In the Line of Fire
ELEPHANT AND RHINO POACHING IN AFRICA

<div style="text-align:right">1</div>

INTRODUCTION

In June 2014, armed poachers entered the Ol Jogi sanctuary in Kenya and killed four rhinos in one evening. The Kenya Wildlife Service (KWS) described the attack as the worst perpetrated against rhinos since the 1988 killing of five rhinos in Meru National Park (Jorgic, 2014). A month prior to the rhino attack at Ol Jogi, KWS rangers found themselves caught between two gangs of armed poachers. When the shootout ended, 25-year-old KWS ranger Paul Harrison Lelesepei was dead from gunshot wounds (Heath, 2014). The two recent incidents underscore the danger armed poachers pose to wildlife and rangers alike, not only in Kenya, but across African range states where poachers target elephants and rhinos for their ivory and horn, fuelling a thriving international illicit trade.

In Africa, elephant populations on the whole are in decline and the illicit killing of rhinos has escalated sharply over recent years. The actors involved in poaching these animals include armed militias, rogue military officers, commercial poachers, and bush meat and subsistence hunters. Poachers are making widespread use of military-style weapons and high-calibre hunting rifles in their pursuit of elephants and rhinos, complicating the efforts of wildlife rangers to stop them.

This chapter draws on interviews with leading wildlife conservation experts and open-source material to examine the challenges facing and strategies adopted by anti-poaching forces and wildlife management agencies in African range states with elephant and rhino populations. Based on original field research conducted in Kenya, the chapter also offers insight provided by rangers, conservationists, and others affected by poaching in the country. The main findings are that:

- Poachers use multiple means to kill elephants and rhinos, including firearms and non-firearm methods.
- As demand for ivory and rhino horn remains high, some poachers and anti-poaching forces are becoming increasingly militarized, using military-style weapons and adopting more aggressive tactics.
- Firearms and ammunition found at poaching sites are not systematically identified, recorded, or traced despite the potential use of such techniques in identifying the sources and trafficking routes of poacher weapons.
- Armed groups have been responsible for major cases of large-scale elephant poaching, yet poaching allegations have also been levelled against some government military forces.
- Small groups of poachers also target elephant herds and rhinos, killing significant numbers of animals over time, particularly in rangeland where elephant and rhino populations are dense.
- Without a substantial reduction in the demand for ivory and rhino horn, efforts to deter poachers through armed interventions may disrupt poaching, but not stop it.

The chapter begins with an overview of poaching in Africa, covering trends and drivers in elephant and rhino poaching. It then discusses armed groups involved in poaching, highlighting the cases of groups operating primarily in Central African states. Next, it provides insight into the different types of weapons used in poaching, including military-style weapons, hunting rifles, and craft firearms, as well as traditional weapons and methods, such as spears, arrows,

and poison. The final section reviews national responses to poaching and the roles of law enforcement, the military, and local communities.

OVERVIEW OF POACHING IN AFRICA

Poaching is the illegal killing of wildlife in contravention of national or international law. Since 2010, the illegal killing of elephants in Africa has outpaced natural population replacement rates (Wittemyer et al., 2014); meanwhile, conservationists estimate that rates of rhino poaching could surpass birth rates by 2018 (Save the Rhino, n.d.). The 1970s and 1980s witnessed earlier escalations in the illegal killing of elephants and rhinos (Blanc et al., 2007; Okello et al., 2008; UNEP et al., 2013).

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) was adopted in 1973 and entered into force for states parties in 1975 (CITES, 1973). CITES regulates the international trade in wildlife

Map 1.1 **Elephant rangeland in Africa**
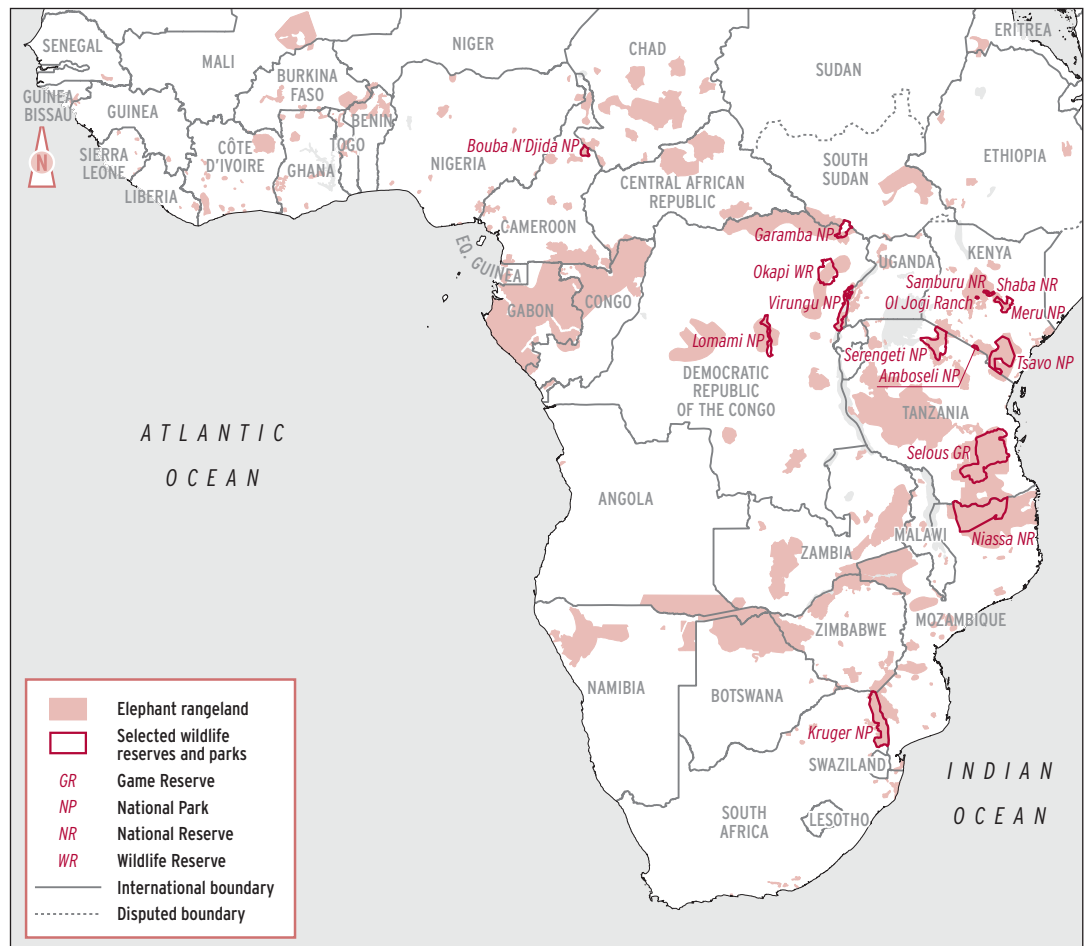
Source: IUCN (n.d.)

species that it classifies as threatened or endangered. In 1989, a CITES vote listed elephants on Appendix I—a classifi-cation given to the most endangered species—in essence prohibiting all trade, with a few exceptions, including scientific research. In 1990, the trade ban came into force in CITES countries and territories. In 1997, the elephant populations of Botswana, Namibia, and Zimbabwe were relisted to Appendix II, which comprises 'species that are not necessarily threatened with extinction but that may become so unless trade is closely controlled' (CITES, 1973). White and black rhinos are on CITES Appendix I, with the exception of southern white populations in South Africa and Swaziland, which are listed on Appendix II for acceptable trade in live animals and hunting trophies.

Sport hunting of elephants is permitted under a quota in a number of countries, subject to domestic legislation; CITES also allows the export of hunting trophies (such as ivory) collected by hunters as long as it is for non-commercial use (FWS, 2013). Wildlife services are also allowed to carry out the controlled killing of animals that pose a danger to the public.

Poaching of various types takes place across African range states (see Maps 1.1–1.2). In Central Africa, where some elephant populations have decreased significantly, poachers include armed militias, rogue law enforcement officers,

Map 1.2 **Rhino rangeland in Africa**
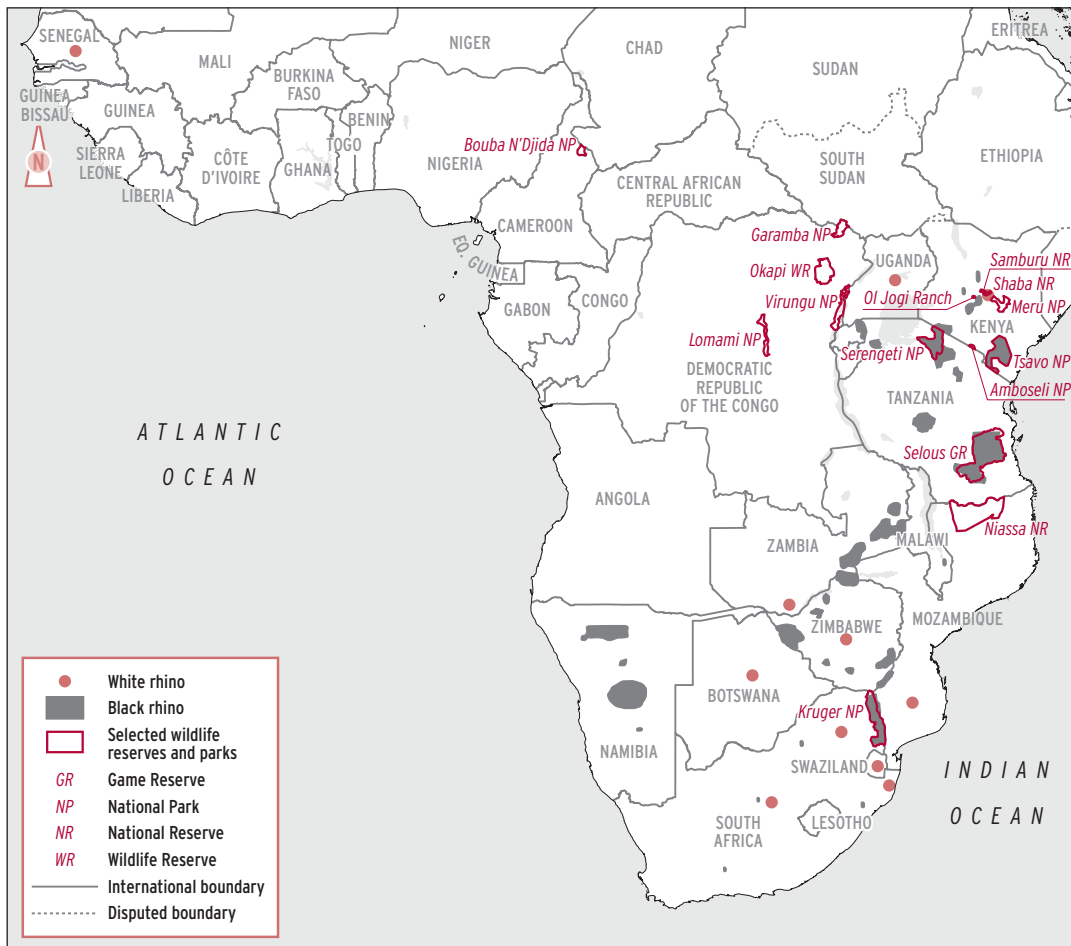
Sources: San Diego Zoo and International Rhino Foundation (n.d.); Rookmaaker and Antoine (2013)

commercial poachers, and subsistence hunters. The potential threat that armed groups pose to governments and wildlife alike has prompted the UN Security Council to identify poaching in Central Africa as a regional security threat requiring urgent action (UNSC, 2014a; 2014c).

