Fordham Intellectual Property, Media and Entertainment Law Journal

Volume 12 *Volume XII* Number 3

Article 2

2016

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Recommended Citation

Kofi Ernest Abotsi, Paolo Galizzi, and Alena Herklotz, *Wildlife Crime and Degradation in Africa: An Analysis of the Current Crisis and Prospects for a Secure Future*, 12 Fordham Intell. Prop. Media & Ent. L.J. 394 (2002).

Available at: https://ir.lawnet.fordham.edu/iplj/vol12/iss3/2

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WILDLIFE CRIME AND DEGRADATION IN AFRICA: AN ANALYSIS OF THE CURRENT CRISIS AND PROSPECTS FOR A SECURE FUTURE

Kofi Ernest Abotsi,¹ Paolo Galizzi² and Alena Herklotz³

The poaching crisis in Africa poses serious development, environmental, and security challenges to the continent. It is pushing vulnerable and endangered species toward extinction; fueling corruption and conflict; destroying lives; and deepening poverty and inequality. We must all collaborate to stop this horrific trade.

- UNDP Administrator Helen Clark⁴

At the dawn of the 21^{st} century, few places on Earth remain untouched by humanity and, as our needs and populations grow, we are leaving less room and resources for the wildlife with which we share the planet. As a result, native animal populations the world over are under threat from a variety of human activities – from overexploitation to habitat destruction – making wildlife conservation a crucial issue for our generation. As one of the most biodiverse regions on Earth, home to several of the most well-known

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^{4.} UNDP Administrator Helen Clark, *Speech at the First Lady of Kenya's State House Luncheon on Wildlife Conservation*, Nairobi, Kenya (25 June 2014), http://www.undp.org/content/undp/en/home/presscenter/speeches/2014/06/25/helen -clark-speech-at-state-house-luncheon-on-wildlife-conservation.html [https://perma.cc/SG7V-TM7B].

and beloved but also critically threatened species of our time, Sub-Saharan Africa commands particular attention.

For decades, Sub-Saharan Africa's wildlife has supported the growth of vibrant tourism industries in many countries, particularly in Eastern and Southern Africa, becoming one of the sub-regions' key sources of income, and providing direct and indirect employment to hundreds of thousands of people. At the same time, however, habitat loss has been gradually eroding African biodiversity and ecosystems, while poaching and illegal trade in wildlife products have begun to push vulnerable and endangered species further toward extinction. Wildlife crime is now a serious global problem, ranking in value among illegal trade in drugs, guns, and human beings. Beyond the long-term risks to iconic species and the many livelihoods and industries they support, the poaching crisis in Africa fuels corruption and conflict and deepens poverty and inequality, posing serious development, environmental and security challenges.

This article analyzes the growing wildlife crisis in Sub-Saharan Africa, and leading efforts to combat the decline of these critical natural resources. Parts One and Two explore the various drivers of wildlife loss, with a focus on the growing role of transnational organized crime. The article then moves on to review the many regulatory gaps and challenges that arise under the international framework for trade in endangered species, and the practical difficulties of combating wildlife crime at the national level.

I. DRIVERS OF WILDLIFE DEGRADATION IN AFRICA

Wildlife decline is driven by a variety of factors, some rooted in poverty and need, and others in profit and greed. This section focuses on the passive forces and small-scale crimes of opportunity that characterize the former category, with discussion of higher level crimes to follow in Part II. Across the continent, the greatest longterm threat to wildlife comes from population growth, one of the many legacies of colonialism that have formed and shaped wildlife conservation in the region. Surging populations and urbanization in underdeveloped economies have spawned an array of interconnected drivers of wildlife degradation, including loss of habitat, humanwildlife conflict, and the bushmeat trade. Closely connected with the overarching issues of multidimensional poverty, food insecurity, and distribution of agricultural lands, these factors are driven by need and speak to the equally compelling need for integrated responses that expand economic opportunities and the benefits of sustainable wildlife management, to provide viable alternatives to the taking of wild lands and lives.

THE IMPACT OF COLONIALISM

In many ways, the arrival of the colonial powers in the beginning of the 19th century shaped the African continent. For one, colonialism brought about drastic declines in human and wildlife populations across much of the continent.⁵ The Europeans introduced foreign diseases, such as smallpox and the infectious cattle virus rinderpest; and imposed new patterns of settlement, labor and land use that aided the spread of illness.⁶ Likewise, outbreaks of indigenous diseases – such as malaria, dysentery, and trypanosomiasis (commonly known as sleeping sickness), which claims the lives of both humans and animals – also raged in the aftermath of colonial disruption.⁷

The upheavals of colonization disturbed the relative tolerance that Africans had developed against local strands of common parasites.⁸ European conquest also disrupted the effective ecological controls that African societies had long relied upon to contain those threats and conserve wildlife populations.⁹ Africans had long succeeded in containing sleeping sickness, in particular, by establishing unsettled bands of wilderness areas around their settlements, which provided a buffer for people and livestock to avoid frequent contact with the tsetse flies that transmit the disease.¹⁰ Ignorant of these practices, colonial authorities upset these delicate controls and unleashed diseases that had long been held in check. Some areas suffered losses

^{5.} Steven Feierman & John M. Janzen, *Part Two - The Decline and Rise of African Population: The Social Context of Health and Disease, in* THE SOCIAL BIAS OF HEALTH & HEALING IN AFRICA 25, 25-30 (Steven Feierman & John M. Janzen eds. 1992) [hereinafter Feierman & Janzen].

^{6.} Id. at 25-30.

^{7.} Id. at 25-30.

^{8.} Id. at 26.

^{9.} Id. at 27-28.

^{10.} Id. at 27.

of up to one-third of the local human population,¹¹ and 90% of indigenous cattle stocks, ¹² with wild hoofed-mammal species succumbing to rinderpest in large numbers as well.¹³

Declining numbers of people and wildlife, together with human withdrawal from large swaths of territory newly infested with the tsetse flies, visibly altered the African landscape. Thriving, integrated ecosystems in which people and wildlife had coexisted gave way to abandoned wilds, which the colonial powers mistook as the natural state of the land.¹⁴ This colonial misconception of Africa as a pristine wilderness combined with European traditions of appropriating prime land for private game reserves to cement imperial ideologies of conservation that would dominate wildlife resource management in Africa well into the twentieth century.¹⁵

Hunting had long been a major part and pastime of European empire and intensified under colonial rule.¹⁶ Declining livestock and wild prey populations brought Africans into competition with colonial sport hunting and trade, which was already driving many iconic species towards extinction.¹⁷ Conceiving of African wildlife as "imperial heritage"¹⁸ whose conservation was part of Europe's "civilizing mission on the continent," ¹⁹ colonial authorities established wildlife reserves and regulations to safeguard colonial profits from ivory and the globetrotting hunting elite. These colonial conservation regimes cast local people as the principal threat to wild habitat and wildlife and excluded Africans from the use and control of their natural resources.²⁰ Across the continent, local people were deprived of their ancestral lands and traditional food sources, as well

^{11.} Daniel R. Headrick, *Sleeping Sickness Epidemics and Colonial Responses* in East and Central Africa, 1900–1940, 8(4) PLOS NEGL TROP DIS (2014).

^{12.} *Id*.

^{13.} Bernhard Gißibl, German Colonialism and the Beginnings of International Wildlife Preservation in Africa, 3 GHI BULLETIN SUPPLEMENT 121, 125 (2006).

^{14.} Samantha Jones, A Political Ecology of Wildlife Conservation in Africa, 109 REVIEW OF AFRICAN POLITICAL ECONOMY 483 (2006). Thomas Lekan, Serengeti Shall Not Die: Bernhard Grzimek, Wildlife Film, and the Making of a Tourist Landscape in East Africa, 29(2) GERMAN HISTORY 224 (2011).

^{15.} Gißibl, supra note 13, at125; see also Jones.

^{16.} Gißibl, supra note 13, at 123.

^{17.} Gißibl, supra note 13, at 125.

^{18.} Gißibl, supra note 13, at 121.

^{19.} Gißibl, supra note 13, at 122.

^{20.} Jones, supra note 14, at 485.

as the ability to manage wild animals that threatened their livestock and crops: "In short, they experienced imperial environmentalism as a form of environmental imperialism; a process which saw the reordering of space, the often violent expropriation of traditional rights, enhanced vulnerability and the imposition of European values."²¹ Protected areas were established by methods that have come to be known as the 'protectionism,' 'fortress conservation,' or 'fences and fines' model, which centers on excluding or removing local people from the delimited area, prohibiting their consumptive use of the environment, and enforcing their exclusion through state monitoring and policing.²² Access to wildlife and wilderness was heavily restricted via such measures as expensive hunting licenses, bans on indigenous hunting techniques and on hunting female and young specimens, and limited hunting grounds, seasons, and quotas.²³ Subjugating African interests to impose European ideals of Africa as an untouched Eden, colonial preservation schemes separated Africans from their natural heritage.

The colonial separation of Africans from the natural resources of their continent disrupted traditional wildlife and land management practices that had sustained healthy populations for centuries. Treating local people's use of land and wildlife as invasions into pristine wilderness that needed to be preserved, drove them into competition and conflict with species with which they had long coexisted.²⁴ As is discussed in the following section, as the human population has gradually recovered to resume and exceed its former numbers, demand and pressure on natural resources has mounted. People are now looking to expand agricultural production into uncultivated land that was, in the interim, claimed for wildlife preservation. Modern conflicts between human needs and wildlife conservation are, in many ways, the persistent legacy of imperial environmentalism that recast wildlife as the exclusive domain of white wealth and tourism, of no benefit or interest to local people. Bridging this gap, reintegrating local interests with the long term health and recovery of natural resources, is an essential challenge and factor in African development going forward.

^{21.} Gißibl, *supra* note 13, at 137.

^{22.} Jones, *supra* note 14, at 485.

^{23.} Gißibl, supra note 13, 127-128.

^{24.} See generally Jones, supra note 14; Lekan, supra note 14.

POPULATION GROWTH AND URBANIZATION

The African population has recovered and increased remarkably in the last few decades, and the trend is expected to continue in the near future. The current population is estimated at 1.2 billion, which is five times the population of 1950.²⁵ As African populations increase and wild lands are taken over for development, wild animals are gradually losing their habitats and being pushed to the edge, forced into competition and conflict with humans over diminishing resources.²⁶ With more people to feed, the need for agricultural land increases along with demand for natural resources, such as firewood.²⁷ Without proper consideration of the impacts on wild species, agricultural expansion often results in wasteful deforestation, and more frequent and serious clashes between people and wild animals.²⁸ As people exploit natural resources for both sustenance and profit, the degradation of African species and habitats has been growing at an alarming rate. Taken together, habitat degradation (31.4%) and loss (13.4%) are the primary threats to wild populations worldwide,²⁹ with average rates of deforestation in Africa from 2000 to 2010 estimated at 0.14% per year.³⁰

Another key factor in wildlife decline is increasing urbanization. Population growth has not been spread out over the continent, rather it is centralized and flowing into cities.³¹ With current and predicted

^{25.} The African population was 9% of the global population in 1950. It is expected climb to 40% by the end of this century. Danzhen You et al., *Generation 2030 AFRICA child demographics in Africa* (UNICEF 2014).

^{26.} See United Nations Environment Programme, Environmental Change and Socioeconomic Factors in Africa, (May 31, 2010), available at http://www.eoearth.org/view/article/152610/ [https://perma.cc/XTM3-LDSZ]. 27. Id.

^{27.} Id. 28. Id.

^{29.} WWF, *Living Planet Report 2014*, 20 (2014), *available at* http://bit.ly/1ssxx5m.

^{30.} European Commission, 1 Larger than elephants: Inputs for the design of an EU strategic approach to wildlife conservation in Africa 20 (2015), available at http://capacity4dev.ec.europa.eu/sites/default/files/file/03/09/2015_-

_1546/devco_african_wildlife_strategy.pdf [https://perma.cc/NZC3-ZHV4].

