based lighting systems, as well as working with the government to ensure that all the villagers have a recognised identity including voting ID cards and ration cards.

Effectiveness for IWT: The referenced case study does not assess effectiveness (as it is too early to establish).

Indonesia

32. Linkie, M *et al.* (2015) Safeguarding Sumatran tigers: evaluating effectiveness of law enforcement patrols and local informant networks. *Journal of Applied Ecology*, 52: 851–860.

Case Study Name: Safeguarding Sumatran Tigers

Status: Not specified

Target species: Tiger

Description: To protect tigers and their principal prey, five Tiger Protection and Conservation Units (patrol teams) were established between 2000 and 2005. Operational field command has been provided by National Park staff who work in partnership with community members and a local informants network. Informants receive a small reward for their information, typically mobile phone credit or money for cigarettes.

Effectiveness for IWT: Patrols were significantly more likely to detect snares (increase of 40%). Camera trap data showed a stable population of tiger prey species. However, despite these positive results tigers and their prey continue to be poached in the Kerinci Seblat landscape.

33. Linkie, M *et al.* (2014) Breaking the Vicious Circle of Illegal Logging in Indonesia. *Conservation Biology*, 28: 1023–1033.

Case Study Name: Aceh Forest and Environment Project

Status: No longer operating

Target species: Timber (species not specified)

Description: One component of the internationally donor funded Aceh Forest and Environment Project (2006–2010) designed by Fauna and Flora International focused on a forest protection through a community-based informant network. The primary focus of this partnership was to engage local communities to accurately document the frequency and locations of forest offences, namely illegal logging (removal of trees), timber storage (temporary placement of timber awaiting transportation), timber transportation, sawmills, and, trading illegally sourced timber. Collectively, the local NGOs provided complete geographical coverage for intelligence-based monitoring of forest offences across Ulu Masen. Each informant, who was a resident in their focal area, directly communicated with the NGO upon detecting a forest offence. Upon receiving an informant report, an NGO verified the information and where the NGO deemed there was sufficient information for the government agencies to act, it reported the incident to a district-level government. The law enforcement response to a local NGO report was then monitored by the same NGO.

Effectiveness for IWT: Successful collaboration between law enforcement and community stakeholders led to high levels of prosecution and punishment for those caught. However, the high prevalence of illegal logging at the study end indicates that the project did not act as an effective deterrent to rule breaking behaviour.

34. Pohnan, E *et al.* (2015) Does tree planting change minds? Assessing the use of community participation in reforestation to address illegal logging in West Kalimantan. *Tropical Conservation Science*, 8: 45–57.

Case Study Name: Alam Sehat Lestari Reforestation Project

Status: No longer operating

Target species: Timber

Description: Since 2009, local NGO Alam Sehat Lestari (ASRI) has reforested 20 hectares of degraded grassland within the Gunung Palung National Park, with the goal of restoring forest area and decreasing the incidence of illegal logging inside the park by providing jobs and income to local people. ASRI's reforestation program was located in a village of 764 households, where it directly employed nearly one-hundred villagers between 2009–2013 as nursery staff, seasonal reforestation workers, day labourers, and fire protection crews.

Effectiveness for IWT: Interviewees believe that the reforestation programme has greatly helped to reduce illegal logging in Gunung Palung National Park. However, contradictory responses suggest that respondents may have conflated the impacts of the reforestation activities with the impacts of other external influences, such as increased patrolling efforts by national park staff and the development of an oil palm plantation.

35. Wilke, D *et al.* (2016) Measuring Impact – Rewards and Risks Associated with Community Engagement in Anti-Poaching and Anti-Trafficking. Biodiversity Research Paper, USAID.

Case Study Name: Goats for Hope

Status: Ongoing

Target species: Tiger

Description: The Wildlife Conservation Society (WCS) has helped the government of Indonesia protect tigers by protecting livestock (mostly goats) from tiger attacks in villages near the Bukit Barison Selatan National Park in southwestern Sumatra. Through Goats for Hope, a Wildlife Response Unit works with local people to build tiger-proof enclosures to secure livestock at night, support night patrols that keep tigers at a distance from village livestock, and respond rapidly to community reports of human-tiger conflict.