As discussed in this chapter, the problem of poaching extends well beyond Central Africa. The CITES Secretariat has recommended that a number of African states parties to the Convention, including Angola, Cameroon, the Democratic Republic of the Congo (DRC), Gabon, Kenya, Mozambique, Nigeria, Tanzania, and Uganda, develop national action plans to combat ivory poaching and trafficking, and monitor progress in their implementation (CITES Secretariat, 2014b).

Poaching trends

The latest population estimates of elephants in Africa range from 419,000 to 650,000 (UNEP et al., 2013, p. 22). Established under CITES and operational since 2002, a monitoring system known by its acronym, MIKE—Monitoring the Illegal Killing of Elephants—is used to estimate poaching rates. MIKE determines the cause of an elephant's death, making distinctions between illegally killed elephants, non-intentional elephant deaths (such as death due to natural causes), and intentional but legal killings, such as those resulting from sport hunting or the control of problem animals. Elephant kills can involve an array of weapons, including firearms, spears, machetes, and poisons, and can result from commercial poaching, bush meat hunting, or human–elephant conflict. Data collected from kill site investigations is used to establish the proportion of illegally killed elephants (PIKE). PIKE is the total number of illegally killed elephants discovered, divided by the total number of carcasses encountered per year for each site investigated (UNEP et al., 2013).

In 2011, PIKE rates were at their highest levels following a steady upward trend that began in 2006 (see Figure 1.1). Data shows a slight decline in overall PIKE rates after 2011; yet, despite this decline, aggregate levels are probably unsustainable. PIKE rates from 2013 show that the illegal killing of elephants across Africa accounted for almost two-thirds of all discovered elephant carcasses that year (CITES Secretariat, 2014a).

Figure 1.1 **PIKE trends in Africa, 2002–13**

ESTIMATED PIKE
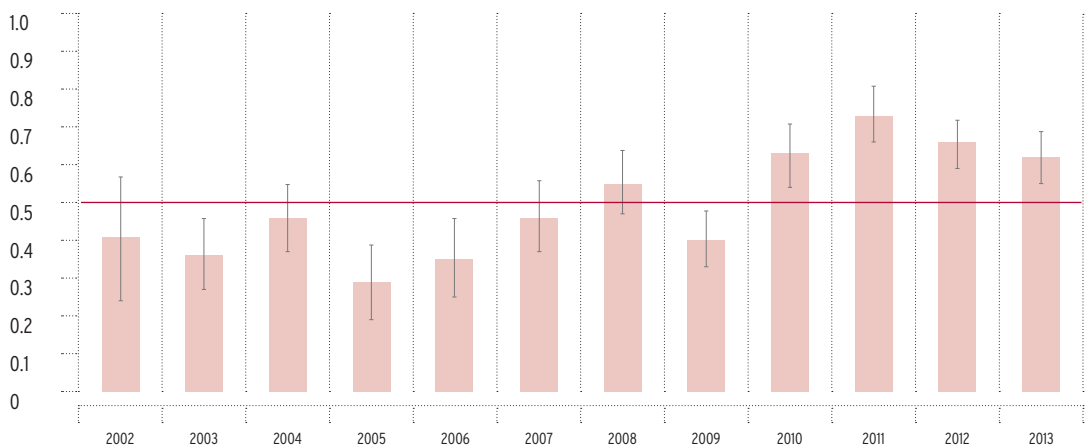
Notes: The graph is based on 12,073 carcasses, with confidence intervals at 95 per cent. PIKE rates that exceed 0.5–the level at which half of the dead elephants found are deemed to have been illegally killed (marked by a red line)–are likely to be unsustainable.

Source: CITES Secretariat (2014a, p. 18)

At the *global* level, demand for illegal ivory is a strong predictor of poaching trends. The strongest *national-level* factor influencing PIKE rates is poor governance, which enables both poaching and ivory trafficking 'through ineffective law enforcement or active aiding and abetting by unscrupulous officials' (CITES Secretariat, 2014a, pp. 19, 21). Ineffective law enforcement may involve the poor collection of evidence at poaching sites or poor security with regard to seized weapons, which occasionally re-enter the illicit weapons market. In fact, many areas of wildlife rangeland are in remote areas where control over state weapons may be poor, whether due to a lack of ranger training or professionalism or inadequate storage facilities. Poverty is the most significant *local* factor associated with high PIKE levels (CITES Secretariat, 2014a, p. 19).

Central Africa, which exhibits the highest regional poaching levels in Africa, suffers from weak governance and poverty—as well as widespread insecurity and the presence of armed groups. In parts of the region where private and public investment is low and job opportunities are limited, poaching may offer an attractive, alternative livelihood.[1] Yet as elephant populations in Central Africa decline, conservationists fear that ivory trafficking may increase in East and Southern Africa (CITES Secretariat, 2014a, p. 32).

In West Africa, where elephant populations are fragmented, limited PIKE data precludes the identification of poaching trends. While PIKE levels in Southern Africa are the lowest in Africa, East African levels were approximately 50 per cent higher from 2010 to 2013 than during preceding years, and the highest average rates since 2002 for that region (CITES Secretariat, 2014a, p. 19).

Compared to elephant protection efforts in East and Southern Africa, those in West and Central Africa face challenges related to weak governance, ongoing armed conflicts, substantial firearms proliferation, and the presence of criminal groups. Elephant populations in these areas are now low, with some groups nearing extinction (UNEP et al., 2013, p. 51).

Well-organized criminal networks are involved in rhino poaching and horn trafficking.

Regional and international networks and trade

A variety of civil society actors involved in the fight against ivory poaching have initiated joint data collection activities on various aspects of the trade. The Elephant Trade Information System (ETIS), for example, is maintained by TRAFFIC, a joint International Union for Conservation of Nature and World Wildlife Fund programme, on behalf of CITES.

The linking of longitudinal data concerning different seizures can yield tentative inferences about ivory poaching and trafficking networks. The evidence shows that a large number of facilitators—including illicit mineral transporters, freight forwarding companies, shipping agents, and politicians—make up the complex networks (Vira, Ewing, and Miller, 2014, p. 31). Container ports in East Africa currently appear to be the primary export points for ivory to international markets (UNODC, 2013). Since 2009, all large-scale (≥500 kg) ivory seizures recorded by ETIS have taken place on routes between Africa and Asia (CITES Secretariat, 2014a, p. 29).

The involvement of well-organized criminal networks is also evident in the case of rhino poaching and horn trafficking (see Box 1.1). Many rhino populations in Africa have become locally extinct or are in decline. The two rhino species in Africa—the black (*Diceros bicornis*) and white rhino (*Ceratotherium simum*)[2]—are distributed across Southern and East Africa, with the majority living in South Africa, where, in absolute terms, the most poaching also takes place. At the end of 2012, estimates placed rhino populations at 20,954 in South Africa, 2,274 in Namibia, and 1,025 in Kenya (CITES Secretariat, 2013).

South Africa's rhino population has been the most heavily affected in terms of numbers killed, with 1,004 poached in 2013 and 1,215 in 2014. Taken as a percentage of the 2012 population estimate, those 2,219 killed rhinos represent

Box 1.1   Rhino poaching in South Africa

Rhino horn trafficking differs substantially from ivory trafficking. While ivory is often containerized in large quantities, rhino horns–which are significantly more valuable pound-for-pound (Vira, Ewing, and Miller, 2014, p. 28), less bulky, and lighter–are often transported in small amounts, commonly by aircraft, to final destinations in Asia.[3]

The illegal rhino horn trade threatens all African species of rhino. Despite some successful efforts to reintroduce rhinos to protected areas in South Africa, which is home to 80 per cent of all African rhinos, the rate of poaching continues to accelerate (WWF International et al., 2014, p. 27).

South Africa's Kruger National Park is the most densely populated rhino region in the world. It is also where poaching is at its most concentrated (Lunstrum, 2014, p. 816); from 2012 to 2014 more than 60 per cent of all rhino poaching in South Africa took place in the park (WESSA, 2014; see Figure 1.2).

Most poaching gangs in Kruger National Park are small groups who enter via the Great Limpopo Transfrontier Park in Mozambique, often on a daily basis. The economic incentives driving rhino horn poaching are great. Prices for rhino horn in 2012 were estimated at more than USD 60,000 per kilogram (IUCN, 2012). Mozambican poaching syndicates support and equip the heavily armed poaching gangs, and operations to hunt and kill rhinos and extract their horns often unfold rapidly. Indeed, poachers can extract rhino horns in a matter of minutes; having done so, they quickly move across the border into Mozambique and transfer the horn to 'consolidation points'. From there, the contraband begins its journey across the Indian Ocean to Asia (Vira, Ewing, and Miller, 2014, p. 16). Yet arrests of South African poachers indicate that the problem of rhino poaching is not restricted to Mozambican nationals.

Figure 1.2   **Rhino poaching in Kruger National Park and all of South Africa, 2010–14**

■ Kruger National Park   ■ South Africa

NUMBER OF RHINOS POACHED

Source: SRP (n.d.)
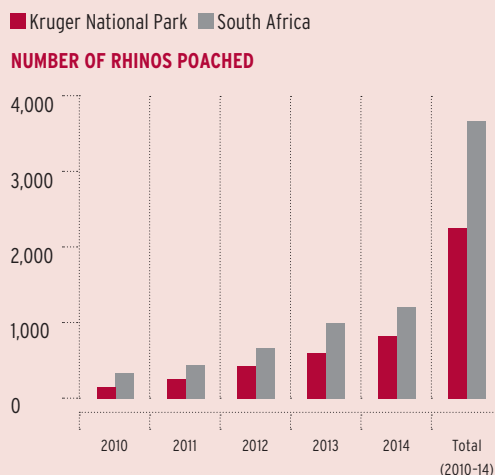
The tactics and equipment used–by both poachers and anti-poaching units–are increasingly sophisticated, with the term 'rhino wars' reflecting the trend towards the militarization of poaching and anti-poaching efforts (Humphreys and Smith, 2014, p. 795). As discussed elsewhere in this chapter, the involvement of national armed forces and the growing emphasis on the arrest of poachers are part of the strategy to curb increasing rates of rhino poaching. Poachers have responded by adopting a wide range of methods to target rhinos. While the majority of rhinos are shot dead–sometimes with firearms equipped with sound suppressors–some rhinos are immobilized with veterinary tranquilizers before their horns are hacked off (Milliken and Shaw, 2012, p. 75).

10 per cent of the South African population (SRP, n.d.). In Kenya, 59 rhinos—or nearly 6 per cent of the national herd—were poached in 2013 (KWS, 2014). A leading Kenyan conservationist stressed that the poaching rate is not sustainable, and that recovery will grow more difficult as populations decline.[4]

Unlike elephants, many of which migrate beyond reserve and park boundaries, rhinos in the central region of Kenya typically remain within secured conservancies. As these areas are designed to offer protection, the 2014 incident that claimed four rhinos at Ol Jogi is unusual. To find rhinos, poachers tend to recruit game industry insiders to assist them in locating rhinos and security patrols (Milliken and Shaw, 2012, p. 66). Since 2009, increasing prices for rhino horn have encouraged poachers to enter conservancies in central Kenya. Poaching gangs are usually made up of two or three people, some with weapons and some without; they generally strike at dusk and escape under cover of darkness. They wait inside the conservancy, tracking a target animal, and only strike at a moment that they deem will give them a good chance of escaping rangers, who will have been alerted by a gunshot. As security teams often patrol fence

lines at scheduled times, poachers aim to avoid these times when entering the conservancies,[5] an illustration of the importance of insider information to poachers.