^{31.} Christine Kessides, *The Context of Urban Development in Sub-Saharan Africa* 5 (The Cities Alliance 2006), *available at* https://www.citiesalliance.org/sites/citiesalliance.org/files/CA_Docs/resources/pap er-pres/ssa/eng/chap_2.pdf [https://perma.cc/H5BU-UNRZ].

patterns of growth, it is expected that half the total population of Africa will live in cities by 2030.³² Urban growth and infrastructure expansion present an additional complication for wildlife in the form of habitat fragmentation. Deforestation and other forms of land conversion frequently cut across wild habitats, bisecting migration routes, breeding and feeding grounds, and isolating populations of wild species, causing inbreeding and making species more vulnerable to disease and less able to cope with habitat loss and change.³³

HUMAN-WILDLIFE CONFLICT

Growing human populations and cities also lead to increased contact between human and wildlife populations and, in turn, conflict. For people the world over, local wild animals are generally perceived as sources of food and/or pests that destroy crops and livestock, and may occasionally pose risks to humans, as well. In Africa, although smaller species, such as locusts and other pests, may have a larger impact on humans in terms of scale, larger herbivores and carnivores – including elephants, buffalo, and hippos, and lions, leopards, hyenas and crocodiles – are generally seen as a bigger threat.³⁴

The case of the African elephant illustrates all three points of conflict. First, local people view elephants as an excellent source of meat, and generally would not hesitate to hunt them for food.³⁵ Second, elephants can cause tremendous damage to crops. A single elephant can easily destroy the growing fields of a small-scale farmer, razing the crops on which they and their family depend for

^{32.} United Nations, Department of Economic and Social Affairs, Population Division, WORLD URBANIZATION PROSPECTS: THE 2014 REVISION, HIGHLIGHTS, ST/ESA/SER.A/352, p. 7 (2014).

^{33.} See Ian E. A. Yeboah et al., *Emerging Urban System Demographic Trends:* Informing Ghana's National Urban Policy and Lessons for Sub-Saharan Africa, 60 AFRICA TODAY 99 (2013).

^{34.} F. Lamarque et al., Food and Agriculture Organization of the United Nations (FAO), *Human-wildlife conflict in Africa: Causes, consequences and management strategies* (S. Morgan. Production et al. eds. 2009), *available at* http://www.fao.org/docrep/012/i1048e/i1048e00.pdf [https://perma.cc/8Q6G-T3M5].

^{35.} Chris Tomlinson, *Demand for Elephant Meat Puts Africa's Forest Herds at Risk*, THE SEATTLE TIMES, June 7, 2007.

sustenance and their modest annual income.³⁶ While non-lethal elephant management methods have been introduced, such as planting crops that are not as appealing to elephants, most are far from having been perfected and conflict continues.³⁷ Fencing agricultural land to keep elephants out is another possible option, but must be researched and implemented carefully to avoid habitat fragmentation.³⁸ Finally, elephants easily can and do maim and kill people, and some problem elephants have been destroyed.³⁹

Lions and other large land carnivores compete with humans for wild game and prey on livestock and, occasionally, people.⁴⁰ The threat to cattle, sheep, goats and other domestic herds not only jeopardizes critical protein sources for local people, but also diverts time and effort from education and gainful employment to wearisome livestock guarding, and can lead to casualties on both sides of the conflict.⁴¹ Similar dynamics play out between humans and the Nile crocodile. While crocodiles do not commonly threaten livestock, they complete directly with humans for fish, which are another vital source of protein for many Africans, so much so that many fishing stocks across the continent are dangerously depleted.⁴² In addition, the species' preferred fresh-water habitat brings them into direct

^{36.} IRIN, *Rampaging Elephants Destroying Crops*, IRINNEWS.ORG, Apr. 15, 2008, *available at* http://www.irinnews.org/report/77771/zimbabwe-rampaging-elephants-destroying-crops [https://perma.cc/W88J-HKGL].

^{37.} Id.

^{38.} Agrisellex Electric Fencing, *A Holistic Assessment of the Human-Elephant Conflict*, *available at* http://www.agrisellex.co.uk/articles/human-elephant-conflict.html [https://perma.cc/9USG-URZ9].

^{39.} World Wide Fund for Nature (WWF), *Threats to African Elephants, World Wildlife Foundation*, *available at* http://wwf.panda.org/what_we_do/endangered_species/elephants/african_elephants/african_elephants/afrelephants_threats/ [https://perma.cc/DX9H-R5HE].

^{40.} Public Broadcasting Service (PBS), *Hope for the Lion, available at* http://www.pbs.org/earth-a-new-wild/episode-plains/hope-lion/ [https://perma.cc/DX9H-R5HE].

^{41.} Peter Standring, *Revenge Killings: African Farmers Massacre Lions*, NATIONAL GEOGRAPHIC, Feb. 10, 2004, *available at* http://news.nationalgeographic.com/news/2004/02/0210_040210_TVlionmystery.h tml [https://perma.cc/9T4S-6V35].

^{42.} F. Lamarque et al., Food and Agriculture Organization of the United Nations (FAO), *Human-Wildlife Conflict: The Issues* 9 (S. Morgan. Production et al. eds. 2009), *available at* http://www.fao.org/docrep/012/i1048e/i1048e03.pdf [https://perma.cc/6GKF-HQFN].

contact with humans fishing and gathering water for drinking and household use.⁴³ Even given the general underreporting of accidents, crocodile attacks still account for the most human-wildlife conflict casualties on the continent.⁴⁴ Finally, while these predators are not viewed as a primary food source, demand for crocodile leather surged in the 1980s, pushing the species toward extinction in some regions before a farming industry was established and wild populations rebounded enough to be moved to the IUCN's 'least concern' list.⁴⁵

As human populations increase, settlement expands into wild habitat, increasing the risks of human-wildlife conflict. Frightening or frustrating encounters with wildlife cause general discontent among local people, who consider wildlife as threats and rivals, rather than resources to be preserved or protected. Problem animals make headlines and often have to be destroyed, fueling negative perceptions and attitudes towards wildlife. It is vital for conservation efforts aimed at addressing conflict issues to actively engage and incorporate the needs and knowledge of local communities, to promote conditions for sustainable cohabitation between human societies and their wild neighbors.

BUSHMEAT TRADE

Another important cause of wildlife decline is bushmeat trade and consumption. Bushmeat – that is meat from undomesticated species caught in the wild – contributes up to 90% of total animal protein consumed in some regions of Africa.⁴⁶ As the human population has grown, local fisheries have been depleted, while zoonotic disease burdens have prevented livestock production from increasing enough

^{43.} FAO, HUMAN-WILDLIFE CONFLICT IN AFRICA CAUSES, CONSEQUENCES AND MANAGEMENT STRATEGIES, 15-16 (2009).

^{44.} *Id.* at 5.

^{45.} Crocodylus Niloticus, THE IUCN RED LIST OF THREATENED SPECIES, *available at* http://www.iucnredlist.org/details/46590/0 [https://perma.cc/GLS7-E2P3].

^{46.} Yaa Ntiamoa-Baidu, FAO Conservation Guide 33, *Wildlife and food* security in Africa (1997), available at http://www.fao.org/docrep/w7540e/w7540e00.htm [https://perma.cc/V2CV-9RUM].

to provide adequate protein.⁴⁷ Bushmeat is also an important source of livelihoods, and preferred over domesticated meat in many circles.⁴⁸ As a result, Africans still regularly consume bushmeat, which is widely hunted and circulated despite laws to the contrary.⁴⁹ Indeed, rural communities that have hunted local animals for centuries are often entirely unaware that taking wild game has been prohibited in their area.⁵⁰

Some species that are commonly hunted for bushmeat are abundant, with healthy, growing herds than may actually benefit from population control, at least in some areas.⁵¹ Most bushmeat hunting is rather opportunistic, however, with hunters taking whatever animals they come across, without regard to whether the species is endangered or plentiful in that region.⁵² Trapping is especially problematic in this regard, as traps catch animals indiscriminately, and can seldom be rigged to exclude protected species from capture.⁵³ In cases in which particular species are

49. Bushmeat, U.S. Fish & Wildlife Service International Affairs, *available at* http://www.fws.gov/international/wildlife-without-borders/global-program/bushmeat.html [https://perma.cc/P2HE-637C].

50. Steve Boyes, *No More Hunting of Any Kind in Botswana*, NATIONAL GEOGRAPHIC VOICE, Nov. 15, 2012, *available at* http://voices.nationalgeographic.com/2012/11/15/no-more-hunting-of-any-kind-in-botswana/ [https://perma.cc/F8FD-M224].

51. Xan Rice, *Too Hungry, Too Destructive, Too Many: South Africa to Begin Elephant Cull*, THE GUARDIAN, Feb. 26, 2008, *available at* http://www.theguardian.com/environment/2008/feb/26/environment [https://perma.cc/U8GH-9MGS].

52. Steve Boyes, *No More Hunting of Any Kind in Botswana*, NATIONAL GEOGRAPHIC VOICE, Nov. 15, 2012, *available at* http://voices.nationalgeographic.com/2012/11/15/no-more-hunting-of-any-kind-in-botswana/ [https://perma.cc/8A8T-44EL].

53. Bob Serata, Primitive and Ruthless, Snares Threaten Africa's Endangered Wild Dogs, African Wildlife Conservation Fund, 2012, available at

^{47.} The International Livestock Research Institute (ILRI), *New ILRI Study Maps Hotspots of Human-Animal Infectious Diseases and Emerging Disease Outbreaks*, ILRI NEWS, Jul. 5, 2012, *available at* http://www.ilri.org/ilrinews/index.php/archives/9172 [https://perma.cc/4ANE-MA5F].

^{48.} See Michelle Schenck et al., *Why People Eat Bushmeat: Results From Two-Choice, Taste Tests in Gabon, Central Africa*, 34 HUMAN ECOLOGY 433 (2006); A test to determine whether consumers could distinguish between domesticated meat and bushmeat, found that consumers were able to taste the difference and demonstrated a preference for bushmeat.

sought out, it is often because their meat is considered a delicacy – a status that is often conferred on the basis of rarity, and frequently overlaps with the ranks of threatened and vulnerable.⁵⁴

Beyond the threat it poses to endangered species, bushmeat is also a cause for concern for human health. Specimens caught in the wild carry a greater risk of disease, with the potential to spread zoonotic disease to humans, as in the cases of monkeypox, HIV, avian flu and, some scholars have speculated, Ebola.⁵⁵ Since bushmeat is not regulated, the meat is not inspected for disease prior to reaching the market and may also be subject to unsafe handling, processing, and storage.⁵⁶ Nonetheless, with malnutrition and lack of protein in particular remaining a major challenge in Africa, bans on bushmeat are not feasible while livestock production remains unequal to the nutritional requirements of the population.⁵⁷

Shrinking and fragmented habitat, human-wildlife conflict, and the bushmeat trade are primary concerns for wildlife conservation in Africa, as people and animals strive to meet their basic needs and flourish. For many species, however, these burdens pale in comparison to the pressure of the profit-driven poaching that now fuels a multi-billion dollar criminal industry. Part II explores the growing market for wildlife specimens and products, and the

56. Gerard Flynn & Susan Scutti, *Smuggled Bushmeat is Ebola's Back Door to America*, NEWSWEEK, Aug. 21, 2014, *available at* http://www.newsweek.com/2014/08/29/smuggled-bushmeat-ebolas-back-door-america-265668.html [https://perma.cc/T349-RJEM].

http://www.africanwildlifeconservationfund.org/primitive-and-ruthless-snares-threaten-africas-endangered-wild-dogs/ [https://perma.cc/8AAT-9MCX].

^{54.} Melissa Cronin, *African Bushmeat Market Exposed: 9,000 Primates Killed Each Year*, THE DODO, Mar. 25, 2014, *available at* https://www.thedodo.com/african-bushmeat-market-expose-482602551.html [https://perma.cc/C5UX-GHHH].

^{55.} Nathan D.Wolfe et al., Bushmeat hunting and deforestation in prediction of zoonoses emergence, 11 EMERGING INFECTIOUS DISEASES 1822 (2005), available at http://wwwnc.cdc.gov/eid/article/11/12/pdfs/04-0789.pdf [https://perma.cc/2LCK-XX9B]; Andrew Elliott Kohn &Heather E. Eves, The African Bushmeat Crisis: A Case for Global Partnership, 30 ENVIRONS ENVTL. L. & POL'Y J. 245 (2006).

^{57.} Jochem Bokhorst, *The impact of forest governance arrangements on the livelihoods of bushmeat actors in Ghana's High Forest Zone* (Human Geography – University of Amsterdam 2010), *available at* https://www.uva.nl/binaries/content/documents/personalpages/r/o/m.a.f.rostonen/en/tab-four/tab-four/cpitem%5B15%5D/asset?1355373708891.

increasing involvement of sophisticated poachers and smugglers, who employ a range of illegal methods to carry out this deadly trade.