Effectiveness for IWT: Community members are now willing to halt retaliatory killing of tigers. Rather than helping professional hunters, they now provide actionable intelligence to the Wildlife Crime Unit.

Kyrgyzstan

36. Mishra, C *et al.* (2014) Citizen Ranger Wildlife Protection Programme. Application form for the UK Illegal Wildlife Trade Challenge Fund 2014. UK Department for Environment, Food and Rural Affairs. Unpublished.

    Case Study Name: Citizen Ranger Wildlife Protection Program

    Status: Ongoing

    Target species: Snow Leopard, Argali Sheep and the Ibex

    Description: With funding from the UK Darwin Initiative, from 2015–2018, the project proposes to scale up a new anti-poaching program in the Kyrgyz Republic called Citizen-Ranger Wildlife Protection Program (CRWPP). CRWPP aims to train, inspire and better appreciate the efforts of state rangers, and encourage support and collaboration from local communities. CRWPP publicly recognises and financially rewards rangers, and ranger-community member combined teams, who successfully apprehend poachers and file cases against them under the criminal justice system.

    Effectiveness for IWT: The referenced paper does not assess effectiveness (as it is too early to establish), but outlines the project proposal.

Mongolia

37. Mishra, C *et al.* (2003) The Role of Incentive Programmes in Conserving the Snow Leopard. *Conservation Biology*, 17: 1512–1520.

    Case Study Name: Snow Leopard Enterprises

    Status: Not specified

    Target species: Snow Leopard

    Description: Snow Leopard Enterprises was initiated in 1998 in response to an expressed need on the part of herders for improved access to markets, in exchange for a conservation commitment. The incentive program focuses on value addition to wool. Snow Leopard Enterprises guarantees that it will purchase a certain number of specially designed handicrafts. Herders sign a contract committing to specific conservation actions, such as a complete ban on poaching of snow leopards and their prey. Environmental officers of the local government monitor compliance and incentives are provided to these administrative agencies by assuring them 10 per cent of the sales income from the project.

Effectiveness for IWT: No reports of snow leopards being killed in any of the project sites since the programme was initiated (compared to three cases of snow leopards being poached between 1994 and 1998 before the project).

Myanmar

38. Galster, S *et al.* (2010) Partnering to stop poaching: Developing cross-sector strategic responses to wildlife. Chapter 7 in Tilson, R and Nyhus, PJ (2010) *Tigers of the World: The Science, Politics, and Conservation of Panthera Tigris* (Second Edition). Academic Press.

    Case Study Name: Surviving Together

    Status: Ongoing

    Country: Myanmar (originally) and subsequently moved to Thailand

    Target species: Tiger

    Description: The different components of the programme include – wildlife monitoring, protected area monitoring systems, ranger training, human wildlife conflict management, community education and outreach and the introduction of alternative livelihoods.

    Effectiveness for IWT: In one focal community in Myanmar the number of poachers was reduced, but for others, the lure of easy money from poaching was too strong and they simply shifted their attention to parks with less protection. .

    * Information on this case study has also been taken from the project website: http://www.freeland.org/programs/surviving-together/

Nepal

39. Khatiwada, AP (2015) Community-based Conservation of Chinese Pangolins, Nepal in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

    Case Study Name: Community-based Conservation of Chinese Pangolins

    Status: Ongoing

    Target species: Pangolin

    Description: Set up in 2012, the project aims to collect baseline information on ecology, status, distribution and specific threats facing the Chinese pangolin, and to generate support for their conservation. The project focuses on two villages

in the Taplejung municipality in the east of Nepal – a transit point for the illegal trade in pangolin into Tibet and India. Data from the project has revealed that those who get involved with illegal trade were generally not the poorest. The project has been designed on the basis of existing local governance. In Nepal, districts are divided into administrative units run by Village Development Committees (VDCs). These VDCs are each subdivided into nine wards. Working with two VDCs, the project has established a pangolin conservation sub-committee in each ward. A representative from each sub-committee is then appointed to a VDC level conservation committee, which is tasked with launching and supporting conservation activities to raise awareness and control illegal trade in the village's jurisdiction.