Drivers of elephant poaching

As noted above, ivory demand drives poaching (CITES Secretariat, 2014a, p. 23). The impact of this demand has been seen at monitored sites where poaching increased markedly after 2008, in step with increases in the price of ivory locally and in China (Wittemyer et al., 2014, p. 2; Save the Elephants, 2014).

Ivory is highly sought after in Asia, and particularly in China, where intricate carving is an established industry. Economic growth and increased consumer purchasing power in China have significantly expanded the market for ivory; some of the trade is legal, such as the trade in ivory purchased from the CITES-approved sales, but poor enforcement of the legislation fuels a flourishing trade in illegal ivory in the country (Martin and Vigne, 2011). There are other significant markets for ivory in Asia, but not all are growing. Japan was a major ivory importer, but strict regulation of the trade after the CITES ban, a decline in consumer demand, and an economic recession have suppressed this market (Martin and Vigne, 2010, pp. 45, 51).

News of rising ivory prices can spread quickly, prompting spikes in poaching levels and attracting greater numbers of would-be poachers. Among Maasai communities in Kenya, information about high prices paid for ivory can come from radio broadcasts or via Internet news sources. Since 2011, more local people have engaged in poaching although the Maasai have traditionally shunned the killing of elephants.[6] In some regions, the killing of elephants provides not

Seized ivory figurines and sculptures are displayed before being crushed at an event attended by US government officials and leading conservationists, Denver, Colorado, November 2013. © Kate Brooks/Redux

only large sums of money from ivory, but also meat and other products of value to poachers, as evidenced in a number of Central African countries (Stiles, 2011, p. 86).

Types of poaching

Large-scale poaching

Large-scale poaching is the targeting and illegal killing of a concentrated population of elephants in a short period of time. Documented cases have involved the use of firearms, large quantities of ammunition, and even military helicopters. By one account, large-scale poaching is facilitated by automatic weapons such as Kalashnikov-pattern rifles, particularly if elephants gather into groups as a defensive mechanism, such as when they sense danger (Crone, 2014). Yet large-scale poaching does not always involve firearms, as illustrated by a mass poisoning event that reportedly killed hundreds of elephants in Zimbabwe over several months in 2013 (Thornycroft and Laing, 2013).

A conservationist interviewed for this chapter identified two major types of groups involved in large-scale poaching. The first type is non-state armed groups, such as former 'janjaweed' members from Sudan and Mai Mai militias of Congolese origin; they are heavily armed with military-style weapons and carry out large-scale poaching in groups of more than ten members. The degree of organization of their ivory sales varies across groups. The second type of group engaged in large-scale poaching is rogue military units that also use military-style weapons. Operating on the orders of specific officers, these groups usually take a highly organized approach to selling ivory, as discussed below.[7]

Evidence of large-scale poaching can be found by comparing DNA taken from seized ivory with DNA samples of mapped elephant populations. Between 2002 and 2006, DNA testing was conducted on samples from more than 20 tons of ivory seized from a number of container consignments in Asia. Findings showed that the samples had been drawn from a small number of elephant populations belonging to related elephant herds (Wasser et al., 2008), suggesting that the poachers may have targeted particular geographic areas.

Shipping containers loaded with multi-ton ivory consignments are the product of hundreds of elephants' ivory and point to the involvement of organized criminal networks in the storage and preparation of these shipments. Nevertheless, containerized ivory consignments are not necessarily linked to large-scale incidents, as they could also result from leakage from government stockpiles or traffickers' consolidation of ivory over a period of time or broad geographic region.

Two major poaching incidents in Cameroon and Chad provide some sense of the magnitude of large-scale poaching and its impact on herds. In Cameroon's Bouba N'Djida National Park, between 300 and 600 elephants were allegedly killed by armed raiders in 2012 (UNEP et al., 2013, p. 58). A year later, 89 elephants were poached in southern Chad, with dozens of pregnant females and 15 calves among those killed (WWF New Zealand, 2013).

Following the incident in Cameroon, the secretary-general of CITES warned that the attack was reflective of a growing trend across African range states, where armed poachers with military-style weapons were decimating elephant populations (CITES Secretariat, 2012). Most national parks were—and, in some cases, still are—ill-equipped to defend against such large-scale poaching.

Small-scale poaching

Small-scale poaching is the targeting of an individual elephant or rhino, or small numbers of them, for profit. In contrast to large-scale poaching, which involves the concentrated killing of a herd in a short period of time, small-scale poaching tends to be conducted over a significant period of time. The poachers make use of firearms and non-firearm methods to kill animals. Like large-scale poaching, small-scale activities are mainly driven by profit from illegal ivory.

Firearms, large quantities of ammunition, and even military helicopters are used in large-scale poaching.

The groups involved in small-scale poaching vary considerably. In some areas, small groups of local people with knowledge of the bush may target animals to supply a known dealer. This type of poaching has been documented in the Samburu area of Kenya and typically involves the use of firearms (see Box 1.4). Local people who target nearby elephants and rhinos often operate with a low degree of organization and unsophisticated weapons, such as snares, spears, artisanal weapons, or poison.[8] These types of weapon may benefit poachers in areas where security patrols are active, as rangers will not be alerted by a gunshot.

Outsiders may also travel to elephant and rhino rangeland to poach small numbers of animals. Such poachers tend to be well organized, with groups consisting of 2–12 hunters and porters. Using hunting rifles or military-style firearms, they may carry out poaching to order or be self-financed; their sale of ivory or rhino horn also tends to be well structured. Military and law enforcement personnel are known to have engaged in small-scale poaching—sometimes opportunistic, sometimes planned; their activities normally involve the use of military-style firearms.[9]

While a single elephant kill may not garner news headlines in the same way larger raids in places such as Cameroon and Chad have, PIKE levels in East Africa, where large-scale poaching incidents have not recently been reported publicly, exceeded 40 per cent from 2010 to 2013 (CITES Secretariat, 2014a, p. 19).

Rhinos are not as numerous as elephants, nor do they gather in large herds or migrate. For these reasons, they are most often poached individually and cases of several rhinos being killed together are rare. As a consequence, rhino horn is trafficked in smaller quantities than ivory, although this distinction also reflects the fact that its selling price is much higher than that of ivory.

ARMED GROUPS

Armed groups involved in poaching encompass a variety of actors and include pro-government militias and armed opposition forces, as well as economically motivated bands of former or current state military. As these groups can potentially operate in large numbers and possess considerable firepower, they can pose unique challenges to rangers and others charged with protecting wildlife.

Over the past decade, armed groups from Darfur have allegedly killed elephants in Chad and Cameroon (Gettleman, 2012a); meanwhile, multiple non-state groups and military forces have been blamed for the killing of elephants in the DRC (UNSC, 2014c). The Lord's Resistance Army (LRA), active since 1986, is among the groups that have reportedly killed elephants in the DRC (Agger and Hutson, 2013; see Box 1.2). Despite the efforts of national wildlife agencies, security providers, conservancy organizations, and UN bodies to combat illegal poaching, armed groups continue to kill elephants for their ivory.

Box 1.2 The Lord's Resistance Army

In a 2013 report, the UN Security Council called upon UN member states and regional partners to combat illicit trade networks operating in Central Africa, citing in particular the LRA and its involvement in poaching (UNSC, 2013a). Consisting of an estimated 200 fighters, plus abducted civilians, the LRA reportedly poaches elephant tusks to trade for food, weapons, ammunition, and other supplies, including radios (Resolve, Enough Project, and Invisible Children, 2014).[10] While it lacks the logistical capacity to move large quantities of ivory, the group can reportedly access trafficking routes, including Sudanese ones, to move what it manages to poach (Poffenberger, 2013; Ronan, 2014).

The LRA's poaching activity is not as significant as that of other armed groups operating in the DRC, however. This has led some conservation experts and researchers to express concern that media interest in the LRA, including its elephant poaching, has deflected attention away from the more serious regional threats that elephants face (Duffy and St. John, 2013). These include national armed forces, or elements of those forces, and non-state armed groups other than the LRA, such as Séléka fighters in the Central African Republic, Mai Mai militias in the DRC, and the Forces démocratiques de libération du Rwanda (Democratic Forces for the Liberation of Rwanda, or FDLR) (Titeca, 2013).[11]

Poaching by national armed forces

The Forces Armées de la République Démocratique du Congo (Armed Forces of the Democratic Republic of the Congo, FARDC) have been identified by independent observers as among the most ruthless ivory poachers in the DRC, where the state military is reportedly responsible for 75 per cent of all poaching in nine of 11 investigated areas with elephant populations in the country (Kakala, 2013). FARDC soldiers, who are often deployed into elephant range areas in eastern DRC, allegedly control large criminal poaching networks and trading routes that move ivory out of the region and into foreign markets (Vira and Ewing, 2014, p. 38). In 2004, the FARDC apparently moved 17 tons of ivory out of the Okapi Wildlife Reserve in six months (Apobo, 2004)—evidence of the sophisticated logistical arrangements in place and the intense pace at which elephant poaching can be conducted.

Allegations have also been made against high-ranking officers in the FARDC concerning collusion with rebel groups and other poachers. In 2012, a UN report accused FARDC Gen. Gabriel Amisi of trading weapons and ammunition in exchange for poached ivory (UNSC, 2012). President Kabila suspended Amisi soon after the UN accusations, but in August 2014 he was cleared of all charges, reinstated, and promoted in the military (RFI, 2014).

> Armed groups operating in Central Africa have the most significant impact on elephant herds.

There are also accusations that soldiers from other countries' militaries have poached elephants in the DRC. In a 2012 poaching incident in Garamba National Park, 22 elephants were killed and stripped of their tusks. Fifteen of those elephants were shot through the top of their heads, suggesting they were shot from above. In fact, witnesses claim that a helicopter—later identified as an Mi-17MD transport helicopter registered with the Uganda People's Defence Force (UPDF)—was flying above the area at the time the elephants were killed (Gettleman, 2012a). In addition, there are allegations that poached ivory from Virunga National Park was smuggled into Uganda with the assistance of an armed escort provided by a former senior UPDF officer (UNSC, 2014b, para. 234).

During Sudan's civil war (1983–2005), the main agents of the ivory trade in Sudan were reportedly members of the national armed forces who poached elephants in what was then southern Sudan, as well as in the Central African Republic (CAR) and the DRC (UNEP, 2007). Observers assert that since the independence of South Sudan, its military has poached elephants in Garamba National Park and engaged in shootouts with park rangers (Gettleman, 2012a).

Non-state armed groups in Central Africa

Among armed groups in Africa, those operating in Central Africa have had the most significant impact on elephant herds; their poaching activity in the region has been condemned by international bodies, including the UN Security Council and CITES.