II. THE DEMAND CREATING THE CURRENT CRISIS AND THE INCREASING ROLE OF TRANSNATIONAL ORGANIZED CRIME

In addition to wildlife loss related to the underlying human development and natural resource management challenges examined in Part One, African wildlife are increasingly threatened by an unprecedented surge in targeted demand for wildlife products and specimens driven by fashion, status seeking, and trends in alternative medicine. Demand from wealthy consumers and the high prices they are willing to pay - particularly the emerging middle classes in many Asian countries - are now the main driver in the decline of many species. Attracted by the tremendous profits to be made from the rising demand for exotic pets and products, transnational organized crime networks are increasingly involved in both illegal poaching and trade. This section examines the factors driving the illegal capture and killing of threatened species for profit, and its transformation into one of the largest areas for transnational organized criminal activity.

DECONSTRUCTING DEMAND

Levels of poaching and illegal trade in wildlife products and specimens are growing at an alarming rate the world over, particularly for endangered species whose very rarity helps fuel demand. From a black market assessed at \$5 billion in 1997,⁵⁸ the United Nations Development Programme (UNDP) now estimates the value of illegal wildlife trade at USD \$23 billion per year,⁵⁹ while its sister agency, the United Nations Environment Programme (UNEP), places the annual figure at USD \$50-\$150 billion.⁶⁰ Many of the African animals most impacted by profit-driven exploitation are

^{58.} Robert S. Anderson, Investigation, Prosecution, and Sentencing of International Wildlife Trafficking Offenses in the U.S. Federal System, 12 NAT'L ENVTL. ENFORCEMENT J. 14, 10 (1997).

^{59.} UNDP, Combating Poaching and Wildlife Trafficking – Strengthening Livelihoods and Governance (2014).

^{60.} UNEP, UNEP Year Book 2014 emerging issues update – Illegal Trade in Wildlife, p. 25 (2014).

among the continent's most iconic species, such as elephants, great apes, and rhinoceros.

Rates of elephant poaching are at a 20-year high, having doubled since 2007 alone; meanwhile key rhinoceros territories have seen poaching increase by as much as 7000%. ⁶¹ While Africa's charismatic mammals are the most visible targets, trade also thrives in a wide range of species, from insects and amphibians, to fish and reptiles.⁶² In addition to live specimens, species are also sought out for their meat, eggs, and specific body parts and organs, such as bones, horns, shells, skins and tusks.⁶³

The demand for trade in particular animals or products can generally be grouped into two categories: Status seeking and medicine. In the first category, private collectors and zoos seek live specimens as exotic pets and displays, while products derived from dead animals are desired for fashion and ornament, or consumed as culinary delicacies that confer status and prestige.⁶⁴ In the second, niche markets flourish around consumer beliefs in the curative properties attributed to certain body parts in traditional and alternative medicine.⁶⁵ The category of demand varies by species, as well as market, with several species under pressure from a combination of sources.

AFRICAN GREY PARROTS

The African Grey parrot is one of the single most-heavily traded wild birds in the world, prized by the exotic pet trade for its

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^{61.} Id. at 26.

^{62.} UNEP, The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment, p. 23 (Nellemann, C., Henriksen, R., Raxter, P., Ash, N., Mrema, E. eds., UNEP & GRID-Arendal: 2014).

^{63.} International Fund for Animal Welfare (IFAW), *Stopping Illegal Wildlife Trade* (2011), http://www.ifaw.org/sites/default/files/wildlife trade us 0.pdf

^{64.} Zimmerman, The Black Market for Wildlife: Combating Transnational Organized Crime in the Illegal Wildlife Trade, 36 VAND. J. TRANSNAT'L L. 1657, 1669 (2003).

^{65.} UNEP, The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment, p. 23 (Nellemann, C., Henriksen, R., Raxter, P., Ash, N., Mrema, E. eds., UNEP & GRID-Arendal: 2014).

intelligence and ability to mimic human speech.⁶⁶ Despite import bans on wild specimens and thriving captive-breeding programs, these parrots are all but disappearing from much of their natural range.⁶⁷ Experts point to breeders' ongoing practice of using wild birds for breeding stock, rather than waiting for their captive-bred stock to reach breeding age.⁶⁸ Breeders purchase mature adults on the black market and sell their offspring to well-meaning buyers who unwittingly support the illegal trade.⁶⁹ Pressure on this charismatic species is compounded by their high mortality rates in captivity: 45 to 65 % don't survive to be exported.⁷⁰ One of the most popular avian pets worldwide, the number of captive birds may soon exceed the population of African Greys in the wild.

ELEPHANTS

The poaching of elephants for ivory threatens the survival of this highly intelligent, expressive African icon. Recent figures indicate that, although poaching levels have fallen since a 2011 spike during which nearly 100 elephants were killed each day,⁷¹ illegal hunting

^{66.} Paul Steyn, WILDLIFE WATCH: This Talking Bird Is Disappearing From the Wild – Why is the beloved African Grey Parrot almost gone from the forests of West and central Africa?, NATIONAL GEOGRAPHIC, Feb. 5, 2016, http://news.nationalgeographic.com/2016/02/160205-african-grey-parrots-wildlifetrafficking-ghana-extinction/ [https://perma.cc/YAM5-5UTS].

^{67.} Annorbah, Collar, Marsden, *Trade and habitat change virtually eliminate the Grey Parrot Psittacus erithacus from Ghana*, 158:1 Ibis 82 (2016), http://onlinelibrary.wiley.com/doi/10.1111/ibi.12332/epdf; Tracy Brighten, *African grey parrot silenced by trapping and logging*, Feb. 2016, http://tracybrighten.com/environment/african-grey-parrot-silenced-by-trapping-and-logging/ [https://perma.cc/D826-RYVL].

^{68.} Paul Steyn, WILDLIFE WATCH: This Talking Bird Is Disappearing From the Wild – Why is the beloved African Grey Parrot almost gone from the forests of West and central Africa?, NATIONAL GEOGRAPHIC (Feb. 5, 2016), http://news.nationalgeographic.com/2016/02/160205-african-grey-parrots-wildlifetrafficking-ghana-extinction/.

^{69.} Id.

^{70.} *Id*.

^{71.} Richard Schiffman, *Four countries are acting as safe havens for African elephants*, NEW SCIENTIST, June 5, 2015, https://www.newscientist.com/article/dn27665-four-countries-are-acting-as-safe-havens-for-african-elephants/ [https://perma.cc/9UCV-R9G3].

still claims 20-25,000 elephants per year. ⁷² With population estimates currently hovering around 500,000, that figure equates to a loss of 4-5% of the African elephant population each year, which is above the natural birth rate and, therefore, pushes the species further into decline.⁷³

Demand is driven by consumers who are willing to pay top dollar for intricate ivory carvings, jewelry and other collectibles – piano keys, knife and gun handles, canes, and personal seal stamps, among others – based on ivory's status as both a luxury item and status symbol,⁷⁴ and an investment purported to hold its value very well.⁷⁵ In particular, studies show a correlation between ivory poaching and consumer purchasing power in China.⁷⁶ The market price for ivory has increased nearly tri-fold since 2010 alone, from \$750 to \$2100 per kilogram (roughly \$1000/pound),⁷⁷ with estimates of the annual street value of poached raw ivory in Asia, the primary demand region for ivory, at \$165 to \$188 million.⁷⁸

RHINOCEROS

The street value of the rhinocerous horn poached in the most recent year on record is as high as \$192 million USD.⁷⁹ The price of rhino

http://europe.chinadaily.com.cn/epaper/2011-07/01/content_12816685.htm [https://perma.cc/HJ5W-HXGQ].

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^{72.} UNEP, *supra* note 65, at 32.

^{73.} CITES Secretariat, *Press Release: African Elephants Still In Decline Due To High Levels Of Poaching* (Mar. 3, 2016), https://cites.org/eng/news/pr/african_elephants_still_in_decline_due_to_high_level s of poaching 03032016 [https://perma.cc/VX7E-W2U2].

^{74.} UNEP, CITES, IUCN, TRAFFIC, *Elephants in the Dust – The African Elephant Crisis. A Rapid Response Assessment*, p. 40 (UNEP & GRID-Arendal, 2013).

^{75.} Elephant ivory trade in China: Trends and drivers, Yufang Gao and Susan G. Clark; The tusk at hand, Liu Lu, 2011-07-01, CHINA DAILY EUROPEAN WEEKLY (July 1, 2011),

^{76.} CITES Secretariat, Elephant Conservation, Illegal Killing and Ivory Trade, Report to 62nd Standing Committee meeting: SC62 Doc. 46.1, pp. 12 – 13 (2012).

^{77.} Save the Elephants, Press Release: Price Of Ivory In China Triples In Four Years, With Grave Implications For Elephants In Africa, July 2, 2014, http://savetheelephants.org/about-ste/press-media/?detail=1344

[[]https://perma.cc/BAU2-ALKA].

^{78.} UNEP, *supra* note 65, at 32.

^{79.} *Id.* at 37.

horn, long prized for medicinal properties in traditional Chinese medicine, has recently skyrocketed to as much as \$75,000 per kilogram in Vietnam, where it has been reputed to cure cancer.⁸⁰ Demand persists despite the lack of conclusive scientific evidence of the medicinal efficacy of rhino horn, which consists of keratin, the same substance as hair and nails.⁸¹

Prized in many corners of the ancient world for abilities ranging from water purification to poison detection, as well as the beauty and rarity of polished horns, rhino horns have been highly sought after since as early as 5000 B.C.⁸² Traditional medicine practitioners in many east Asian countries prescribed rhino horn for centuries to treat a variety of ailments, including fever, headache, hallucinations, gout, poisoning, rheumatism, stroke, and typhoid.⁸³ With market prices for rhino horn now higher than the value of gold, platinum, diamonds and cocaine,⁸⁴ poaching levels in South Africa – home to 80% of the world population – have increased by as much as 35%, from 13 illegal killings in 2007 to 448 in 2011.⁸⁵ Experts caution that the species could become extinct on the continent as soon as 2025.⁸⁶

^{80.} Julie Ayling, What sustains wildlife crime? Rhino horn trading and the resilience of criminal networks, *Transnational Environmental Crime Project, Australian National University, Working Paper 2/2012*, pp. 3-5 (2012).

^{81.} Id. at 4.

^{82.} U.S. FISH AND WILDLIFE SERVICE, FACTS ABOUT RHINO HORN, https://www.fws.gov/le/pdf/rhino-horn-factsheet.pdf [https://perma.cc/BC5L-NKFU].

^{83.} *Id; see also* Kristin Nowell, *Assessment of Rhino Horn as a Traditional Medicine*, A report prepared for the CITES Secretariat by Kristin Nowell on behalf of TRAFFIC, pp. 19-29 (2012), https://cites.org/eng/com/sc/62/E62-47-02-A.pdf [https://perma.cc/PQB6-HHWF].

^{84.} WWF, Fighting Illicit Wildlife Trafficking: A Consultation with Governments, 11 (WWF Global: 2012), http://wwf.panda.org/about_our_earth/species/problems/illegal_trade/wildlife_trade _campaign/wildlife_trafficking_report/ [https://perma.cc/ZW57-XG6C] [hereinafter WWF, Fighting Illicit Wildlife Trafficking].

^{85.} Ayling, supra note 80, at 4.

^{86.} Id. at 5.

GREAT APES

Central Africa is home to four of the world's five species of great apes: bonobos, chimpanzees and two species of gorilla.⁸⁷ While habitat loss remains the primary threat to wild ape populations, illegal hunting and trafficking also take a considerable toll.⁸⁸ Adults are killed for meat and body parts, and infants captured for live sale.⁸⁹ The market for live animals is driven by private collectors seeking exotic household pets and gifts for status and prestige, as well as disreputable zoos, amusement parks and circuses that use them as photo props and tourist attractions.⁹⁰

For every individual sold, experts estimate that as many as ten others die from injuries during or shortly after the hunt, or from stress and mistreatment in captivity.⁹¹ Studies suggest that illicit activities claimed over 20,000 wild great apes from 2005 to 2011, more than 3000 each year.⁹² Profits from the sale of great apes vary widely. A poacher who captures a great ape may earn as little as \$50 USD, while final resale prices have been recorded as high as \$400,000.⁹³ High demand and profits for the illegal trafficking of these and other species have attracted transnational organized criminal syndicates, for whom wildlife poaching and trade is now big business.