Effectiveness for IWT: Before the project began, villagers who came across a pangolin by chance would more likely than not have killed it. Now there is a growing number of cases where locals come across a live pangolin and bring it to the attention of conservation sub-committee members.

40. Kock, R *et al.* (2010) Final Report: Crises to Biological Management: Rhinoceros, Grassland and Public Engagement – Nepal. Darwin Initiative. Access online: http://www.darwininitiative.org.uk/project/16009/

Martin, E and Martin, C (2010) Enhanced community support reduced rhino poaching in Nepal. Pachyderm No. 48 July–December 2010, pp. 48–56.

Case Study Name: Rhinoceros, Grassland and Public Engagement

Status: No longer operating.

Target species: Rhinoceros

Description: The central aim of this UK Darwin funded initiative (2007–2010) was to re-establish effective capacity, systems and motivation for the conservation of the endangered one-horned Asian rhinoceros and associated Terai grassland habitat in Nepal. Attention to the community has involved engagement, education and awareness raising. In particular, the project has targeted conflict issues related to crop raising by rhino and elephant. Support to community anti-poaching volunteers has included establishing a guard post and providing track-suit uniforms and bicycles.

Effectiveness for IWT: Poaching has ceased in Bardia National Park over the project's lifetime.

41. Martin, E *et al.* (2013) Successful reduction in rhino poaching in Nepal. *Pachyderm*, July–December 2013, No. 54: 67–73.

Martin, E and Martin, C (2010) Enhanced community support reduced rhino poaching in Nepal. *Pachyderm*, July–December 2010, No. 48: 48–56.

Case Study Name: Buffer Zones

Status: Not specified

Target species: Rhinoceros

Description: The Buffer Zone concept was promulgated in Nepal in 1993 for certain protected areas in Nepal to encourage the local communities to be more reliant on economic activities within the buffer zone. The National Trust for Nature Conservation (NTNC), an NGO, has played an important role in support buffer zones, for example, in 2005 and 2006 they set up a fund of NPR 5,000,000 (then worth USD 69,444), using the interest to pay informers, to patrol outside the Park boundary and to help maintain anti-poaching vehicles.

Effectiveness for IWT: Cumulative increase of 99 rhinos in the Chitwan and Bardia National Parks and the Suklaphanta Wildlife Reserve from 2008–2011. From an average of nearly 10 rhinos poached a year in Nepal from 2008 to 2010, the number dropped to only 1 a year in 2011 and 2012 (Martin *et al.* 2013). Though note, the assessment in the referenced paper does not disaggregate the community-based approaches from wider approaches to IWT.

42. Martin, E *et al.* (2013) Successful reduction in rhino poaching in Nepal. *Pachyderm*, July–December 2013, No. 54: 67–73.

Martin, E and Martin, C (2010) Enhanced community support reduced rhino poaching in Nepal. *Pachyderm*, July–December 2010, No. 48: 48–56.

Case Study Name: Terai Arc Landscape

Status: Ongoing

Target species: Rhinoceros, Tiger

Description: WWF Nepal donated NPR 4–5 million (USD 52,300– 65,400) to buffer zone communities as part of theTerai Arc Landscape (TAL) programme. WWF Nepal have worked with the communities in the Buffer Zone to reduce human wildlife conflict and provide income-generating activities. WWF Nepal spent NPR

800,000 (USD 12,365) in 2009 for informers and for intelligence gathering on potential poachers and wildlife traders. WWF Nepal under the TAL programme employ a rhino conservation coordinator to coach the 150 guards recruited from the Buffer Zone that patrol on the community forests on a daily basis and collect information on poachers.

Effectiveness for IWT: Cumulative increase of 99 rhinos in the Chitwan and Bardia National Parks and the Suklaphanta Wildlife Reserve from 2008–2011. From an average of nearly 10 rhinos poached a year in Nepal from 2008 to 2010, the number dropped to only 1 a year in 2011 and 2012 (Martin *et al.* 2013). Though note, the assessment in the referenced paper does not disaggregate the community-based approaches from wider approaches to IWT.