Poaching and other forms of illicit trading in resources—such as minerals and timber—enable these groups to purchase weapons and ammunition with which to challenge local and national authorities, such as the military and the police, as well as security forces affiliated with UN missions (Agger, 2014; UNSC, 2014a). International reports on poaching by armed groups in Central Africa highlight the transnational nature of their activities; these groups move across international borders to poach wildlife, to exploit trafficking routes that furnish them with weapons and ammunition, and to supply distant markets with ivory (ICG, 2014; UNEP et al., 2013). Most poachers operating in CAR are believed to originate in neighbouring states, particularly Chad and Sudan, although Séléka fighters (insurgents) in CAR are also engaged in poaching (Agger, 2014; ICG, 2014). Local bands of armed poachers in CAR and in Cameroon have reportedly transported ivory westward to Nigeria (Lombard, 2012).

Independent observers claim that some armed groups entering CAR from Sudan receive funding from prominent Sudanese businessmen, including several based in the Nyala area in Darfur, who equip them with firearms, night-vision

goggles, and satellite phones (Agger, 2014; ICG, 2014). The continued presence of armed groups in remote areas of CAR, coupled with weak governance and corruption, suggests that law enforcement and government officials are either absent or colluding with the poachers (ICG, 2014, p. 14).

Poaching by armed groups in Central Africa is not new. In what are today CAR and Sudan, Sudanese groups have been killing elephants for their ivory for centuries, supplying Khartoum, one of the world's oldest ivory carving centres (UNEP, 2007). More recently, in 2013, it was reported that bands of Khartoum-supported fighters, including 'janjaweed' members, poached more than 3,000 elephants in Chad and Cameroon (Gettleman, 2012a). In 2010, UPDF soldiers searching for LRA camps inside CAR encountered what they described as a 'janjaweed caravan', alleging that the group counted more than 400 members and was well armed. The encounter resulted in the deaths of ten Ugandan soldiers (Gettleman, 2012a).

Across the border from CAR in the DRC, many armed groups have poached elephants, including Mai Mai militias, the Allied Democratic Forces–National Army for the Liberation of Uganda, the Congolese March 23 Movement (until its recent demise), and the Forces démocratiques de libération du Rwanda (Democratic Forces for the Liberation of Rwanda, FDLR) (FDLR–FOCA). Some of these groups reportedly attacked ranger patrols and poached wildlife in national parks such as Garamba, Lomami, and Virunga, as well as in the Okapi Wildlife Reserve (Vira and Ewing, 2014, p. 37).

In the DRC and elsewhere, armed groups are believed to assist each other in the collective pursuit of ivory and other resources. Mai Mai fighters supply ivory in exchange for material provisions and support from other groups (Vira and Ewing, 2014, p. 41). The Katanga and Gedeon Mai Mai militias, with 8,000 fighters or more, are believed to acquire most of their revenue from poaching (IRIN, 2013).

The revenues that some groups can generate from illicit trading, including dealing in ivory, are high. One report estimates that the FDLR previously generated as much as USD 71 million per year from a combination of illicit tax collection and trading, including in ivory (AllAfrica, 2014a). There are indications that some armed groups involved in poaching are now disarming, with large numbers of FDLR fighters having done so already (Mwai, 2014; FDLR–FOCA); it is still too early to determine whether such disarmament campaigns will lead to any significant reductions in poaching in Central Africa.

Weapons range from hunting rifles and Kalashnikov-pattern rifles to craft muzzle-loading firearms.

POACHERS' WEAPONS

The weapons used by armed groups and other poachers, both commercial and subsistence, vary considerably, ranging from hunting rifles and Kalashnikov-pattern rifles to craft muzzle-loading firearms. In addition to firearms, pastoralists and subsistence poachers also use traditional weapons and methods to kill wildlife, such as spears and poisons. The complicity of some government officials reportedly facilitates the supply of firearms and ammunition to armed groups involved in poaching in Central Africa (ICG, 2014, p. 14; see Box 1.3). To a certain extent, it appears this is also true of commercial poaching networks operating independently of armed groups in the sub-region (Stiles, 2011).

Firearms and ammunition

In Central Africa, illicit weapons reportedly originate from multiple sources, including Libya (UNODC, 2013; UNSC, 2013b). Individual poachers and poaching groups across Africa have sourced other weapons from conflict zones in countries including Angola, Burundi, Mozambique, South Sudan, and Sudan. Some armed groups, such as those in

Box 1.3   **Firearms and ammunition data collection**

Although information on weapons and ammunition used by poachers could provide insight into the networks that support and conduct poaching, including weapons sources and supply lines, it is not systematically collected or analysed. The form used to gather MIKE data at elephant kill sites includes a section for the type of weapons used, but this information is provided on a voluntary basis.[12]

Richard Leakey, the director of the Kenya Wildlife Service from 1989 to 1994,[13] implemented a system to recover components of fired cartridges–typically projectiles and cartridge cases. As a result, his agency was able to trace several poaching incidents back to a small number of firearms registered with the Kenyan police. These guns, it appears, were being hired out to multiple poachers.[14] Yet a lack of firearm registration data from neighbouring countries, where many of the weapons his rangers seized were thought to originate, prevented investigations into the origins of many other firearms.

While it is possible to trace firearms used by poachers that bear certain markings, such as the country of manufacture or country of last legal import, many anti-poaching forces have not been trained to do so. Moreover, wildlife rangers rarely have the opportunity to seize weapons used by poachers. Fired cartridge cases are sometimes found at poaching sites and bullets–if not fragmented–can be recovered from the remains of dead animals, but ballistics checks are only exceptionally run on these items, despite their potential value in identifying poachers, their guns, and broader arms trafficking networks.[15]

the DRC, are believed to be so flush with weapons that they have little need to acquire more (UNODC, 2013).

Kalashnikov-pattern rifles are prominent among the military-style weapons used for poaching in Central Africa, while 12-gauge shotguns, sometimes loaded with craft bullets, are also reported to be in use (*Independent*, 2013; Stiles, 2011, p. 13). A report on weapons and ammunition use among hunters in four Central African countries finds hunting rifles to be less common than automatic military rifles and shotguns, possibly due to the high price of hunting rifles (USD 1,365–2,200) and hunting ammunition (Stiles, 2011, p. 48).

Firearms commonly used to hunt elephants and other big game can be classified into three groups: hunting rifles of various calibres; automatic military-style small arms, including assault rifles and light machine guns; and shotguns (Stiles, 2011). Large-calibre rifles are considered ideal for hunting large game, with the .375 calibre bullet[16] representing the minimum calibre needed to kill either an elephant or a rhino with one shot (McAdams, 2014). The larger .458 calibre bullet, also commonly used for hunting big game, has a firing range of more than two miles (more than 3.2 km). Automatic military small arms, including Kalashnikov-pattern rifles, are chambered for smaller-calibre cartridges (such as 7.62 × 39 mm) and, in comparison with most hunting rifles, have decreased range and stopping power, making them less suitable than hunting rifles for poaching big game.

Many firearms reach poachers, including armed groups, after having been diverted from government security forces, particularly in situations where ethnic and political alliances trump national security interests (UNODC, 2013, p. 98). A 2014 report links ammunition found at elephant kill sites in Cameroon, CAR, Chad, and the DRC to ammunition in Sudanese government stores (Vira and Ewing, 2014). It is unclear whether the ammunition was transferred deliberately, or instead leaked accidentally from Sudanese stockpiles.

It is common for smaller poaching groups to be supplied by middlemen and financiers, who supply them with guns, ammunition, food, and medical supplies (Stiles, 2011). Poachers often use hunting rifles to kill elephants or rhinos, given their greater range and accuracy, but assault rifles better equip them to confront armed rangers or other armed anti-poaching units.

Which guns elephant poachers use may depend on the resources or external support they can access to finance poaching activity. A study of cartridges in several Central African states finds that the cost of cartridges for hunting rifles ranged from USD 18 to USD 34 each, while those for automatic rifles, including Kalashnikov-pattern rifles, cost

as little as USD 0.17 a piece (Stiles, 2011, pp. 49–50). The same study concludes that bush meat hunters in the Republic of Congo use between 18 and 60 pieces of 7.62 × 39 mm cartridges to kill an elephant, while in Cameroon hunters typically use between three and five .458 calibre cartridges for this purpose. This translates to a total cost per animal of USD 90–170 in the Cameroon case, versus USD 3.60–42.00 in that of the Republic of Congo (Stiles, 2011, p. 50).

Some poachers have used homemade sound suppressors in rhino conservancies in central Kenya. Ammunition produced by the former Royal Ordnance Factories facility at Radway Green in the UK[17]—both 5.56 × 45 mm and 7.62 × 39 mm—has reportedly been found in rhino conservancies in Kenya. Conservancy security officers posit that the ammunition, manufactured for the British Armed Forces, has been picked up from British firing ranges following training exercises.[18]

As seen in countries such as South Africa, some poaching groups carry different types of weapons for different purposes. Most rhino poaching groups entering Kruger National Park are composed of three poachers; roughly a dozen such groups are inside the park at any given time (Ramsey, 2014). Mozambican poaching groups commonly employ a designated shooter. While the shooter wields a hunting rifle, the other members of the group tend to use military-style rifles to provide a protective perimeter during the tracking of animals and the extraction of horns or ivory (Vira and Ewing, 2014, p. 73).

Arms and ammunition seized from poachers by the Kenya Wildlife Services, Nairobi, June 2012. © Tony Karumba/AFP Photo

The fight against poaching may be able to benefit from civilian firearm controls. Mozambique has passed a new bill—to be enacted in 2015—that increases the fines for poaching with illegal firearms, regardless of whether the poacher in possession of the firearm kills wildlife (AllAfrica, 2014b). Neighbouring South Africa already has stringent laws against the use of illegal firearms in hunting, with poachers and permit-carrying hunters alike subject to fines and/or imprisonment for the use of prohibited weapons (Library of Congress, 2014).

To kill rhinos, Mozambican poachers appear to prefer hunting rifles over other firearms available to them. There is evidence that Czech CZ 550 bolt-action rifles have become more popular with poachers in recent years (MacLeod and Valoi, 2013). While obtaining a rifle through official channels in Mozambique can take up to six months, there is a brisk trade in illicit hunting rifles, as evidenced by some recent seizures of hunting rifles affixed with sound suppressors, including a Winchester Magnum rifle chambered for .458 ammunition (Bloch, 2012; MacLeod and Valoi, 2013). While it is possible to suppress the sound of a .458 Winchester Magnum rifle by using a reduced-power subsonic cartridge,[19] doing so requires significant technical expertise on the part of users.

In several cases, firearms seized by Mozambican police and rangers have been traced to multiple poaching incidents (Vira and Ewing, 2014, p. 71), indicating that security forces and ranger patrols were negligent in storing seized weapons or were resupplying criminals, or both. In fact, poachers arrested or killed in Mozambique have included active

---

Box 1.4   Poaching in Samburu, Kenya

Firearms play an important role in poaching in the Samburu-Laikipia area of the North Rift region of Kenya. A recent analysis of KWS data covering the first six months of 2012 demonstrates that 85 per cent of the elephants killed in the area died from gunshot wounds (Vira and Ewing, 2014, p. 60). Historically, the Samburu have experienced conflict with Somali ethnic groups to the east and Pokot and Turkana groups to the west. They began arming themselves in the late 1990s, following the emergence of conflict with Somali ethnic groups, and firearms have been a common means of poaching elephants in the area for the past 15 years.[20]

Poaching inside Samburu National Reserve is rare as the area is well patrolled by rangers and experiences heavy tourist traffic. Most illegally killed elephants are poached outside the reserve boundaries. Not all reserves in the region are safe for elephants, however. Conservationists who have visited nearby Shaba National Reserve, an area without the same law enforcement presence as the Samburu reserve, report that elephants there have become fearful of vehicles and visitors after having been targeted by poachers.[21]

Poachers in the area are from four different ethnic groups and sometimes work together to hunt wildlife. They are familiar with the terrain and skilled in animal tracking. While they try to avoid park rangers, 'they will shoot back if they are shot at and they shoot first sometimes'.[22]

Criminal ivory trafficking networks are reportedly well established in the Samburu region, enabling quick movement of tusks from the area to ports. Independent observers say poaching kingpins facilitate ivory smuggling from their homes in the Kenyan town of Archer's Post, a trading centre on the edge of Samburu National Reserve, and Shaba National Reserve (Koross, 2013). Criminal syndicates in the region reportedly benefit from police corruption and political protection. Indeed, as KWS rangers observe, vehicles suspected of transporting ivory have on occasion passed freely through manned police checkpoints (Koross, 2013).