TRANSNATIONAL ORGANIZED WILDLIFE CRIME

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

^{87.} UNEP, Stolen Apes – The Illicit Trade in Chimpanzees, Gorillas, Bonobos and Orangutans, A Rapid Response

Assessment, pp. 17-18 (Stiles, D., Redmond, I., Cress, D., Nellemann, C., Formo, R.K. eds., UNEP GRID-Arendal: 2013), http://www.un-grasp.org/stolen-apes-counts-illegal-trade-toll/ [https://perma.cc/K7X9-U35J].

^{88.} UNEP, supra note 65, at 29.

^{89.} UNEP, supra note 87, at 25, 31.

^{90.} Id. at 40-41.

^{91.} Id. at 36.

^{92.} Id. at 37.

^{93.} UNEP, supra note 62, at 29.

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... The fight to end wildlife crime is a fight for humanity.⁹⁴

The rising value and demand for wildlife resources have created significant financial incentives for organized criminal enterprises to become involved in trade in endangered species. As a result, wildlife crime is now increasingly dominated by emerging criminal networks that specialize in wildlife poaching and trafficking, as well as established organized crime groups that are expanding into this lucrative market. This section reviews key features of organized crime, and indications that the illegal trade in wildlife has strong connections to sophisticated criminal organizations, corruption and, in some cases, conflict.

In a 2003 report to the UN Commission on Crime Prevention and Criminal Justice on the emerging issue of illicit wildlife trafficking, the UN Secretary General – noting the lack of uniform agreement on the definition of the term 'organized crime' – set out a useful list of characteristics that, when present, suggest the involvement of organized crime. ⁹⁵ The Secretary General's list comprises the following seven indicators:

- Multiple shipments through well-established routes, methods and facilitators;
- Use of violence against rivals or law enforcement;
- Use of sophisticated methods of concealment or fraud;
- Trafficking of wildlife alongside other contraband;
- Laundering of profits;
- Use of front companies to provide legitimate cover;

^{94.} IFAW, Criminal Nature, infra note 102, at 11 (citing Hickey, Valerie, The fight to end wildlife crime is a fight for humanity, VOICES, PERSPECTIVES ON DEVELOPMENT WEBLOG (Mar. 11, 2013).

^{95.} UN Secretary General, *Illicit trafficking in protected species of wild flora and fauna and illicit access to genetic resources - Report of the Secretary-General*, 12th Session of the ECOSOC Commission on Crime Prevention and Criminal Justice, Vienna, 13-22 May 2003, para. 29 (E/CN.15/2003/8, 4 March 2003), https://www.unodc.org/pdf/crime/commissions/12_commission/8e.pdf [https://perma.cc/2DVP-7WPB].

• Use of bribery and corruption to facilitate trade⁹⁶

In addition to the threats posed to endangered species, wildlife poaching and trafficking now exhibits all of these hallmarks of organized crime, raising important concerns for both local stability and global security.

Well-Established Networks

As little as ten years ago, poaching was generally more opportunistic, undertaken on occasion by poor, rural individuals or informal groups seeking to supplement their household meals or income.⁹⁷ Various middlemen with international contacts would buy, solicit and transfer goods for resale, but their routes and smuggling tactics were relatively unsophisticated.⁹⁸ As demand and market prices for wildlife products have grown, however, poaching and smuggling networks have become increasingly sophisticated.⁹⁹ The size of shipments now being intercepted and seized indicates the involvement of highly advanced and organized criminal networks.¹⁰⁰ Today, while some low-level poaching and trade still persists, the vast majority of wildlife crime is carried out by highly-skilled and specialized transnational criminal syndicates.¹⁰¹

Professional hunters now feed into well-established smuggling rings that, in turn, supply extensive domestic and international networks of clandestine retailers, taxidermists, and galleries.¹⁰²

1, 2008) http://www.newsweek.com/big-business-wildlife-trafficking-83865).

^{96.} Id.

^{97.} Ayling, *supra* note 80, at 74 (citing Greg L. Warchol, The Transnational Illegal Wildlife Trade, 17 CRIM. JUSTICE STUDIES 57, 65 (2004)).

^{98.} *Id.; see also* Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 92 (2012).

^{99.} Nigel Dudley et al., *Editorial: Wildlife Crime Poses Unique Challenges to Protected Areas*, 19 PARKS 7, 8 (2013).

^{100.} Anita S. Akella & Crawford Allan, Dismantling Wildlife Crime: ExecutiveSummary, TRAFFIC 1, 3 (2012) (citing Maryrose Fison, The £6bn Trade in AnimalSmuggling,INDEP.(Mar.5,2011),http://www.independent.co.uk/environment/nature/the-1636bn-trade-in-animal-smuggling-2233608.html; and Sharon Begley, Extinction Trade, NEWSWEEK (Mar.

^{101.} Ayling, supra note 80, at 74.

^{102.} IFAW, Criminal Nature: The Global Security Implications of the IllegalWildlifeTrade,16,(2013),availableathttp://www.ifaw.org/sites/default/files/ifaw-criminal-nature-2013-low-res0.pdf

Modern wildlife trafficking networks move goods along complex, shifting routes that seek out and exploit gaps in surveillance and enforcement: ¹⁰³ Smugglers are "light on their feet, frequently changing routes and modes of operation as enforcement commences in any one place, and continually working through the routes and means of least resistance."¹⁰⁴ Proliferating unseen under the cover of exploding globalization and international trade, criminal networks are poaching and moving unprecedented quantities of wildlife products across continents.¹⁰⁵

The sale of illegal wildlife products also thrives online, where websites and dealers can be very difficult to trace.¹⁰⁶ Wildlife criminals advertise on online auctions, forums and classified lists, claiming their items were legally obtained, but not providing any documentary proof; or using acronyms and euphemisms to avoid detection.¹⁰⁷ Ivory, for example, is commonly advertised under the

104. Elizabeth L. Bennett, Another Inconvenient Truth: The failure of Enforcement Systems to Save Charismatic Species, 45 ORYX 476, 476 (2011) (citing Ben Davies, Black Market: Inside the Endangered Species Trade in Asia (2005); World Bank, Going, Going, Gone. . . The Illegal Trade in Wildlife in East and South-east Asia (2005),available at http://documents.worldbank.org/curated/en/2005/07/6276982/going-going-goneillegal-trade-wildlife-east-southeast-asia [https://perma.cc/YU4J-GVNA]; and Bryan Christy, Asia's Wildlife Trade: The Kingpin, NATIONAL GEOGRAPHIC, Jan. 2010).

[[]herinafter IFAW, Criminal Nature] (citing Maryrose Fison, The £6bn Trade in Animal Smuggling, INDEP. (Mar. 5, 2011),

http://www.independent.co.uk/environment/nature/the-1636bn-trade-in-animalsmuggling-2233608.html [https://perma.cc/DGN4-UV6X]; and Liana Wyler & Pervaze A. Sheikh, International Illegal Trade in Wildlife: Threats and U.S. Policy 7, Washington, D.C.: Congressional Research Service (2010)).

^{103.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 93 (2012).

^{105.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 88-89 (2012).

^{106.} CITES, *Wildlife Trade on the Internet*, 19 World – Official Newsletter of the Parties (Sept. 10 2013), https://cites.org/eng/news/world/19/6.php [https://perma.cc/NUH4-7GKE].

^{107.} IFAW, *Criminal Nature*, at 16 (citing at n.132 Nic Fleming, *Illegal wildlife trading in Internet's deepest, darkest corners*, THE GUARDIAN (Sep. 4, 2012) http://www.theguardian.com/environment/2012/sep/04/illegal-wildlife-trade-internet [https://perma.cc/EC9E-GSM3]).

code words 'ox bone,' 'white gold,' and 'unburnable bone.'¹⁰⁸ Illegal wildlife trade is also conducted on the so-called "deep web" – websites that are not indexed or searched by traditional search engines, and that protect the identity, location, and communications of their users – which is widely used for various forms of illicit trade.¹⁰⁹

In addition to the rise of specialized wildlife crime networks, the illicit and transnational nature of the trade in endangered species have also made it ripe for capture by established organized crime groups that have traditionally operated in other markets. Already adept at circumnavigating the law, well-known organized criminal organizations in China, Japan, Libya, and Russia have moved into wildlife crime.¹¹⁰ Using their sophisticated smuggling methods and networks to conceal, falsify, and transport wildlife contraband worldwide, organized crime syndicates are drawing additional focus and concern.¹¹¹

VIOLENCE

Wildlife crime networks also have both the capacity and propensity to use violence. Armed with heavy weaponry, poachers present a grave threat to wildlife, civilians and enforcement officers, as well as to peace and security. Providing further evidence of the involvement of sophisticated criminal organizations, today's poachers are equipped with advanced weapons and technologies that far exceed the reach of the average African citizen. Poaching gangs employ "state-of-the-art heat-seeking telescopes, night-vision goggles, GPS satellite receivers, automatic and semi-automatic weapons, rocketpropelled grenades, and even helicopters and other military-grade vehicles."¹¹² Heavily armed poachers have, in turned, spurred the

^{108.} Id. at 17 (citing Todd Pittman, Online ivory trade threatens Africa's elephants, ASSOCIATED PRESS, Mar.15 2013).

^{109.} *Id.* (citing Nic Fleming, *Illegal wildlife trading in Internet's deepest, darkest corners*, The Guardian, Sep. 4, 2012).

^{110.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 93 (2012).

^{111.} *Id*.

^{112.} Leo R. Douglas & Kelvin Alie, *High-value natural resources: Linking wildlife conservation to international conflict, insecurity, and development concerns*, 171 BIOLOGICAL CONSERVATION 270, 273 (2014) (citing Jeffrey

militarization and rise of shoot-on-site policies among wildlife protection units, leading to escalations in violent conflict and concerns about state violence and violations of human rights.¹¹³ Over 150 rangers have lost their lives guarding the Democratic Republic of Congo's Virunga National Park over the past decade alone.¹¹⁴ The International Ranger Federation reports that at least 1000 rangers have been killed over the same period, and the global total may be as high as 5,000 guardians lost.¹¹⁵

CONCEALMENT AND FRAUD

The advanced weaponry employed by poaching gangs is matched by increasingly sophisticated methods of concealment and fraud in the transport of illegal wildlife products. Smugglers launder wildlife contraband through legal supply chains, hiding illegally obtained specimens or products underneath their legal counterparts, or mixing them in together when the differences between individuals or species are difficult to discern.¹¹⁶ Criminal networks also reuse, falsify and trade species identification labels, permits and other official documents, even going so far as to hack government websites to

Gettleman, *Elephants Dying in Epic Frenzy as Ivory Fuels Wars and Profits*, NEW YORK TIMES, Sep. 3, 2012, http://www.nytimes.com/2012/09/04/world/africa/africas-elephants-are-being-slaughtered-in-poaching-frenzy.html [https://perma.cc/FK2A-DPP3]).

^{113.} Id. (citing Tor A. Benjaminsen et al., Wildlife Management in Tanzania: State Control, Rent Seeking and Community Resistance, 44 DEV. & CULTURE 1087, (2013); Dan Brockington et al., Conservation, human rights, and poverty reduction, 20 CONSERV. BIOL. 250 (2006); and Paige West et al., Parks and Peoples: The Social Impact of Protected Areas, 35 ANNU. REV. ANTHROPOL 251 (2006)).

^{114.} Brian C. Howard, *Rangers Killed in Africa's Oldest Park Push Death Toll to 150*, NATIONAL GEOGRAPHIC, Mar. 14, 2016, *available at* http://news.nationalgeographic.com/2016/03/160314-two-rangers-killed-virunga-national-park [https://perma.cc/3MZD-V4Q2].

^{115.} IFAW, *Criminal Nature*, at 10 (citing Amelie Bottollier-Depois, *Ruthless Crime Gangs Driving Global Wildlife Trade*, Phys.org, Mar. 9, 2013, *available at* http://phys.org/news/2013-03-ruthless-crime-gangs-global-wildlife.html).