Thailand

43. Steinmetz, R *et al.* (2006) Collaborating to Conserve Large Mammals in South East Asia. *Conservation Biology*, 20: 1391–1401.

Case Study Name: Collaborating to Conserve Large Mammals in South East Asia

Status: No longer operating

Target species: Tiger, Gaur

Description: This project initiated a learning process between 2000–2006 that included Thung Yai government officials and Karen villagers and was directed toward incremental improvement of the status of wildlife – in particularly mammals that are poached for commercial trade (Tiger and Gaur) and subsistence use (porcupines and civets). Collaborative wildlife workshops were organized with the intention of undertaking a wildlife status and impact assessment, and planning for conservation action. At Thung Yai, this included setting up two joint monitoring teams that patrol and gather information on poaching.

Effectiveness for IWT: Not reported.

Latin America

44. Lichtenstein, G (2015) Vicuña management in the Andes, Latin America in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

Case Study Name: Vicuña management in the Andes

Status: Ongoing

Countries: Argentina, Chile, Bolivia, Peru

Target species: Vicuña

Description: Community-based management has been used as a mechanism for encouraging conservation and tolerance of vicuñas in community lands, while at the same time contributing to local economic development and poverty alleviation. The implementation of vicuña management projects in the region has been a process divided into four main stages: conservation (including custodianship by the local people, and control and monitoring by the government), planning (by the government), fibre production and processing. In the conservation stage, government decides on the conservation activities required to implement the provisions signed under the Vicuña Convention (1979). The protection and increase of vicuña populations and the control of poaching and illegal trade of vicuña products depend on the support of local people who have little influence or control over government directives – typically local people act as informants and many local communities have local guards for their wild populations. In all countries, the government is responsible for the certification of fibre as a measure to control illegal trade. The fibre is pooled together for the national auction that is usually organised by the associations of producers with support from the governments.

Effectiveness for IWT: Not reported.

Brazil

45. Waldhoff, P and Vidal, E (2015) Community loggers attempting to legalize traditional timber harvesting in the Brazilian Amazon: An endless path. *Forest Policy and Economics*, 50: 311–318.

    Case Study Name: Forest management through participative planning at the Curuçá river communities

    Status: No longer operating

    Target species: Timber

    Description: 'Forest management through participative planning at the Curuçá river communities' was pioneered by the Community Association of Agricultural and Forest Products (ACAF). ACAF formed from a group of small loggers who joined forces to seek new opportunities within legal parameters because as environmental issues surrounding tropical forest becoming increasingly disputed, traditional logging activities performed by locals came to be regarded as illegal. In 2004, with support from ProManejo, courses were taught on the stages of legal registration necessary for forestry micro-businesses; administration and accounting for non-profit organizations; basic workplace safety concepts and accident prevention; and wood classification. ProManejo also promoted exchange programs with other CFM in the region and with Forest Stewardship Council (FSC) certified enterprises. In 2004 the Amazonas State agreed to a 2400 ha area in which that ACAF could formally start its forest management activities. In 2004, ACAF started its forest certification process in concurrence with FSC guidelines.

    Effectiveness for IWT: Not reported.

46. Zimmerman, B *et al.* (2001) Conservation and development alliances with the Kayapó of south-eastern Amazonia, a tropical forest indigenous people. *Environmental Conservation*, 28: 20–22.

    Case Study Name: Conservation International do Brasil – illegal logging of Mahogany

    Status: Not specified

    Target species: Timber

    Description: In 1992, the non-governmental organization Conservation International do Brasil (CI-Brasil) began a conservation and development project with the Kayapó community of A'Ukre with the objective of providing economic alternatives to logging and protecting a population of mahogany trees. The objective of the CI-Brazil project was to direct a sustainable flow of benefits from the forest to the people of A'Ukre and hence provide an economic alternative to logging and contribute to the Kayapó's capacity for self- etermination. The project focused its efforts on establishing an ecological research station (Pinkaití).

    Effectiveness for IWT: The people of A'Ukre have controlled mahogany logging on their land, including the exclusion of trespassing loggers and prohibition of logging within the 8000 ha Pinkaití research reserve. In 1998, the community stopped the attempted sale of mahogany logs in the research reserve by one of its members.