With the support of NGOs, such as the Northern Rangelands Trust, communities and ethnic groups in northern Kenya are participating in efforts to curb poaching. The Trust has helped to establish community committees that are led by locally chosen elders and act to discourage poaching and support livelihood initiatives, with an emphasis on the local management of resources, including wildlife conservancies (NRT, 2009). Communities also work with Trust rangers to recover stolen livestock, reduce banditry, and identify those involved in illegal activity, including poaching (King, 2011).

It appears that the programmes have been largely successful in turning the communities against poaching, although some members, especially young men, continue to poach wildlife. The latter often enjoy a measure of protection from other community members, in part because they are seen as potential defenders of the community, specifically in conflicts with other groups.[23]

Ammunition casings recovered in the Samburu area, Kenya, August 2014. © Joanna Wright

and former members of the army, border guards, and police (Vira and Ewing, 2014). Active and former state security providers who are involved in poaching may have insider access to state-held firearms. Moreover, they are often professionally trained in the use of such weapons. Depending on their experience and former duties, poachers with military backgrounds may also have knowledge of bush combat tactics and possess skills that can be adapted to wildlife tracking.

Given the high price of rhino horn and elephant tusks, the financial rewards from poaching are considerable. There is evidence that increasing numbers of 'non-professionals' are getting involved in poaching, with kill-site investigations in Tanzania identifying the use of 'spray and pray' methods that involve shooting an animal with many more bullets than are strictly needed to kill it.[24]

Similarly, in Kenya, some rhino killings have reportedly involved the use of large numbers of bullets. This may largely be determined by the types of weapons or ammunition available to the poacher. As noted above, a poacher will need more bullets to kill a rhino with an automatic rifle than with a hunting rifle. Limited financial resources may force some poachers to use a Kalashnikov-pattern rifle, in part because compatible cartridges are much less expensive than some hunting rifle ammunition.

Traditional and craft weapons

As noted above, poachers do not always use firearms to kill wildlife. In Tsavo National Park, in Kenya's Coast province, the percentage of elephants killed by gunshot is much lower (34 per cent) than in the North Rift region of the country (85 per cent) (Vira, Ewing, and Miller, 2014). Instead of relying on firearms to kill animals, poachers in the Tsavo area use trusted methods that often involve traditional weapons that have the advantage of not drawing the attention of rangers—unlike a discharged firearm.[25]

Poachers do not always use firearms to kill wildlife.

According to a member of the African Elephant Specialist Group of the International Union for Conservation of Nature, traditional weapons—including poison-tipped spears and arrows—are commonly used for poaching in Tsavo.[26] These 'silent' methods often kill animals more slowly than a high-calibre gunshot, but the poachers are patient, avoiding detection and tracking the animal over many hours as they wait for it to die. One such case is that of Satao, a giant tusker killed with a poisoned arrow in Kenya in 2014 (Tsavo Trust, 2014).

Some members of the Maasai use poison-tipped traditional spears. Data collected by the NGO Big Life in a Maasai area outside Amboseli National Park indicates that of the 42 elephants poached in 2011–13, more than three-quarters (32) were killed with poisoned spears. Of the remaining ones whose means of death could be identified, five elephants died from gunshot wounds, one was killed by a snare, another by poison, and a one by arrows.[27]

Poisoning is used in many locations in East, Central, and Southern Africa. In some areas, conservationists find that poisoning is increasing (Ogada, 2014). Although the reasons for the increase are unclear, it could be linked to hunters' growing use of silent methods of killing to avoid detection by anti-poaching patrols. Poisons are easy to transport and widely accessible, as they can be made from local flora or commercial ingredients that are available in trading centres and towns. Plant-based poisons are typically used on spears or arrows, whereas shop-bought poisons tend to be used on bait foods, such as pumpkins, watermelons, and pineapples, which are left near watering holes or crops and eaten by elephants.[28]

Craft firearms and ammunition offer an inexpensive alternative when factory-made materiel is beyond poachers' means. Commonly used by subsistence and small-scale local poachers, they are principally made by hand in relatively small quantities (Berman, 2011). Blacksmiths are known to make cheap and effective shotguns, as well as firearms constructed from car steering columns that are loaded with melted-down gunshot to make single, pointed bullets (Chappaz, 2006).

NATIONAL RESPONSES TO POACHING

Across African range states that have elephant and rhino populations, anti-poaching initiatives take many different forms. In some cases, they involve a combination of state and private rangers, government soldiers, and locally based organizations working jointly to combat poaching through the use of force or through grassroots work aimed at influencing local behaviour and attitudes. Anti-poaching rangers and units form the first line of defence against poaching, along with supporting law enforcement structures. While holding poachers accountable for poaching is important, so is the arrest and conviction of the people running the criminal syndicates that sponsor and facilitate the trafficking of ivory and rhino horn. To be effective, initiatives against poaching must be able to rely on cooperative efforts by government agencies (including judiciaries), local conservation organizations, and national and international organizations and conservation groups.

The limits of law enforcement

South Africa has sought to curb poaching by boosting ranger patrols and army presence in parks, reserves, and other wildlife habitats. In Kruger National Park, increased funding for anti-poaching efforts has accompanied a steady increase in annual arrests of poachers over the past five years, from 67 arrests in 2010 to 147 in 2014 (Save the Rhino, n.d.). Yet, despite these gains, the number of rhinos poached in Kruger National Park increased at an even higher rate than the arrests. During the same period, the total number of poached rhinos in the park quintupled, from 146 in 2010 to at least 827 in 2014 (SRP, n.d.; see Figure 1.2). According to one conservation expert, this trend reflects the relatively low likelihood of being detected, arrested, and convicted in South Africa (Stiles, 2011). Figure 1.3 shows the total number of rhinos poached and arrests made in South Africa from 2010 to 2014.

When South African courts do convict poachers, they are increasingly opting for stiffer penalties. In 2014, a convicted poacher was sentenced to 77 years in prison for his involvement in a 2011 incident during which three rhinos were killed. He was convicted on charges of illegal hunting, rhino horn theft, illegal possession of firearms and ammunition, and, notably, the killing of his poaching accomplice, who was shot by South African anti-poaching forces. The court determined

A park ranger holding an FAL-type rifle searches from a helicopter for a poacher on the run in Kruger National Park, South Africa, November 2014.
© James Oatway/Sunday Times/Gallo Images/Getty Images

that he bore responsibility for the death of his fellow poacher because—by virtue of entering the park illegally with intent to poach—he was responsible for the well-being, and eventual death, of his companion (Torchia, 2014).

In neighbouring Zimbabwe, a recent evaluation shows that penalties—including jail sentences and fines—led to a reduction in the number of small-scale and subsistence poachers but had little impact on professional poachers who were financed by criminal networks (Duffy, 2014).

A review of 743 wildlife crimes committed between 2008 and 2013 in Kenya finds that only 4 per cent of the cases resulted in jail sentences. Of the ones that involved elephant or rhino poaching, just 7 per cent ended with

Figure 1.3 **Total number of rhinos killed and arrests made in South Africa**

■ Poaching arrests   ■ Rhinos killed

NUMBER OF RHINOS POACHED/ARRESTS MADE

**Source:** Save the Rhino (n.d.)

the incarceration of offenders. Further, 91 per cent of all fines imposed on convicted elephant poachers were below the maximum fine of KES 40,000 (USD 440). Charges relating to firearms were brought in only 12 of the cases, resulting in three convictions for illegal ammunition possession (Kahumbu et al., 2014).

Kenya's Wildlife Act provides for the imposition of relatively harsh fines on convicted poachers (Kenya, 2013). In practice, however, the act potentially discourages the conviction of poachers charged with minor offences as the penalties may be seen as disproportionate.[29] Nevertheless, the law has given teeth to Kenyan authorities, who had previously shown little enthusiasm for the prosecution of major players who enable illicit wildlife trafficking in the country. A lack of political will has also been a problem in Tanzania, where state corruption allegedly enables some poaching syndicates to operate with impunity, with members of parliament accusing a former donor of the ruling Chama Cha Mapinduzi party (Party of the Revolution) of using land allocated for legal hunting for the purpose of illegal poaching (*Economist*, 2014). As of late 2014, the donor had not been formally charged with any crime.

Even when suspects are apprehended and charged with poaching-related offences, prosecutions are often poorly handled, with insufficient evidence offered to prove guilt in many cases (Ross, 2013). The International Criminal Police Organization (INTERPOL) has sought to assist East African countries in addressing legislative and law enforcement shortfalls and in strengthening their capacity to carry out investigations (INTERPOL, 2014). It has established a Nairobi-based office to support its Project Wisdom, which combats the illicit wildlife trade. The special investigative team collaborates with national law enforcement agencies under a specific mandate that targets ivory and rhino horn trafficking.