^{116.} Id. at 15 (citing Simon Elegant, Eating Disorder: China's Appetite for Exotic Wildlife Has Spawned a Thriving Black Market in Asia's Endangered Species. Will Pangolin Be Eaten into Extinction?, TIME.COM, Sep. 26, 2005); Gail Emilia Rosen & Katherine F. Smith, Summarizing the evidence on the international trade in illegal wildlife, 7 ECOHEALTH 24, 27 (2010).

produce counterfeit credentials for export.¹¹⁷ Live animals and illegal products are altered in appearance and falsely declared, or concealed in hidden compartments in clothing, luggage, shipping crates and vehicles;¹¹⁸ all too easy additions to the portfolios of organized criminal enterprises already skilled in smuggling drugs, arms and people.

PARALLEL TRAFFICKING, MONEY LAUNDERING AND FRONT COMPANIES

The smuggling of protected species or illegal wildlife articles along with other contraband is increasingly common,¹¹⁹ giving further indication that organized crime is heavily involved in the illicit wildlife trade. Criminal organizations combine illegal shipments of drugs and wildlife, at times using animals to carry or conceal drugs.¹²⁰ There are also reports of drugs being used as payment for the purchase of endangered species.¹²¹ Wildlife specimens and products are now frequently trafficked along the same routes – often in the same containers – as other illegal commodities, as sophisticated transnational criminal organizations increasingly control this valuable trade. Just as illegal wildlife products are being mixed in with shipments of other illicit goods, so too are the proceeds from the trafficking in and sale of wildlife being laundered through front companies and other elaborate, professional criminal

^{117.} UNEP, *The Environmental Crime Crisis*, at 13-14; Gail Emilia Rosen & Katherine F. Smith, *Summarizing the evidence on the international trade in illegal wildlife*, 7 ECOHEALTH 24, 27 (2010).

^{118.} Elizabeth L. Bennett, Another Inconvenient Truth: The failure of Enforcement Systems to Save Charismatic Species, 45 ORYX 476, 476 (2011) (citing Anon, Vietnam Seizes Thousands of Smuggled Pangolins (2008); Samuel K. Wasser et al., Combating the Illegal Trade in African Elephant Ivory with DNA Forensics, 22 CONSERV. BIOL 1065 (2008); Sharon Guynup, On the Ground: Pangolins in Peril, Defenders.org, Winter 2010; and Andrew E. Kramer, At Russia-China Border, Bear Paws Sell Best, N.Y. TIMES, Jun 29, 2010); Rosen & Smith, supra note 116, at 7).

^{119.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 93 (2012).

^{120.} IFAW, Criminal Nature, at 14-15.

^{121.} Id. at 15-16 (citing Maryrose Fison, The £6bn Trade in Animal Smuggling, INDEP., Mar. 5, 2011).

schemes.¹²² Indeed, the shell companies being used to launder profits from trade in endangered species are often the same as are used by drug and arms dealers, known terrorists and other criminal actors, and these illegal proceeds are often reinvested into other forms of crimes.¹²³

BRIBERY AND CORRUPTION

The criminal groups and networks involved in wildlife poaching and trafficking also make use of the final two hallmarks of organized crime set forth by the UN Secretary General: Bribery and corruption. Many of the source countries for the illegal wildlife trade in Sub-Saharan Africa are low on the Transparency International Corruption Perceptions Index, ¹²⁴ and scholars have recently documented empirical evidence of a correlation between ivory poaching and corruption.¹²⁵ Wildlife crime syndicates target and exploit corrupt officials and networks within compromised States:

[Criminal organizations] take advantage of the 'upperworld' of corrupt officials and politicians to evade enforcement and control mechanisms and protect the illegal chains of custody. Local officials, customs officers, police and the judiciary are bribed to overlook illegal shipments, to assist with false paper trails and forged documentation,

^{122.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 94 (2012); IFAW, *Criminal Nature*, at 16 (citing U.S. House Committee on Natural Resources. Poaching American Security: Impacts of Illegal Wildlife Trade. 110th Cong., 2nd sess., Mar. 5, 2008. Statement of John M. Sellar, secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora-CITES).

^{123.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 94 (2012); *see also* IFAW, *Criminal Nature*, at 16 (citing U.S. Senate Committee on Foreign Relations. 2012. *Ivory and Insecurity: The Global Implications of Poaching in Africa*. 112th Cong., 2nd sess., May 24, 2012. Statement of Tom Cardamone, managing director, Global Financial Integrity).

^{124.} Transparency International, 2015 Corruption Perceptions Index, (2015), available at http://www.transparency.org/cpi2015#results-table [https://perma.cc/XQT2-FTL4].

^{125.} Douglas & Alie, *supra* note 112, at 275 (citing Andrew M. Lemieux & Ronald V. Clarke, *The International Ban on Ivory Sales and its Effects on Elephant Poaching in Africa*, 49 Br. J. CRIMINOL 451 (2009)).

to help evidence disappear during prosecutions, to delay or drop prosecutions, and even to return no convictions in the cases of those who are brought to trial.¹²⁶

As is discussed further in Part III below, government officials too often play key roles in the illicit wildlife market; undermining good governance and frustrating efforts to strengthen and enforce conservation law and policy.¹²⁷ Of equal, if not greater, concern beyond its links to transnational organized crime, the illegal wildlife trade now also plays a serious role in funding non-state armed groups, including terrorist organizations.

LINKS TO THREAT FINANCE

Illegal wildlife products are now a key source of revenue for identified extremist groups in several African countries. Somali warlords have been reported to sell poached ivory and rhinoceros horn to Indian Islamic extremist groups loyal to Al Qaeda.¹²⁸ The Lord's Resistance Army – led by the infamous Ugandan rebel leader Joseph Kony – is, likewise, implicated in ivory poaching and trade, as are militia groups in Chad, the Central African Republic, the Democratic Republic of Congo, Niger and Sudan, including the Janjaweed.¹²⁹ UNEP estimates that the annual income derived from

128. *Id.* at 273 (citing Liana Wyler & Pervaze A. Sheikh, *International Illegal Trade in Wildlife: Threats and U.S. policy* 7, United States Congressional Research Service, Washington, DC (2008)).

^{126.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 94 (2012).

^{127.} Douglas & Alie, *supra* note 112, at 275 (citing Jeffrey Gettleman, *Elephants Dying in Epic Frenzy as Ivory Fuels Wars and Profits*, NEW YORK TIMES, Sep. 3, 2012); Andrew M. Lemieux & Ronald V. Clarke, *The International Ban on Ivory Sales and its Effects on Elephant Poaching in Africa*, 49 BR. J. CRIMINOL 451 (2009); R. T. Naylor, *The Underworld of Ivory*, 42 CRIM. L. & SOC. CHANGE 261 (2005); and Greg L. Warchol, *The Transnational Illegal Wildlife Trade*, 17 CRIM. JUSTICE STUDIES 57 (2004)).

^{129.} UNEP, The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment, p.78 (Nellemann, C., Henriksen, R., Raxter, P., Ash, N., Mrema, E. (Eds), UNEP & GRID-Arendal: 2014); see also International Fund for Animal Welfare (IFAW), Criminal Nature: The Global Security Implications of the Illegal Wildlife Trade, 11-14, (2013), available at

illegal ivory by non-state armed groups may be as high as \$12.3 million USD.¹³⁰ The links between organized wildlife poaching and trafficking and militia groups clear concerns for local, regional and international stability and security.

Wildlife crime is a complex and multi-faceted issue, involving poverty and development, as well as the ominous dimensions of organized crime, corruption, and conflict. It destroys vital natural resources that sustain livelihoods and valuable tourism, benefitting a small criminal fraternity at the expense of national economies that are deprived of billions in lost revenue and development opportunities for sustainable use. The following section explores the challenges of addressing illegal wildlife trade under international and domestic wildlife conservation regimes that were not developed to tackle crime of this scale or sophistication.

III. REGULATORY CHALLENGES IN COMBATING WILDLIFE CRIME

The principal international instrument pertaining to international trade in endangered species is the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).¹³¹ Concluded in 1973 in response to growing concerns about endangered species, CITES aims to control and regulate trade in wild plant and animal specimens to ensure that trade does not threaten species survival. While the Convention was not originally designed to combat wildlife crime, it nonetheless provides the framework through which wildlife trafficking is controlled, limited, and criminalized. This section explores this framework, and the myriad gaps and challenges that limit the effectiveness of the CITES regime for preventing and suppressing wildlife crime.

http://www.ifaw.org/sites/default/files/ifaw-criminal-nature-2013-low-res_0.pdf [https://perma.cc/PZ7T-DYVK].

^{130.} UNEP, The Environmental Crime Crisis – Threats to Sustainable Development from Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment, p. 78 (Nellemann, C., Henriksen, R., Raxter, P., Ash, N., Mrema, E. eds., UNEP & GRID-Arendal: 2014).

^{131.} Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 993 UNTS 243, (1973), https://cites.org/eng/disc/text.php [https://cites.org/eng/disc/text.php].

THE CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES (CITES)¹³²

Originally signed by twenty-one countries, CITES now has a membership of 181 states.¹³³ The treaty currently extends protection to approximately 5,600 species of animals and 30,000 species of plants. Trade in protected species is regulated through a permit system designed to safeguard them from overexploitation.

THE BASIC ELEMENTS OF THE CITES FRAMEWORK

CITES is a voluntary international agreement that creates a regulatory framework to limit and control trade in endangered species. The heart of the Convention is its permit system, which sets out the conditions under which trade may be conducted, and required documentation and procedures for the management and monitoring of trade. State parties are required to designate or establish national authorities and regulations to implement the permit system in accordance with the scheme that CITES prescribes. The success and implementation of the treaty depend to a great extent on this network of domestic regulatory bodies and laws.

The requirements for trade in a particular species depend upon the level of protection it needs. Species are grouped into three Appendixes,¹³⁴ according to their conservation status. Species that are currently threatened with extinction are classified under Appendix I.¹³⁵ Appendix II includes species which, although not necessarily threatened with extinction at the moment, may become so unless trade is regulated. Appendix II also contains several look-alike species – that is, non-threatened species that are similar enough in

^{132.} An in-depth overview of the CITES regime is beyond the scope of this article. For an authoritative history and analysis, see Willem Wijnstekers, THE EVOLUTION OF CITES (International Council for Game and Wildlife Conservation: 2011).

^{133.} CITES WEBSITE, MEMBER COUNTRIES, *last accessed* 7 March 2016: https://cites.org/eng/disc/parties/index.php [https://perma.cc/T4QT-GGAV], http://www.cites.org/sites/default/files/eng/app/2014/E-Appendices-2014-09-14.pdf [https://perma.cc/V6K8-ZVJD].

^{134.} CITES, Appendices I, II and III, valid from 5 Feb. 2015, https://cites.org/sites/default/files/eng/app/2015/E-Appendices-2015-02-05.pdf [https://perma.cc/TGW8-CKW5].

^{135.} CITES, Article II.1.

appearance to protected species that shipments must be monitored and inspected closely to prevent false trade.¹³⁶ The majority of protected species are listed in Appendix II. Appendix III lists species that have been accorded protected status in at least one country, which has requested the cooperation and assistance of the other parties to control trade in that vulnerable population.¹³⁷

Parties can unilaterally add species to Appendix III; however, species classifications for Appendices I and II are agreed multilaterally by the state parties, which meet every two to three years to inter alia consider and adopt proposals to amend the Appendixes.¹³⁸ In some instances, a species may have a split-listing, in which the population in at least one country is listed in Appendix I, while the populations of other countries are classified in Appendix II. This is the case for the African elephant, for which the populations of Botswana, Namibia, South Africa and Zimbabwe fall under Appendix II, while all other country populations are under Appendix I.¹³⁹ The larger of the two African species of rhinoceros, the Southern white rhino, also has a split listing: Appendix II for South Africa and Swaziland, while all other populations and the smaller black rhino are under Appendix I.¹⁴⁰ Africa's great apes fall under Appendix I,¹⁴¹ and the African Grey Parrot is listed in Appendix A species' classification among the three Appendixes II^{-142} determines the requirements that will adhere to their trade. Trade in Appendix I species is generally prohibited, while the species listed in Appendix II and III are subject to varying degrees of protection.

140. CITES, Appendices I, II and III, valid from 5 Feb. 2015, https://cites.org/sites/default/files/eng/app/2015/E-Appendices-2015-02-05.pdf [https://perma.cc/9J72-NUMW].

141. CITES, Appendices I, II and III, valid from 5 Feb. 2015, https://cites.org/sites/default/files/eng/app/2015/E-Appendices-2015-02-05.pdf [https://perma.cc/7B3R-P939].