Colombia

47. Delago, GU and Sierra Diaz, CL (2015) ASOCAIMAN, Colombia in Roe, D (ed.) Conservation, crime and communities: case studies of efforts to engage local communities in tackling illegal wildlife trade. IIED, London.

    Case Study Name: ASOCAIMAN Cooperative

    Status: Ongoing

    Country: Colombia

    Target species: American Crocodile

    Description: In Cispatá Bay the American crocodile has been the subject of an active management programme since 2003 involving egg harvesting, incubation and re-release of juveniles into the wild. Community participation is a major component of the Cispatá Bay conservation programme with ex-hunters of crocodiles forming a cooperative in 2006 – ASOCAIMAN – to support the conservation activities in conjunction with the local regional environmental authority and the San Antero Municipality. The aim of the ASOCAIMAN initiative is twofold: (1) to conduct a pilot programme for crocodile conservation based on sustainable use; and (2) to draw up guidelines for a national conservation programme

    Effectiveness for IWT: Over the past 12 years, studies conducted in the bay area have shown that crocodile numbers are rising to the point where there is a stable and viable population that can be exploited on a sustainable basis as one element of a conservation plan. Organised collections from an average of 50 crocodile nests a year has resulted in 8,000 neonates hatching and the release of 3,500 of these into the wild.

Guyana

48. Fernandes, D (2006) 'More Eyes Watching' Community-based Management of the Arapaima (Arapaima gigas) in Central Guyana. Conference Paper – Survival of the Commons: Mounting Challenges and New Realities, the Eleventh Conference of the International Association for the Study of Common Property, Bali, Indonesia.

Bicknell, J and Chin, C (2007) Aquarium fisheries as a non-timber forest product: experiences from conservation through community development in North Rupununi District, Guyana. *Conservation Evidence*, 4: 94–98.

Case Study Name: Community-based management of the Arapaima

Status: Not specified

Target species: Arapaima (Arapaima gigas)

Description: The Arapaima project in Guyana began in the early 2000s and created fishermen groups, a community imposed harvesting ban, local monitoring program and introduced aquarium fish as an alternative livelihood as well as running community education and awareness campaigns.

Effectiveness for IWT: Annual Arapaima surveys have provided empirical evidence to support local claims of Arapaima recovery with the total count of adult and juvenile Arapaima increasing from 425 in March 2001, to 1200 in December 2003.

Mexico

49. Pulido, M and Cuevas-Cardona, C (2013) Cactus Nurseries and Conservation in a Biosphere Reserve in Mexico. *Ethnobiology Letters*, 4: 96–104.

Case Study Name: Cactus Nurseries and Conservation in Mexico

Status: Not specified.

Target species: Cacti

Description: In the Barranca de Metztitlán Biosphere Reserve (RBBM), the federal agency in charge of conservation has supported plant nurseries as an example of an activity that both utilizes resources and promotes conservation. In 2002, Biosphere reserve officials began to promote the establishment of Units for Wildlife Conservation (UMAs) to produce cacti as a sustainable alternative. At all three UMAs, the nursery managers reported support from the reserve administration to attend courses in production methods, cactus care and germination, and marketing.

Effectiveness for IWT: I Interviews revealed that previously whole areas were stripped of plants but as a result of the project local residents now understand that removing cacti is a federal offence and report it. However, unpublished data taken from the environmental protection still showed a large increase in the number of plants seized in 2012 in comparison to the previous seven years.

Illegal wildlife trade (IWT), and particularly the poaching of high value iconic species such as elephants, rhinos and tigers, is at the top of the international conservation agenda. Despite increasing recognition that engaging local communities in conservation efforts is a key component of strategies to tackle IWT, there is no 'one size fits all' approach. Based on a review of published literature, as well as case studies submitted to IIED's Conservation, Crime and Communities database, this issue paper assesses evidence on the effectiveness of community engagement approaches. It highlights some encouraging success stories but, more significantly, demonstrates the paucity of the current evidence base and the urgent need for better documentation and analysis (of what works and what doesn't, where and why) if we are to scale up efforts to tackle IWT.

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