In October 2014, Kenyan police requested INTERPOL's assistance in arresting a suspected poaching 'boss', Feizal Ali Mohammed, accused of trafficking large quantities of ivory (Akwiri, 2014). The warrant for his arrest, part of a global round-up and arrest effort, is one of many targeting the most wanted fugitives for serious environmental crimes (UN News Service, 2014). On 22 December 2014, Mohammed was arrested in Dar es Salaam and extradited to Kenya, where he was charged in a Mombasa court for dealing in elephant trophies (Onsarigo, 2014). While the targeting of prominent individuals involved in poaching in Kenya and elsewhere represents important progress, challenges remain at the national and local levels.
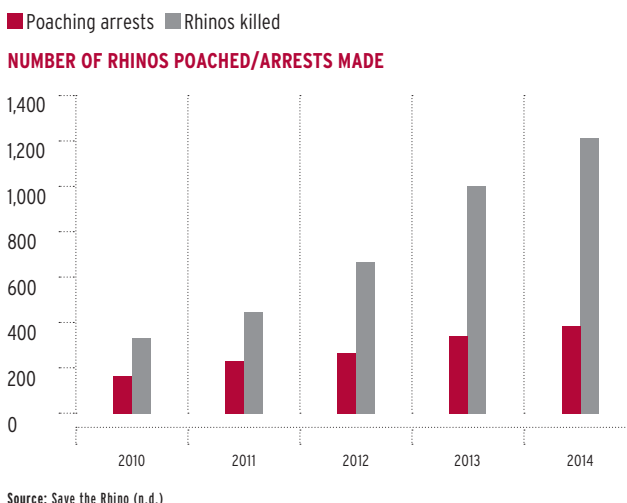
A 2012 study from Tanzania estimates that within 45 km of the western boundary of Serengeti National Park, between 52,000 and 60,000 people have engaged in poaching, with 86 per cent of them involved due to poverty and an income shortfall (Knapp, 2012). A majority of these poachers are not ivory or rhino horn poachers, but rather bush meat hunters. Whatever the reason for their poaching—whether male initiation rites or small-scale or commercial poaching—the rewards for poaching consistently outweighed the risks involved. The study finds that a poacher's likelihood of being injured while poaching was 0.02 per cent for each day spent on the hunt, with most injuries the result of aggressive wildlife, not encounters with park rangers. The study also infers that, on average, poachers faced a 0.07 per cent chance of being caught each time they set out to hunt wildlife. The report concludes that, as long as the rewards for poaching in the Serengeti outweigh the financial, physical, and psychological risks, it is unlikely to decrease (Knapp, 2012).
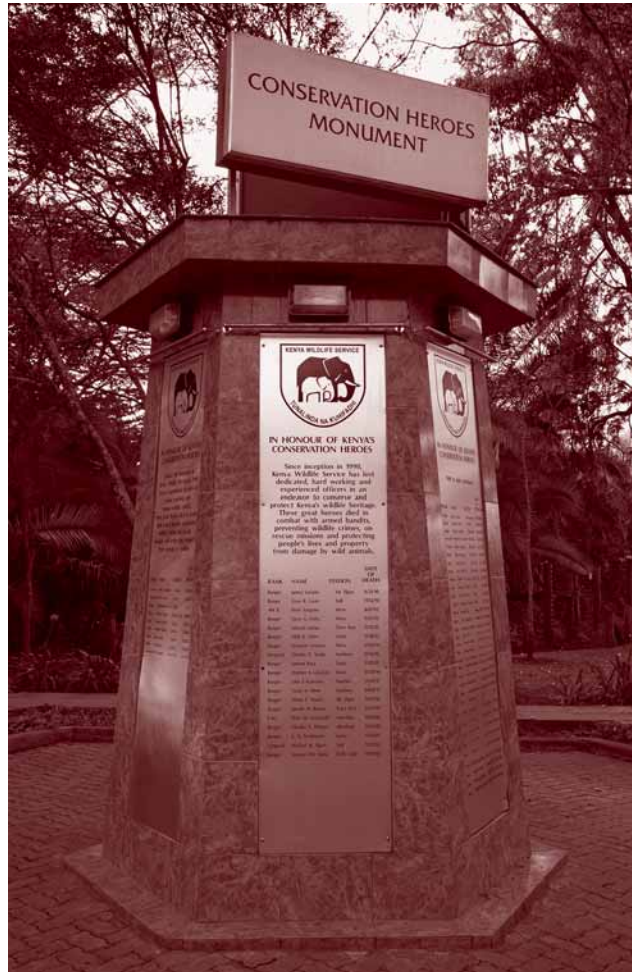
A memorial to rangers killed in the line of duty, Kenya Wildlife Service headquarters, Nairobi, Kenya, August 2014. © Joanna Wright

The military option

In view of the fact that arrests, fines, and the threat of injury are not enough to deter poachers, a former Israeli special forces operator and current anti-poaching consultant, Nir Kalron, has argued for military sweeps of targeted areas; he proposes that infantry and special forces should operate under 'carte blanche' arrangements and be financially supported by NGOs (Kalron, 2013, p. 165). While many feel there is an urgent need to 'stop the bleeding' of poaching,[30] evidence shows that militarization strategies can have unintended consequences (Stiles, 2013; see Box 1.5).

Botswana, Cameroon, Kenya, South Africa, and Zimbabwe are among the countries that have recently increased military involvement and the use of military techniques and technology in anti-poaching efforts. These states have emphasized the military training of rangers, established special anti-poaching task forces, and enhanced intelligence capabilities with helicopters, satellite imagery, and, in some countries, drone usage.

The adoption of more aggressive, militarized anti-poaching strategies is not new. In the 1980s and 1990s governments of what are today the DRC, Kenya, and Zimbabwe provided rangers with extensive military training and permission to use deadly force when confronting poachers (Lunstrum, 2014). Nowadays African states continue to employ anti-poaching strategies involving shoot-on-sight policies and sweeps of villages and parks to forcibly remove

Box 1.5   Militarization of anti-poaching: the case of Botswana

Research has identified the incursion of armed poachers from neighbouring states into the game reserves of Botswana as one of that country's biggest illicit firearms challenges (Thwala, 2004). In 2014, poaching remained a problem for Botswana, but had become even thornier.

From inside Botswana's borders, organized criminal networks seek ivory and rhino horn by funding militias that comprise former guerrilla fighters, are equipped with military-style weapons, and are skilled in bush warfare. These militias either cross into or live in Botswana. The Botswana Defence Force claims that poaching is becoming increasingly militarized, with poaching groups commanded by people with military backgrounds. Further, poachers have reportedly used sound suppressors on their weapons to avoid detection by rangers.

The situation prompted the national anti-poaching coordinator to call poaching a national security threat and to argue for the adoption of shoot-to-kill policies and the deployment of the armed forces into high-risk areas (*Sunday Standard*, 2013). Botswana's environment, wildlife, and tourism minister has also argued that shoot-to-kill policies are the only effective means of stopping poachers (Ontebetse, 2013).

The case of Botswana points to an emerging trend in many sub-Saharan African range states, as increasingly well-armed poachers confront ever more militarized anti-poaching units. It is not clear, however, that poaching has a military solution. Those who oppose the militarization of anti-poaching initiatives cite, in particular, the increased risk to innocent civilians as weapons become more prevalent and tactics more aggressive, bringing with them a heightened risk of violent encounters between civilians and poachers (Pflanz, 2014).

poachers. In Uganda, for example, President Yoweri Museveni has given the UPDF the authority to shoot anyone suspected of being a poacher inside the country's national parks (Tentena, 2014). In some cases, however, local subsistence hunters are being caught in this net.

In Swaziland, King Mswati III has given the head of the national parks service and its rangers complete immunity in the shooting deaths of suspected poachers under the country's Game Act (Dube and Magagula, 2007). But this has led to the shooting deaths of several subsistence poachers of small game, who were killed while trying to trap warthogs (Rooney, 2014).

In October 2013, Tanzania's minister for natural resources and tourism, Khamis Kagasheki, oversaw an anti-poaching strategy that included shoot-to-kill orders (Saramba, 2013). More than 2,300 security personnel from multiple security units, including the People's Defence Force, local police, anti-poaching militias, and wildlife rangers, were sent to enforce the country's ban on rhino and elephant poaching. Two months later, 'Operesheni Tokomeza' (Operation Destroy), as it was called, was abandoned and Kagasheki was dismissed from government following allegations that anti-poaching units were raping, murdering, and torturing civilians (Ng'wanakilala, 2013). The units were subsequently accused of crimes such as the theft of thousands of domesticated animals and other property, including money (Makoye, 2014).

Data supporting military anti-poaching policies is inconclusive. One study that investigated the effectiveness of shoot-to-kill policies adopted in Kenya and Zimbabwe in the 1980s observed that elephant populations began steady increases in both countries after the policies were implemented. Nevertheless, the study's author acknowledges that it did not take into account many factors that may have influenced poaching rates in those countries, including fluctuations in the price paid to poachers, the raw ivory price, government expenditures on anti-poaching efforts, firearms legislation and enforcement, and the impact of development programmes (Messer, 2010).

The militarization of anti-poaching units and programmes is also difficult to fund and maintain. Between 1989 and 1994, when Richard Leakey was head of the Kenya Wildlife Service, he successfully raised more than USD 153 million to operate the Service, which included such measures as arming anti-poaching units with helicopters, vehicles, and better firearms. Yet, by 1998, a lack of funding was preventing the upkeep of the air-support equipment and vehicles.

Some observers have also posited that shoot-to-kill policies probably put rangers and other anti-poaching units at greater risk of death than those operating in areas without such policies (Messer, 2000, p. 55).

Despite such drawbacks, some claim that certain shoot-to-kill policies have reduced the rate of poaching. After the cessation of 'Operation Destroy' in Tanzania, for example, illegal elephant kill rates quickly rose, with 60 such kills reported in the two months immediately following the operation's end. This figure stands in sharp contrast to only two reported illegal elephant kills during the operation's one-month duration (AFP, 2014). With more than 950 suspected poachers arrested, 104 tusks seized, and 31 illegal firearms and 1,458 rounds of ammunition confiscated, the Tanzanian government has argued that the initiative merits further evaluation and possible future retooling (Jopson, 2013; Kiishweko, 2013). Yet whatever successes it might claim, Operation Tokomeza must also be weighed against the abuses government security forces reportedly committed against civilians. Conservation experts have argued that increased levels of military-style enforcement risk alienating local communities and, as a result, undermining overall anti-poaching efforts (Duffy and St. John, 2013).

Community-based initiatives

In 2014 the UK government hosted an international conference on the illegal wildlife trade, including in ivory and rhino horn. It concluded that, in addition to increased law enforcement and the reduction of global demand, engagement with local communities was key to combating trafficking (UK, 2014).

Poaching dynamics can vary significantly across as well as within countries.

In Africa, poaching dynamics can vary significantly across as well as within countries. Differences in terrain, the location of rangeland, economic factors, the nature of land ownership (state vs. private), the degree of government control over territory, and the local capacity to manage land all influence where and how poaching takes place. Proponents of community-based conservation initiatives argue that involving local communities in anti-poaching efforts can bolster formal law enforcement in a way that responds to local conditions (Roe et al., 2014).

Numerous organizations are running community-based initiatives and providing training to local people to better protect wildlife and prevent poaching. Conservation NGOs, training colleges, and academies, along with grassroots groups, operate across African range states. While some organizations train and equip local people to serve as (non-governmental) scouts in conservancies and wildlife reserves, other organizations offer specialized training, including in the use of GPS systems, weapons, and tracking skills. Educating local communities in the value of conservation is an important component of many of these programmes, including those run by Space for Giants, an elephant conservation group in Kenya (Pflanz, 2014).

To access elephants and rhinos, poachers must often pass through communities, whose assistance they must solicit in caching weapons, transporting supplies, and carrying ivory. Cooperation with local leadership—who generally serve as gatekeepers through whom communities can be engaged more broadly—is often critical. In 2012, one of Kenya's most notorious elephant hunters converted from poacher to ranger after village elders intervened and convinced him to stop (Gettleman, 2012b). In Tanzania, a programme focused on wildlife in Serengeti National Park helps local committees recruit village scouts to monitor poaching activity. The work of the scouts has resulted in the capture of poachers and their sentencing—not to prison time, but rather to community service and village development work (Shetler, 2007, p. 226). In Uganda, traditional chiefs in Nebbi district collected more than 500 weapons from game poachers there (Ocowun, 2010). While most of those weapons were not firearms, the elders' ability to collect them underscored their importance in coordinating anti-poaching and weapons collection initiatives. In Kenya, some elders have reportedly offered to assist the KWS by using magic to make poachers fall asleep (Mwadime, 2014).

The Tsavo Trust, a Kenyan NGO, emphasizes the physical security of communities, as well as wildlife, in its anti-poaching efforts. It supports the local recruitment of professionally trained anti-poaching units that are mandated to identify and apprehend poachers residing or working out of the same communities. The Tsavo Trust works in partnership with the KWS, as well as other private conservancy groups, and serves as a link between government agencies and local people in collating elephant data and supporting cooperative efforts to combat poaching. By coordinating aerial and ground teams, the Tsavo Trust can identify where poaching incidents have taken place and assist in the tracking and apprehension of poachers (Tsavo Trust, 2014).