142. CITES, Grey Parrot, https://cites.org/eng/gallery/species/bird/grey_parrot.html [https://perma.cc/E2LJ-R3ED].

^{136.} CITES, Article II.2(a).

^{137.} CITES, Article II.3.

^{138.} CITES, Article XI.

^{139.} CITES, Appendices I, II and III, valid from 5 Feb. 2015, https://cites.org/sites/default/files/eng/app/2015/E-Appendices-2015-02-05.pdf [https://perma.cc/T9BU-HHHP].

PERMITTING REQUIREMENTS UNDER CITES

The management and monitoring of trade in listed species is handled by two national authorities which every state party is required to designate: A Management Authority, which grants import and export permits; and a Scientific Authority, which is charged with evaluating and advising on the effects of trade on the status of protected species.¹⁴³ Appendix I species carry the strictest limitations on trade. Trade in specimens and products of species listed in Appendix I requires both an import permit from the receiving nation, as well as an export permit from the country of origin. The importing state may only issue an import permit upon satisfaction of three discrete conditions:

- 1. The importing state's Scientific Authority (SA) has advised that the import will be for purposes that are not detrimental to the survival of the species;
- 2. The importing state's SA is satisfied that the proposed recipient is suitably equipped to house and care for the animal; and
- 3. The importing state's Management Authority (MA) is satisfied that the specimen is not to be used for primarily commercial purposes.¹⁴⁴

Four further conditions must be satisfied in order for the exporting state to issue an export permit:

- 1. The exporting state's SA has advised that the export of the specimen will not be detrimental to the survival of the species;
- 2. The exporting state's MA is satisfied that the specimen was not obtained in contravention of any of its species protection laws;
- 3. The exporting state's MA is satisfied that any living specimen is prepared and shipped so as to minimize the risk of injury, cruelty or harm to health; and

^{143.} CITES, Article IX; CITES WEBSITE, HOW CITES WORKS, *available at* https://cites.org/eng/disc/how.php [https://perma.cc/FQW4-NEVY]. 144. CITES, Article III.3.

4. The exporting state's MA is satisfied that an import permit has been granted.¹⁴⁵

The strict requirements for trade in Appendix I species effectively operate as a *de facto* ban on international trade, with very narrow exceptions.

Appendix II species carry a more moderate level of protection. Only an export permit is required, for which the criteria are the same as for the granting of an Appendix I export permit, with the exception that the MA need not confirm any import permit since none is required.¹⁴⁶ Commercial trade in Appendix II species is permitted, although the Convention requires that the SAs monitor the effect of trade on species and advise their MAs if export permits should be limited.¹⁴⁷ Trade in species listed in Appendix III also require only an export permit, for which only the second and third Appendix I criteria apply.¹⁴⁸

All member states are legally bound to implement this permitting scheme, which may entail the adoption or revision of various legislative and regulatory measures. CITES further requires Parties to take appropriate steps to enforce the Convention and prohibit unlawful trade, including imposing penalties and providing for confiscation of illegal specimens or return to the state of export.¹⁴⁹ As was alluded to above, CITES' implementation depends almost entirely on member states' successful translation of its permitting system into concrete laws and penalties at the national level. The recent surge in trafficking of endangered species highlights the great extent to which many countries' existing frameworks remain unequal to this important task.

BARRIERS TO PREVENTING AND COMBATING WILDLIFE CRIME

CITES' actual impact on the ground is determined largely by the extent to which individual countries have laws in place to regulate trade in endangered species, and the human and financial resources to

^{145.} CITES, Article III.2.

^{146.} CITES, Article IV.2.

^{147.} CITES, Article IV.3.

^{148.} CITES, Article V.2.

^{149.} CITES, Article V.III.

enforce them. Unfortunately, many countries in Africa and elsewhere lack the means and capacity to enact and implement the necessary legislation. Gathering the requisite political will and support to establish strong rules, and train and equip law enforcement and customs is no small task, particularly for developing countries that are confronting resource and capacity shortages on multiple fronts. Corruption throughout many of the government agencies entrusted with these responsibilities is another serious concern. Taken together, the lack of adequate legislation and enforcement, resources, and transparency in many member states constitute a formidable obstacle to the success of this critical regime, and efforts to coordinate CITES enforcement with other international frameworks aimed at tackling corruption and organized crime.

LACK OF IMPLEMENTING LEGISLATION AT THE NATIONAL LEVEL

Implementation of CITES... is impossible without a firm legislative basis covering, at a minimum, the granting of permits, the control of the validity of foreign permits and the imposition of penalties, including the confiscation of unlawfully traded specimens.¹⁵⁰

More than 40 years after the treaty's entry into force, many parties still have not yet established the necessary national infrastructure to implement CITES at the domestic level. The Convention's reliance on its member states to adopt appropriate legal codes and mechanisms, institute and maintain proper scientific and management authorities, and penalize illegal trade has proven to be a significant weakness.

CITES has had a dedicated project for reviewing and evaluating national legislation since 1992. That year, at the eight meeting of the parties, the member states adopted Resolution 8.4 directing the CITES Secretariat – the administrative body that oversees the general coordination of the Convention – to *inter alia* identify those Parties whose domestic measures do not provide them with the authority to:

^{150.} Cyrille de Klemm, GUIDELINES FOR LEGISLATION TO IMPLEMENT CITES, IUCN Environmental Policy and Law Paper No. 26, 10 (IUCN: 1993), *available at* https://portals.iucn.org/library/efiles/documents/EPLP-026.pdf [https://perma.cc/9AV9-FUV5].

- i. Designate at least one Management Authority and one Scientific Authority;
- ii. Prohibit trade in specimens in violation of the Convention;
- iii. Penalize such trade; or
- iv. Confiscate specimens illegally traded or possessed.¹⁵¹

Pursuant to this mandate, the Secretariat initiated a National Legislation Project to analyze and support Parties' efforts to adopt the full range of legislative and administrative measures needed to implement the Convention.¹⁵²

The National Legislation Project

The National Legislation Project is both a compliance and technical assistance process. Parties are requested to submit the text of their domestic CITES-implementing legislation, and these national laws are then assessed against the four criteria set forth in Resolution 8.4, and classified into one of the following three categories:

^{151.} CITES Conference of the Parties, Resolution Conf. 8.4 (Rev. CoP15), National laws for implementation of the Convention (1992, 2010), Para. (a), http://cites.org/sites/default/files/document/E-Res-08-04C16.pdf [https://perma.cc/R9CZ-Z25P].

^{152.} For additional information on the NLP, see CITES Secretariat, Doc. 9.24 (Rev.),

National Laws for Implementation of the Convention (1994), pp. 575-78, http://www.cites.org/sites/default/files/eng/cop/09/doc/E9-Doc-23-25.pdf

[[]https://perma.cc/8TLR-EX67]; CITES Secretariat, Doc. 10.31 (Rev.),

National Laws for Implementation of the Convention (1997), http://www.cites.org/sites/default/files/eng/cop/10/doc/E10-31.pdf

[[]https://perma.cc/P6NN-RX3V]; CITES Secretariat, Doc. 11.21.1, National Legislation Project (2000), http://www.cites.org/sites/default/files/eng/cop/11/doc/21 01.pdf; and CITES

Secretariat, CoP14 Doc. 24, *National Laws for Implementation of the Convention* (2007), http://www.cites.org/sites/default/files/eng/cop/14/doc/E14-24.pdf [https://perma.cc/VW4J-E3SA].

Category 1: Legislation that is believed generally to meet *all four requirements* for effective implementation of CITES;

Category 2: Legislation that is believed generally to meet *one to three of the four requirements* for effective implementation of CITES;

Category 3: Legislation that is believed generally *not to meet any of the four requirements* for effective implementation of CITES.¹⁵³

The Secretariat produces regular reports on the status of parties' progress for implementing the Convention. The most recent report from January 2016¹⁵⁴ identifies only 88 of the treaty's 181 member states as having sufficiently comprehensive legislation to be classified in Category 1.¹⁵⁵ The vast majority of African parties have yet to fully implement CITES in their domestic laws.

Fifty African states are currently parties the Convention, but only ten of them are in Category 1.¹⁵⁶ Another nineteen are in Category 2,¹⁵⁷ and twenty are in Category 3.¹⁵⁸ Angola, which joined in 2013,

[https://perma.cc/N4N9-5QGF].

156. *Id*.

^{153.} The three-prong categorization was introduced by the CITES Secretariat in 1994, Doc. 9.24 (Rev.), *National Laws for Implementation of the Convention* (1994), pp. 575-78, http://www.cites.org/sites/default/files/eng/cop/09/doc/E9-Doc-23-25.pdf [https://perma.cc/3AGH-QTE2]. The COP agreed the use of the three categories via its decisions taken regarding implementation of Resolution Conf. 8.4, in which it directed Party and Secretarial actions according to Parties' categorization in Doc. 9.24 (Rev.): Decisions 6, 7 and 8 directed to the Parties, and Decision 7 directed to the Secretariat, *Decisions of the Conference of the Parties* (1994), pp. 122-123; 133-134, http://www.cites.org/sites/default/files/eng/cop/09/E9-Dec.pdf [https://perma.cc/THZ7-LYLP].

^{154.} CITES Secretariat, National Laws for Implementation of the Convention, SC66 Inf.19 (2016) ((Information document prepared for the Sixty-sixth meeting of the CITES Standing Committee, 11-15 January 2016), available at https://cites.org/sites/default/files/eng/com/sc/66/Inf/E-SC66-Inf-19.pdf

^{155.} *Id.* at 2.

^{157.} *Id.* at 5-12. The report lists the countries in Categories 2 and 3 in three separate tables, according to the length of time the country has been a party to the Convention: Twenty years or more, which includes 17 African countries in Category 2, and 12 in Category 3 (pp. 5-9); less than twenty years and more than five years, which includes 2 African countries in Category 2 and 8 in Category 3 (pp. 10-13); and five years of less, which includes 1 African country, Angola,

is listed as pending as the Secretariat awaits submission of its legislation for review.¹⁵⁹ Experts point to lack of resources, capacity and political will to explain the implementation gap.¹⁶⁰ With national legislation being the primary instrument for prescribing the nature, scope and consequences of wildlife crime, the lack of strong domestic infrastructure across the continent is a significant problem for CITES and the endangered species it is meant to protect.

INADEQUATE ENFORCEMENT & PENALTIES

The absence of credible enforcement incentivizes involvement in illicit wildlife trafficking as an alternative to other crimes such as drug trafficking or human trafficking.... [W]ildlife crime carries a lower risk of detection and prosecution... Even when found guilty, those who have profited from illicit wildlife trafficking receive relatively low penalties, making the business an attractive option for criminal groups.¹⁶¹

Another key challenge is adequate enforcement of the laws that countries do have in place, and the lenience of the penalties imposed in the few cases that reach the sentencing phase. Two recent studies conducted by the international law firm DLA Piper reviewed the laws and judicial processes of fourteen African countries - Angola, Botswana, Cameroon, Democratic Republic of Congo, Kenya, Republic of Congo, Gabon, Mozambique, Namibia, South Africa, Tanzania, Uganda, Zambia, and Zimbabwe – and found several weaknesses.¹⁶² With regard to the principal legislation on which

whose category is given as 'p,' which the table key indicates should be read as "pending submission of legislation to the Secretariat" (pp. 14, 17).

^{158.} Id.

^{159.} CITES Secretariat, National Laws for Implementation of the Convention, 14, 17. See also supra note 157.

^{160.} Anita S. Akella & Crawford Allan, *Dismantling Wildlife Crime: Executive Summary*, TRAFFIC 1, 6 (2012), *available at* http://www.independent.co.uk/environment/nature/the-1636bn-trade-in-animal-smuggling-2233608.html [https://perma.cc/LZU6-TBS2].

^{161.} WWF, Fighting Illicit Wildlife Trafficking, supra note 84 at 23.

^{162.} DLA Piper, Empty Threat: Does the Law Combat Illegal Wildlife Trade?