Community-based initiatives to combat poaching ultimately depend on the achievement of basic levels of security.

Farther south, in Tanzania, the PAMS Foundation, another NGO, uses a similar approach in engaging communities and helping them to play a leading role in wildlife protection. The aims of the Ruvuma Elephant Project (REP) are to improve the status of elephant conservation in the 2-million-hectare area covered by the Selous Game Reserve in Tanzania and the Niassa National Reserve in Mozambique. Among its objectives, the REP seeks to prevent elephant poaching through interventions that include the training of local game scouts and support for community-driven conservation and development initiatives (PAMS Foundation, n.d.). Village scouts are trained in field data collection, satellite GPS use, community rights, and anti-poaching techniques.[31]

Most REP scouts are from local communities and, unlike some government park rangers and members of other anti-poaching units, they are highly familiar with the environment in which they work and the communities with whom they engage—communities that are also home to many poachers. The REP scouting teams typically involve members from several different agencies, including police, wildlife rangers, and other conservancy organizations. According to the PAMS chairman, the inter-agency composition of these anti-poaching teams can reduce corruption by promoting operational transparency. Further, most PAMS scouts are not armed; those who are carry only single-shot rifles. Since 2009, they have confiscated more than 800 firearms, including .375 and .458 hunting rifles, Kalashnikov-pattern rifles, and vast quantities of craft firearms and ammunition. Most importantly, elephant populations within the REP project area are reportedly increasing.[32]

In Namibia, elephant population numbers have been increasing at a steady pace over the past 15 years, in part because of the establishment of community-managed conservancies (Elephant Database, 2013). Committees formed of local people manage each conservancy. They develop a management plan that includes the designation of locally selected wildlife scouts. These scouts report poaching incidents to their respective committees and incidents are posted publicly at conservancy offices in order to facilitate responses to them (FZS, 2010). The conservancies promote the inclusion of women as decision-makers and committee members, ensuring the involvement of a broad range of local people in community-led management of wildlife and lands (ODI, 2011).

Ultimately, however, community-based initiatives to combat poaching, such as those described above, depend on the achievement of basic levels of security. The large-scale elephant massacres in the CAR and Cameroon underscore the need to control and reduce rates of armed violence in areas where armed groups poach *before* local populations can safely support and engage in wildlife protection initiatives.

CONCLUSION

Poaching has multiple drivers, including the international demand for ivory and rhino horn, the illegal bush meat trade, and subsistence hunting. The main actors involved in poaching elephants and rhinos in Africa are non-state

armed groups, rogue military officers, commercial poachers, and subsistence hunters. Together, these actors are sharply reducing the numbers of elephants and rhinos present in many habitats, even pushing herds in some areas towards extinction.

The widespread availability of firearms complicates the fight against elephant and rhino poaching. The illicit trade in weapons and ammunition, including diversion from state stockpiles, is giving poachers relatively easy access to military-style weapons and hunting rifles. Further, conviction rates in many countries are relatively low and weapons confiscated from poachers occasionally find their way back to the black market (and back into the hands of poachers). Perhaps most critically, it appears that some government officials, including members of national armed forces, are facilitating, or even conducting, poaching activities.

The militarization of anti-poaching efforts in some states has had both positive and negative consequences. While there are indications that aggressive anti-poaching policies have resulted in high numbers of arrests and seizures of ivory, weapons, and ammunition, in some cases civilians have faced increased threats from firearms and violence related to anti-poaching activity.

The collection of relevant firearms data could be improved. More data could be gleaned from elephant kill sites, which often contain evidence, such as ammunition casings, that could shed light on the sources of poacher weapons and ammunition, as well as associated trafficking networks. The use of law enforcement tools, such as INTERPOL's firearms tracing system, remains low, despite their potential utility in helping national law enforcement agencies fight environmental crime.

Governments, NGOs, and conservancy organizations are increasingly recognizing and acting to harness the support of local communities in anti-poaching efforts. Community involvement in the management of conservancy areas and the monitoring of elephant and rhino poaching can complement law enforcement efforts focused on the arrest and conviction of poachers. Just as poaching has different causes and takes diverse forms, actions to combat poaching will need to be multidimensional, but also context-sensitive, if the threat currently facing African elephant and rhino populations is to be lifted. ◾

LIST OF ABBREVIATIONS

CAR	Central African Republic
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
DRC	Democratic Republic of the Congo
ETIS	Elephant Trade Information System
FARDC	Forces armées de la République démocratique du Congo (Armed Forces of the Democratic Republic of Congo)
FDLR	Forces démocratiques de libération du Rwanda (Democratic Forces for the Liberation of Rwanda)
INTERPOL	International Criminal Police Organization
IUCN SSC	International Union for Conservation of Nature Species Survival Commission
KWS	Kenya Wildlife Service
LRA	Lord's Resistance Army
MIKE	Monitoring the Illegal Killing of Elephants
PIKE	Proportion of illegally killed elephants
REP	Ruvuma Elephant Project
UPDF	Uganda People's Defence Force

ENDNOTES

1   Author interview with Colman O'Criodain, policy analyst, World Wildlife Fund International, Geneva, 24 September 2014.

2   The last remaining three northern white rhinos (*Ceratotherium simum cottoni*) are located in a conservancy in Kenya.

3   Author interview with Colman O'Criodain, policy analyst, World Wildlife Fund International, Geneva, 24 September 2014.

4   Author interview with Richard Leakey, conservationist, Nairobi, Kenya, August 2014.

5   Author interviews with security managers at several conservancies in central Kenya, August 2014.

6   Author interview with a wildlife ranger, south-east Kenya, August 2014.

7   Author correspondence with Daniel Stiles, member, International Union for Conservation of Nature Species Survival Commission (IUCN SSC) African Elephant Specialist Group, 7 November 2014.

8   Author correspondence with Daniel Stiles, member, IUCN SSC African Elephant Specialist Group, 7 November 2014.

9   Author correspondence with Daniel Stiles, member, IUCN SSC African Elephant Specialist Group, 7 November 2014.

10   Author telephone interview with Paul Ronan, project director, the Resolve LRA Crisis Initiative, 28 August 2014.

11   Correspondance with Daniel Stiles, member, IUCN SSC African Elephant Specialist Group, 7 November 2014.

12   Author interview with Julian Blanc, coordinator, CITES Monitoring of Illegally Killed Elephants, Nairobi, August 2014.

13   The Kenya Wildlife Service was called the Wildlife Conservation and Management Department until 1990.

14   Author interview with Richard Leakey, conservationist, Nairobi, August 2014.

15   Author interview with Iain Douglas Hamilton, conservationist and founder of Save the Elephants, Samburu, Kenya, August 2014.

16   The width of a bullet cartridge is its calibre. A bullet size beginning with a decimal, such as the .375 calibre hunting bullet, is measured in inches. A bullet size starting with a number, such as the 7.62 AK-47 bullet, is measured in millimetres.

17   The facility is now operated by BAE Systems Global Combat Systems Munitions.

18   Author interviews with security managers in central Kenya, August 2014.

19   Author correspondence with N.R. Jenzen-Jones, military arms and munitions specialist, 13 December 2014.

20   Author interview with Iain Douglas Hamilton, conservationist and founder of Save the Elephants, Samburu, Kenya, August 2014.

21   Author interviews with conservationists, Kenya, August 2014.

22   Author interview with Iain Douglas Hamilton, conservationist and founder of Save the Elephants, Samburu, Kenya, August 2014.

23   Author interview with Iain Douglas Hamilton, conservationist and founder of Save the Elephants, Samburu, Kenya, August 2014.

24   Author telephone interview with Keith Roberts, conservationist, 24 August 2014.

25   Author telephone interview with Daniel Stiles, member, IUCN SSC African Elephant Specialist Group, 19 August 2014.

26   Author telephone interview with Daniel Stiles, member, IUCN SSC African Elephant Specialist Group, 19 August 2014.

27   Data collected by the NGO Big Life from poaching sites in its local area and shared with the author.

28   Author interview with a wildlife ranger, south-east Kenya, August 2014.

29   Author interview with Richard Leakey, conservationist, Nairobi, August 2014.

30   Author telephone interview with Keith Roberts, conservationist, 24 August 2014.

31   Author telephone interview with Wayne Lotter, chair, PAMS Foundation, 20 August 2014.

32   Author telephone interview with Wayne Lotter, chair, PAMS Foundation, 20 August 2014.

BIBLIOGRAPHY

AFP (Agence France-Presse). 2014. 'Tanzania Elephant Population Plummets.' 11 January.
    <http://www.enca.com/africa/tanzania-elephant-population-plummets>

Agger, Casper. 2014. 'Behind the Headlines: Drivers of Violence in the Central African Republic.' Washington, DC: Enough Project. May.
    <http://www.enoughproject.org/files/CAR%20Report%20-%20Behind%20the%20Headlines%205.1.14.pdf>

— and Jonathan Hutson. 2013. *Kony's Ivory: How Elephant Poaching in Congo Helps Support the Lord's Resistance Army.* Washington, DC: Enough Project. June. <http://www.enoughproject.org/files/KonysIvory.pdf>

Akwiri, Joseph. 2014. 'Interpol Joins Hunt for Kenyan Poaching Suspect.' Reuters. 16 October.
    <http://www.reuters.com/article/2014/10/16/us-kenya-wildlife-poaching-idUSKCN0I524820141016>

AllAfrica. 2014a. 'Rwanda: FDLR Generating U.S. $71 Million from Businesses with Wives of DRC Officers.' 28 August.
<http://allafrica.com/stories/201408290133.html>

—. 2014b. 'Mozambique: Agreement on Fight against Wildlife Crime.' 31 October. <http://allafrica.com/stories/201410311377.html>

Apobo, Amboya. 2004. 'Rapport sur le braconnage d'éléphant et sur le commerce de l'ivoire dans et à la périphérie de la Réserve de Faune à Okapis (RFO) Ituri, RDC.' Kinshasa: Institut Congolais pour la Conservation de la Nature/Wildlife Conservancy Society.