An Eleven-Country Review of Legislative and Judicial Approaches (2014),

countries are relying to implement their CITES obligations, the researchers encountered many laws with serious loopholes, as well as a variety of execution gaps.¹⁶³ National laws that are theoretically suitable for combating wildlife crime are sidelined in practice due to reliance on subsidiary regulations that have not yet been enacted; administrative agencies that have yet to be formed; and/or implementation at the provincial level, where progress is uneven or stalled.¹⁶⁴

Low rates of prosecutions for wildlife crime are another major problem.¹⁶⁵ A recent study in Kenya surveyed eighteen courts with jurisdiction in key biodiversity areas around the country and found that, of the 743 cases involving wildlife crimes registered in the study period, 2008 to 2013, only 202 case files were available.¹⁶⁶ The vast majority of case files – over 70% - were missing or misplaced.¹⁶⁷ Another recent assessment of illegal trade in ivory and rhino horn between Africa and Asia found very few successful investigations,

[https://perma.cc/FFX2-7ZRQ]; Empty Threat 2015: Does the Law Combat Illegal Wildlife Trade? A Review of Legislative and Judicial Approaches in Fifteen Jurisdictions (2015), available at http://www.dlapiperprobono.com/export/sites/pro-bono/downloads/pdfs/Illegal-

Wildlife-Trade-Report-2015.pdf [https://perma.cc/3SFD-3W97]. See also WWF, Wildlife Crime Scorecard – Assessing compliance with and enforcement of

cites commitments for tigers, rhinos and elephants (2012), *available at* http://wwf.panda.org/about_our_earth/species/problems/illegal_trade/wildlife_trade campaign/scorecard [https://perma.cc/BL2T-A9EY].

163. Id.

164. *Id*.

167. Id.

available at http://www.dlapiperprobono.com/export/sites/probono/downloads/pdfs/Illegal-Wildlife-Trade-Report-2014.pdf

^{165.} *Id.; see also* WWF, Wildlife Crime Scorecard – Assessing compliance with and enforcement of

cites commitments for tigers, rhinos and elephants (2012), *available at* http://wwf.panda.org/about_our_earth/species/problems/illegal_trade/wildlife_trade campaign/scorecard [https://perma.cc/2HLK-TDYQ].

^{166.} Paula Kahumbu, et al., Scoping study on the prosecution of wildlife related crimes in Kenyan courts – January 2008 to June 2013, 11 (Wildlife Direct: 2014), available at

http://www.thedswt.org.uk/wildlifecrimekenya.pdf [https://perma.cc/FT5M-DCQC].

arrests or convictions.¹⁶⁸ Only 12% of ivory seizures resulted in arrest and "throughout Africa, even when investigations result is arrests, judiciary proceedings often undermine effective prosecution and function as backdoor exit points for the individuals involved in serious ivory trade crime."¹⁶⁹ Arrests for illegal trade in rhino horn were higher, but typically involved low-level poachers and couriers at the bottom of the criminal pyramid structure and had little impact on the organizational leadership or operations.¹⁷⁰

Weak Penalties

A further area of concern is the strength and consistency of penalties imposed in wildlife cases. In order to be effective, sanctions need to be fair and commensurate with the harm caused, while also severe and consistent enough to have the necessary deterrent effect. While CITES requires parties to take measures to penalize illegal trade, it does not specify any standards for the form or force that penalties should take.¹⁷¹ Criminal fines and sentences are set by the member states and vary widely, creating challenges for multilateral efforts; inconsistency where judges and prosecutors enjoy wide discretion; and, potentially, havens and soft targets for criminal groups.¹⁷²

In the Kenya study mentioned above, only 4% of convicted offenders received custodial sentences; the other 90+% were simply required to pay a fine or perform community service.¹⁷³ The authors report further that, in the period under review, the value of the ivory and rhino horn seized was approximately \$44.5 million KES (roughly \$1M USD), yet the total fines collected were only \$1.17M KES; that is, less than 3% of the street value.¹⁷⁴ Similar findings are indicated in the DLA Piper studies: The lack of sentencing guidelines and the

^{168.} Tom Milliken, Illegal Trade in Ivory and Rhino Horn: an Assessment Report to Improve Law Enforcement Under the Wildlife TRAPS Project, (USAID and TRAFFIC: 2014), available at https://www.usaid.gov/sites/default/files/documents/1865/W-TRAPS-Elephant-Rhino-report.pdf [https://perma.cc/J3S4-DZD8].

^{169.} Id. at 9.

^{170.} Id. at 21-22.

^{171.} CITES, Article VIII.1.

^{172.} DLA Piper reports, supra note 162.

^{173.} Kahumbu et al., supra note 168 at 14.

^{174.} Id.

considerable discretion given to both prosecutors and judges in many of the countries surveyed leads to lower and suspended sentences, as well as the failure to impose mandatory fines.¹⁷⁵ Limited convictions and low or nonexistent fines and sentences embolden traffickers: "[T]he combination of weak penalties and a low risk of prosecution create an insufficient deterrent to outweigh the financial "rewards" of the illegal wildlife trade."¹⁷⁶

ANCILLARY OFFENSES: MISSING LINKS TO THE UNCTOC REGIME

Another potential avenue for combating wildlife crime is the prosecution of so-called related or ancillary offenses: Crimes, such as document fraud, money-laundering, bribery and corruption, illegal use of weapons, tax evasion and non-payment of fees and tariffs, and participation in organized crime, that often accompany and facilitate wildlife poaching and trafficking. Ancillary offenses can be used to bolster wildlife enforcement by providing an additional basis for arrest, conviction and the imposition of effective penalties. Unfortunately, despite the fact that violations of ancillary offenses often carry heavier sentences, the DLA Piper researchers found that prosecutions for wildlife offenses still tend to be brought solely under anti-poaching and other wildlife-specific laws.¹⁷⁷

The primary international agreement in this area is the 2000 UN Convention against Transnational Organized Crime (UNCTOC).¹⁷⁸ The UNCTOC was adopted with the aim to standardize and coordinate legislative, administrative and enforcement responses to transnational organized crime worldwide.¹⁷⁹ Parties commit to undertaking a series of measures, including the creation of domestic criminal offences for corruption, money laundering, participation in an organized criminal group, and obstruction of justice;¹⁸⁰

^{175.} DLA Piper reports, supra note 162.

^{176.} DLA Piper, Empty Threat 2015, supra note 162, at 5.

^{177.} DLA Piper reports, supra note 162.

^{178. 2000} UN Convention Against Transnational Organized Crime (UNCTOC), http://www.unodc.org/documents/treaties/UNTOC/Publications/TOC%20Conventi on/TOCebook-e.pdf [https://perma.cc/Q3ZN-UNKQ].

^{179. 2000} UN Convention Against Transnational Organized Crime (UNCTOC), http://www.unodc.org/documents/treaties/UNTOC/Publications/TOC%20Conventi on/TOCebook-e.pdf [https://perma.cc/W9U6-ZRYP].

^{180.} UNCTOC, Arts. 5 - 8, 23.

strengthening frameworks for extradition, mutual legal assistance and law enforcement cooperation;¹⁸¹ and training and technical assistance for national authorities.¹⁸² In addition to the domestic criminal offenses covered in the Convention, it also applies to all 'serious crime' with a transnational organized criminal aspect, ¹⁸³ with 'serious crime' being defined as any offense punishable by a "maximum deprivation of liberty for at least four years or a more serious penalty." ¹⁸⁴ Although the preamble to the Convention includes wildlife trafficking among the criminal activities that the UNCTOC is intended to address,¹⁸⁵ many countries' wildlife crime sanctions do not currently meet this standard.¹⁸⁶ A similar gap occurs where wildlife offenses are not included among the predicate offenses to which money-laundering laws apply.¹⁸⁷ When wildlife enforcement efforts are left outside the scope of UNCTOC implementation, they lose out on the extensive cooperation and resources available under this Convention. Even in countries where wildlife crimes are serious crimes and predicate offenses under antimoney laundering legislation, the efficacy of these provisions - and the principal wildlife laws they may bolster - depends on the awareness, willingness and capability of prosecutors and judges to apply them in practice. Unfortunately, a great deal of work remains to be done to improve prosecutorial and judicial capacity and processes to effectively combat wildlife crime in Africa, and worldwide.¹⁸⁸

187. DLA Piper reports, *supra* note 162.188. *Id.*

^{181.} UNCTOC, Arts. 16, 18, 27.

^{182.} UNCTOC, Art. 29.

^{183.} UNCTOC, Art. 3(b).

^{184.} UNCTOC, Art. 2(b).

^{185.} UNCTOC, Preamble, "Strongly convinced that the United Nations Convention against Transnational Organized Crime will constitute an effective tool and the necessary legal framework for international cooperation in combating, inter alia, such criminal activities as... illicit trafficking in endangered species of wild flora and fauna..."

^{186.} Lorraine Elliott, *Fighting Transnational Environmental Crime*, 66 J. INT'L AFF. 87, 95 (2012).

RESOURCE & CAPACITY CHALLENGES

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Enacting strong principle and ancillary laws at the national level is just a first step. The effectiveness of the CITES and UNCTOC regimes depends just as heavily, if not more so, on whether the implementing laws are being adequately applied and enforced on the ground. Chronic, widespread resource and capacity shortfalls in justice systems across the African continent present yet another obstacle to the effective prosecution and deterrence of wildlife crime:

The inadequacy of budgets, personnel, and equipment – across sites, countries, and agencies – significantly compromises the ability of enforcement systems to function effectively... Detection agents, investigators, prosecutors and judges frequently lack the technical skills, tools, forensics and expertise needed to ensure that wildlife crime laws are adequately enforced.¹⁸⁹

The protection of endangered species requires stable governments with adequate human and financial resources; however, a number of African countries report that they lack both the means and capacity to control illegal hunting and trade.¹⁹⁰

Creating and sustaining proper scientific and management authorities requires considerable funding and highly-skilled staff, which many countries simply do not have. Customs officials are often unfamiliar with the CITES appendixes and trade limitations that they are designated to enforce: "Since personnel are untrained, enforcement capacity is weak. Because enforcement capacity is weak, it is no surprise that illicit trade goes unreported. Several countries have noted that they have neither the resources nor the capacity to comply."¹⁹¹ The lack of qualified personnel is a major obstacle to effective control of trade.

^{189.} Akella & Allan, Dismantling Wildlife Crime: Executive Summary, 8.

^{190.} Yvonne Fiadjoe, *CITES in Africa: An Examination of Domestic Implementation and Compliance*, 4(1) SUSTAINABLE DEVELOPMENT LAW & POLICY 38, 41-42 (2014), *available at* http://digitalcommons.wcl.american.edu/cgi/viewcontent.cgi?article=1364&context =sdlp [https://perma.cc/CEX7-SDLL]. 191. *Id.*

Similar budgetary and capacity constraints impair efforts to patrol and guard protected areas across the continent. The relatively low priority accorded to wildlife and habitat protection in most countries translates into limited staffing, training and resources on the ground.¹⁹² In a recent statement, the head wildlife officer of the Central African Republic indicated that his department has only 110 rangers to cover 6.4 million hectares of national parks,¹⁹³ an area more than twice the size of Belgium. In the face of mounting incursions from heavily armed criminal gangs, lightly equipped and unarmed wardens defend these protected areas at great risk and disadvantage.¹⁹⁴

Investigative authorities are, likewise, under-resourced, understaffed and undertrained which, in turn, limits crime detection. Insufficient investigative resources and skills undermine the collection and evaluation of the forensic evidence on which wildlife crime prosecutions so often depend:¹⁹⁵

Most developing countries do not have access to modern investigative tools such as DNA mapping and other advanced forensic methodologies to trace products. Even basic methodologies for operations such as crime scene investigations, which are critical for effective prosecution, are often not carried out appropriately.¹⁹⁶

The critical lack of finances extends to the rest of the justice system, as well, where judges and prosecutors are appointed and serve for years with no formal training in wildlife law.¹⁹⁷ Prosecutorial and judicial offices are also chronically understaffed,¹⁹⁸ and generally lack the necessary case management systems to effectively track and document case files.¹⁹⁹ At every step in the enforcement chain, inadequate resources and capacity contribute to ineffective implementation of the domestic laws on which global efforts to

^{192.} Bennett, *supra* note 104, at 477.

^{193.} WWF, Fighting Illicit Wildlife Trafficking, at 24.

^{194.} Nigel Dudley et al., *Editorial: Wildlife Crime Poses Unique Challenges to Protected Areas*, 19 PARKS 7, 9 (2013).

^{195.} DLA Piper reports, supra note 162.

^{196.} WWF, Fighting Illicit Wildlife Trafficking, at 24.

^{197.} DLA Piper reports, *supra* note 162.

^{198.} Id.

^{199.} Kahumbu et al., supra note 168 at 17.

combat wildlife crime very much depend. In addition, when enforcement officials are underpaid, they may be more susceptible to bribes, which the criminal organizations that profit from illegal trafficking can easily afford to pay. These illegal payments are just one of the many forms of corruption that help to fuel and facilitate wildlife crime worldwide.

CORRUPTION

The very nature of wildlife trade makes it susceptible to corruption, as it often requires official permits and clearances to meet regulatory requirements and laws – at the source, transit and market levels.²⁰⁰

Corruption, broadly defined, entails the misuse of entrusted power for private gain.²⁰¹ In the context of wildlife crime, it is a critical factor in the sourcing, transfer and sale of wildlife specimens and products, as well as the laundering of the proceeds from the illegal wildlife trade.²⁰² Efforts to combat wildlife poaching and trafficking are hampered severely when the very institutions mandated to enforce wildlife conservation and trade provisions are mired in corruption.²⁰³

Several studies have demonstrated that wildlife crime thrives in countries with high levels of corruption, engaging corrupt officials at all levels of government, from park rangers, border guards and customs officials, to police and military officers; from judges and prosecutors to embassy staff and diplomats.²⁰⁴ A recent analysis by

^{200.} Akella & Allan, Dismantling Wildlife Crime: Executive Summary, 8.

^{201.} WEBSITE OF TRANSPARENCY INTERNATIONAL, WHAT IS CORRUPTION?, http://www.transparency.org/what-is-corruption/ [https://perma.cc/MZ3V-FJ9G].

^{202.} U4 Anti-Corruption Resource Centre, Wildlife Crime and Corruption, U4 Expert Answer No. 367 (2013),available at http://www.u4.no/publications/wildlife-crime-and-corruption/; see also Tanya Wyatt & Anh Ngoc Cao, Corruption and wildlife trafficking, U4 Issue No. 11 (2015),available at http://www.u4.no/publications/corruption-and-wildlifetrafficking/ [https://perma.cc/T7WV-A7K6].

^{203.} Fiadjoe, supra note 190, at 40.

^{204.} Id.; see also Ayling, supra note 80; Douglas & Alie, supra note 112.

the expert U4 Anti-Corruption Resource Centre details the many ways in which corruption enables wildlife crime:²⁰⁵

Corruption may facilitate many of the crimes along the wildlife trade route, from poaching (e.g. illegal payments to issue hunting licenses, bribery of forest patrol officers), to trafficking (e.g. bribery of customs officials, illegal payments to issue export certificates, etc), to law enforcement (e.g. bribery of police officers and prosecutors to avoid investigations; illegal payments to manipulate court decisions). In addition, corruption and weak regulatory frameworks may offer several opportunities to criminal organisations to launder the proceeds of crime.

One key element is document fraud, in the form of issuing a hunting or trade license with terms that violate the applicable law, as well as the supply of falsified – or, in some cases, blank – hunting licenses and import and export permits.²⁰⁶ Criminal networks have also used captive breeding operations to launder wild-caught specimens and the illegal proceeds of wildlife crime.²⁰⁷ Another common practice is the payment and acceptance of bribes to suspend payment of applicable taxes, duties, tariffs and fees; and overlook illegal hunting and shipments, including fraudulent documents and irregular containers that are above permitted levels or declared below value or volume.²⁰⁸

Corruption frequently pervades the criminal justice system, as well. Corrupt officials may turn a blind eye to illegal hunts, alert criminal networks of planned investigations or inspections, or deliberately botch their evidence-gathering or case preparation to enable the accused to avoid arrest or trial.²⁰⁹ Bribery of prosecutors and judges is also widespread, leading to reduced charges and penalties, improper bail approvals and case dismissals.²¹⁰ At the highest levels, diplomatic staff may abuse their diplomatic immunity

210. Id.

^{205.} U4 Anti-Corruption Resource Centre, supra note 202.

^{206.} Id. at 3-4.

^{207.} Id. at 4.

^{208.} Id. at 3-4.

^{209.} Id. at 4.

to traffic illegal animals or goods; officials may maintain a personal or financial interest in the very activities they are meant to regulate or help launder the proceeds of wildlife crime; and corruption may be used to influence wildlife law and policy.²¹¹

Corruption in governmental institutions is a serious challenge for wildlife conservation and management, and good governance and the rule of law overall. In 2003, the international community built on the precedent of the UNCTOC by adopting another legally binding treaty to "promote and strengthen measures to prevent and combat corruption." ²¹² Like the UNTOC, the UN Convention against Corruption (UNCAC) provides another important legal basis for combating wildlife and forest crime. The Convention requires that state parties implement a range of preventive anti-corruption measures,²¹³ as well as measures relating to criminalization and law enforcement,²¹⁴ international cooperation,²¹⁵ asset recovery,²¹⁶ and technical assistance and information exchange.²¹⁷ At this time, the majority of African states have signed on to the treaty, which entered into force in 2005 and now has 178 parties.²¹⁸ Nonetheless, corruption remains a significant problem in Africa,²¹⁹ and many of the challenges that confound efforts to combat wildlife crime in combination with ancillary offenses under the UNCTOC, have

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^{211.} Id. at 3-4.

^{212. 2003} UN Convention Against Corruption (UNCAC), ch. 1, art. 1., available at

https://www.unodc.org/documents/treaties/UNCAC/Publications/Convention/08-50026 E.pdf [https://perma.cc/HX8J-SFL3].

^{213.} UNCAC, Chapter II.

^{214.} UNCAC, Chapter III.

^{215.} UNCAC, Chapter IV.

^{216.} UNCAC, Chapter V.

^{217.} UNCAC, Chapter VI.

^{218.} WEBSITE OF THE UN TREATY COLLECTION, CHAPTER XVIII - PENAL MATTERS, 14. UN CONVENTION AGAINST CORRUPTION, https://Treaties.Un.Org/Pages/Viewdetails.Aspx?Src=Ind&Mtdsg_No=Xviii-14&Chapter=18&Lang=En [https://perma.cc/6FLX-EP7T].

^{219.} Transparency International, *People and Corruption: Africa Survey 2015 – Global Corruption Barometer* (2015), *available at* http://www.transparency.org/whatwedo/publication/people_and_corruption_africa_survey_2015 [https://perma.cc/59QY-CAK3].

limited the practical implementation of the UNCAC in many African nations, as well.²²⁰

Although corruption – together with weak regulations, enforcement and borders – continues to make African wildlife a target for transnational organized crime, the past few years have brought increased awareness and focus on the illegal wildlife trade as a national and international security issue, as well as a biodiversity and conservation concern. As a result, powerful alliances among international institutions from across the law enforcement spectrum are forming to assist the CITES regime and national governments to reduce and prevent illegal wildlife poaching and trafficking.

^{220.} UN Office on Drugs and Crime (UNODC) State Of Implementation Of The United Nations Convention Against Corruption - Criminalization, Law Enforcement And International Cooperation (2015), available at https://www.unodc.org/documents/treaties/UNCAC/COSP/session6/15-

⁰³⁴⁵⁷_ebook.pdf [https://perma.cc/GR77-EJSQ]; DLA Piper reports, supra note 162. Individual country reports are also available on the UNODC website's *Country Profiles* page, at: https://www.unodc.org/unodc/en/treaties/CAC/country-profile/index.html [https://perma.cc/HH84-5AA5].

CONCLUSION

In response to growing recognition of the serious threats to African wildlife and the wider implications for local stability and global security, several encouraging developments suggest that a coordinated international response is underway. In July 2015, the UN General Assembly adopted a resolution urging member states to take decisive steps to prevent, combat and eradicate illegal trade in wildlife.²²¹ In addition, the newly adopted Sustainable Development Goals explicitly address tackling illegal trade in wildlife through specific Targets under Goal 15, which state:

15.7: Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products.

15.c: 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.²²²

Similar developments have also taken place in Africa at the regional level, as well. In June 2014, the African Union adopted a decision on the conservation of African wildlife and the illegal wildlife trade.²²³ The following May, member states issued a strong declaration urging coordinated regional and international action against wildlife crime, including the conclusion of an Africa-wide

^{221.} UN General Assembly, *Resolution 69/314 – Tackling illicit trafficking in wildlife,* A/RES/69/314 (2015), *available at* https://cites.org/sites/default/files/eng/news/pr/2015/UNGA_res_illicit_trade_wildli fe.pdf [https://perma.cc/N9WB-89KX].

^{222.} Sustainable Development Goals, *available at* https://sustainabledevelopment.un.org/?menu=1300 [https://perma.cc/N9WB-89KX]

^{223.} Decision EX.CL/ Dec.832 (XXV) of the Executive Council of the African Union (2014).

draft strategy and action plan to reduce and eliminate illegal wildlife trade.²²⁴

Since 2009, an inter-agency alliance, the International Consortium on Combating Wildlife Crime $(ICCWC)^{225}$ has joined the efforts of five inter-governmental organizations – the CITES Secretariat, the International Criminal Police Organization (INTERPOL), the World Bank, the World Customs Organization (WCO), and the United Nations Office on Drugs and Crime (UNODC)²²⁶ – to provide coordinated support for national wildlife law enforcement agencies, and sub-regional and regional networks, working in defense of natural resources. In 2012, the ICCWC launched a *Wildlife and Forest Crime Analytic Toolkit*²²⁷ to help governments assess the effectiveness of their responses to wildlife and forest crime, and document their technical assistance needs.²²⁸

The ICCWC Toolkit is an invaluable tool for identifying gaps and challenges in national wildlife legislation and efforts to integrate wildlife enforcement with measures to combat corruption and organized crime. Detailed and exhaustive, the toolkit provides precise explanations and prompts for wildlife administrators to understand the strengths and weaknesses of their existing laws and policies. These analyses, in turn, provide sound indications of where additional human, technical, and financial capacity is needed, and can inform targeted requests for assistance. The ICCWC offers support for government authorities to conduct national Toolkit assessments; and UNODC, which serves as the lead agency for the consortium, has also recently developed forensic guidelines for ivory sampling and laboratory analysis, as well. As Toolkit implementations

226. CITES Website, *ICCWC partners*, http://www.cites.org/prog/iccwc.php/Partners [https://perma.cc/C4WR-RW67].

^{224.} TRAFFIC, African leaders agree on co-ordinated response and action against illegal exploitation and illicit trade of wild flora and fauna in Africa (2015), *available at* http://www.traffic.org/home/2015/5/3/african-leaders-agree-on-co-ordinated-response-and-action-ag.html [https://perma.cc/CU9Z-SURG] (includes link to English translation of declaration).

^{225.} CITES Website, *The International Consortium on Combating Wildlife Crime*, http://www.cites.org/eng/prog/iccwc.php [https://perma.cc/A26Y-J4ZF].

^{227.} ICCWC, *Wildlife and Forest Crime Analytic Toolkit* (2012), http://www.cites.org/common/resources/pub/ICCWC_Toolkit_v2_english.pdf

^{228.} CITES Website, *Tools*, http://www.cites.org/eng/prog/iccwc.php/Tools [https://perma.cc/S6YX-H9FY].

proceed, countries will be positioned to improve their legal responses to wildlife crime with clear mandates, roles, and penalties.

In addition to initiatives to strengthen these vital legal frameworks, more support needs to be given to enforcement bodies – police, prosecution, judiciary and customs – including adequate resources and training. The agencies and authorities central to the fight against wildlife crime must be afforded the same level of resources and support as is provided to prevent and suppress other forms of transnational crime. At the same time, ongoing efforts to address corruption will be crucial, with a focus on building capacity and integrity in customs, law enforcement, and the judiciary.

Above all, strategies to improve law enforcement and strengthen criminal justice systems must be accompanied by initiatives to support sustainable livelihoods across the continent, and share the benefits from sustainable wildlife management:

Ultimately, the illegal wildlife trade will be best controlled not by guns and rangers but by solutions that respect and make partners of local communities and landowners, through providing sound incentives and opportunities to value and conserve wildlife.²²⁹

Communities must be involved in create enduring incentives and opportunities for conserving threatened species *for* the people, rather than from the people. Success depends on strong Africa-owned, Africa-led solutions that address rural poverty and human-wildlife conflict, and deliver both conservation and development.

^{229.} IIED, *The elephant in the room: Sustainable use in the illegal wildlife trade debate* (2014), *available at* http://pubs.iied.org/pdfs/17205IIED.pdf [https://perma.cc/9FSJ-WK9G].