Berman, Eric. 2011. 'Craft Production of Small Arms.' Research Note No. 3. Geneva: Small Arms Survey. March.
<http://www.smallarmssurvey.org/fileadmin/docs/H-Research_Notes/SAS-Research-Note-3.pdf>

Blanc, Julian, et al. 2007. 'African Elephant Status Report 2007: An Update from the African Elephant Database.' SSC Occasional Paper Series 33. Gland, Switzerland: International Union for Conservation of Nature. <https://portals.iucn.org/library/efiles/documents/SSC-OP-033.pdf>

Bloch, Simon. 2012. 'Unarmed Farm Manager Gives Rhino Poachers a Bloody Nose for Christmas.' *Africa Geographic*. 28 December.
<http://africageographic.com/blog/unarmed-farm-manager-gives-rhino-poachers-a-bloody-nose-for-christmas/>

Chappaz, Nicolas. 2006. 'How Poachers Kill Elephants in Banyang-Mbo Wildlife Sanctuary, Cameroon.' Open Earth Project. 9 June.
<http://www.open-earth.org/document/natureR_main.php?natureId=283>

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). 1973. Adopted 3 March. Entered into force 1 July 1975.
<http://www.cites.org/eng/disc/text.php>

— Secretariat. 2012. 'CITES Secretary-General Expresses Grave Concern over Reports of Mass Elephant Killings in Cameroon.' Media statement. 28 February.
<http://www.cites.org/eng/news/pr/2012/20120228_elephant_cameroon.php>

—. 2013. 'African Rhinoceroses: Latest Trends in Rhino Numbers and Poaching.' CoP16 Inf. 51.
<http://www.cites.org/sites/default/files/eng/cop/16/inf/E-CoP16i-51.pdf>

—. 2014a. 'Elephant Conservation, Illegal Killing and Ivory Trade.' SC65 Doc. 42.1. Geneva: CITES Standing Committee.
<http://www.cites.org/sites/default/files/eng/com/sc/65/E-SC65-42-01_2.pdf>

—. 2014b. 'Interpretation and Implementation of the Convention—Species Trade and Conservation: Elephants.' SC65 Doc. 42.2.
<http://www.cites.org/sites/default/files/eng/com/sc/65/E-SC65-42-02.pdf>

Crone, Anton. 2014. 'Beyond the Infinity Pool: Running a Park at the Sharp End of Conservation.' *Africa Geography Magazine*. 3 October.
<http://magazine.africageographic.com/weekly/issue-14/zakouma-chad-african-parks-safari-adventure>

DEA (Department of Environmental Affairs). 2014. 'South Africans Urged to Work together to Curb Rhino Poaching.' Pretoria: Government of South Africa.
11 September. <https://www.environment.gov.za/mediarelease/southafricans_workingtogether_rhinopoaching>

Dube, Buhle and Alfred Magagula. 2007. 'The Law and Legal Research in Swaziland.' New York: Hauser Global Law School Program, New York University School of Law. <http://www.nyulawglobal.org/globalex/Swaziland.htm>

Duffy, Rosaleen. 2014. 'Waging a War to Save Biodiversity: The Rise of Militarized Conservation.' *International Affairs*, Vol. 90, No. 4, pp. 819–34.

— and Freya St. John. 2013. *Poverty, Poaching and Trafficking: What Are the Links?* Evidence on Demand. June.
<http://eprints.soas.ac.uk/17836/1/EoD_HD059_Jun2013_Poverty_Poaching.pdf>

Economist. 2014. 'Tanzania's Dwindling Elephants: Big Game Poachers.' 8 November.
<http://www.economist.com/news/middle-east-and-africa/21631202-claims-links-between-politicians-and-poachers-merit-further-investigation-big>

Elephant Database. 2013. 'Namibia, 2012 ("2013 Africa" Analysis).'
<http://www.elephantdatabase.org/preview_report/2013_africa/Loxodonta_africana/2012/Africa/Southern_Africa/Namibia>

FWS (United States Fish and Wildlife Service). 2013. 'CITES and Elephants: What Is the "Global Ban" on Ivory Trade?' November.
<http://www.fws.gov/le/pdf/CITES-and-Elephant-Conservation.pdf>

FZS (Frankfurt Zoological Society). 2010. 'Experience Sharing Visit to Namibia: September 10–20, 2010.' Draft. September.
<http://www.macaulay.ac.uk/CAMP/Namibia-Report-Sep10.pdf>

Gettleman, Jeffrey. 2012a. 'Elephants Dying in Epic Frenzy as Ivory Fuels Wars and Profits.' *The New York Times*. 3 September.
<http://www.nytimes.com/2012/09/04/world/africa/africas-elephants-are-being-slaughtered-in-poaching-frenzy.html?pagewanted=all&_r=2&>

—. 2012b. 'Notorious Poacher Now Leads a Fight to Save Africa's Elephant.' *Sydney Morning Herald*. 31 December.
<http://www.smh.com.au/world/notorious-poacher-now-leads-a-fight-to-save-africas-elephants-20121230-2c1ix.html>

Heath, Kevin. 2014. 'KWS Ranger Killed by Poachers.' *Wildlife News*. 4 June. <http://wildlifenews.co.uk/2014/06/kws-ranger-killed-by-poachers/>

Humphreys, Jasper and M.L.R. Smith. 2014. 'The "Rhinofication" of South African Security.' *International Affairs*, Vol. 90, No. 4, pp. 795–818.

Independent (United Kingdom). 2013. '10 Things You Need to Know about Elephant Poaching.' 4 December.
<http://www.independent.co.uk/voices/iv-drip/10-things-you-need-to-know-about-elephant-poaching-8983276.html>

ICG (International Crisis Group). 2014. *The Central African Crisis: From Predation to Stabilization*. Africa Report No. 219. Brussels: ICG. 17 June.
<http://www.crisisgroup.org/~/media/Files/africa/central-africa/central-african-republic/219-la-crise-centrafricaine-de-la-predation-a-la-stabilisation-english.pdf>

INTERPOL (International Criminal Police Organization). 2014. 'Elephant Poaching and Ivory Trafficking in East Africa: Assessment for an Effective Law Enforcement Response.' Lyon: INTERPOL. February. <http://www.interpol.int/News-and-media/News/2014/N2014-029>

IRIN. 2013. 'Conflict Cuts off Civilians in DRC's Katanga.' 2 May.
<http://www.irinnews.org/report/97963/conflict-cuts-off-civilians-in-drc-s-katanga>

IUCN (International Union for Conservation of Nature). 2012. 'Facts and Fiction: The Rhino Horn Trade.' 16 November.
<http://cmsdata.iucn.org/downloads/factsheet_rhino_poaching.pdf>

—. n.d. 'Loxodonta Africana: African Elephant.' <http://maps.iucnredlist.org/map.html?id=12392>

Jopson, Tyson. 2013. 'Tanzania's Controversial Anti-poaching Campaign to Continue.' *Getaway*. 12 November.
<http://www.getaway.co.za/travel-news/tanzania-operation-terminate-anti-poaching-drive/>

Jorgic, Drazen. 2014. 'Four Rangers Killed in Kenya's Worst Poaching Attack in Years.' Reuters. 11 July.
<http://in.reuters.com/article/2014/07/11/kenya-rhinos-idINKBN0FG1HD20140711>

Kahumbu, Paula, et al. 2014. *Scoping Study on the Prosecution of Wildlife Related Crimes in Kenya Courts: January 2008 to June 2013*. Wildlifedirect.org.
<http://baraza.wildlifedirect.org/files/2014/01/WILDLIFEDIRECT-court-study-26.1.14.pdf>

Kakala, Taylor Toeka. 2013. 'Soldiers Trade in Illegal Ivory.' Inter Press Service. 25 July.
<http://www.ipsnews.net/2013/07/soldiers-trade-in-illegal-ivory/>

Kalron, Nir. 2013. 'Neo-conservation: A Commentary on the Future Security of Africa's Wildlife.' *African Security Review*, Vol. 22, No. 3. September, pp. 160–66. <http://www.tandfonline.com/doi/pdf/10.1080/10246029.2013.823795>

Kenya. 2013. 'The Wildlife Conservation and Management Act.' No. 47 of 2013. 27 December.
<http://www.kws.org/export/sites/kws/info/publications/acts_policies/The_wildlife_conservation_and_management_bill_2013.pdf>

Kiishweko, Orton. 2013. 'Tanzania: 952 Arrested in "Tokomeza" Operation.' AllAfrica.com. 31 October. <http://allafrica.com/stories/201310310131.html>

King, Juliet. 2011. 'Northern Rangelands Trust Report 2010: Development of a Joint Conservancy Anti-poaching Team to Protect African Elephants in Northern Kenya.' March. <http://www.elephantconservation.org/northern-rangelands-trust-report-2010/>

Knapp, Eli. 2012. 'Why Poaching Pays: A Summary of Risks and Benefits Illegal Hunters Face in Western Serengeti, Tanzania.' *Journal of Tropical Conservation Science*, Vol. 5, No. 4, pp. 434–45.
<http://tropicalconservationscience.mongabay.com/content/v5/TCS-2012_Vol_5%284%29_434-445_Knapp.pdf>

Koross, Kibiwott. 2013. 'Untouchable Lords of Poaching in Samburu.' *Star* (Kenya). 29 January.
<http://www.the-star.co.ke/news/article-104884/untouchable-lords-poaching-samburu>

KWS (Kenya Wildlife Service). 2014. 'Kenya Airways, Born Free back War against Rhino Poaching.' 5 December.
<http://www.kws.org/info/news/2014/5dec2014kenyaairways.html>

Library of Congress (United States). 2014. 'Wildlife Trafficking and Poaching: South Africa.' Last updated 11 March.
<http://www.loc.gov/law/help/wildlife-poaching/southafrica.php>

Lombard, Louisa. 2012. 'Dying for Ivory.' *The New York Times*. 20 September.
<http://www.nytimes.com/2012/09/21/opinion/elephants-dying-for-ivory.html?_r=0>

Lunstrum, Elizabeth. 2014. 'Green Militarization: Anti-poaching Efforts and the Spatial Contours of Kruger National Park.' *Annals of the Association of American Geographers*, Vol. 104, No. 4, pp. 816–32. <http://www.tandfonline.com/doi/abs/10.1080/00045608.2014.912545#.VCQjC1OAqD>

MacLeod, Fiona and Estacio Valoi. 2013. 'Rhino Trafficking: Down the Rabbit Hole at the Kruger Park.' *Daily Maverick*. 8 July.
<http://www.dailymaverick.co.za/article/2013-07-08-rhino-trafficking-down-the-rabbit-hole-at-the-kruger-park/#.VDJ4zFOAApDx>

Makoye, Kizito. 2014. 'Anti-poaching Operation Spreads Terror in Tanzania.' Inter Press Service. 6 January.
<http://www.ipsnews.net/2014/01/anti-poaching-operation-spread-terror-tanzania/>

Martin, Esmond and Lucy Vigne. 2010. 'Consumer Demand for Ivory in Japan Declines.' *Pachyderm Journal*, No. 47, January–June.
<http://pachydermjournal.org/index.php/pachy/article/viewFile/173/109>

—. 2011. 'The Ivory Dynasty: A Report on the Soaring Demand for Elephant and Mammoth Ivory in Southern China.' London: Elephant Family, Aspinall Foundation, and Columbus Zoo and Aquarium. <http://www.elephantfamily.org/uploads/copy/EF_Ivory_Report_2011_web.pdf>

McAdams, John. 2014. 'The Five Best Cartridges for Hunting Africa.' 17 August.
<http://www.wideopenspaces.com/5-best-cartridges-for-hunting-africa/>

Messer, Kent. 2000. 'The Poacher's Dilemma: The Economics of Poaching and Enforcement.' *Endangered Species Update*, Vol. 17, No. 3.
<http://www.leedr.cornell.edu/kdm22/docs/Poacher%27s%20Dilemma%20-%20Messer%202000.pdf>

—. 2010. 'Protecting Endangered Species: When Are Shoot-on-Sight Policies the Only Viable Option to Stop Poaching?' *Ecological Economics*, Vol. 69, No. 12, pp. 2334–40.

Milliken, Tom and Jo Shaw. 2012. 'The South Africa–Viet Nam Rhino Horn Trade Nexus: A Deadly Combination of Institutional Lapses, Corrupt Wildlife Industry Professionals and Asian Crime Syndicates.' Johannesburg: TRAFFIC.
<http://www.traffic.org/species-reports/traffic_species_mammals66.pdf>

Mwadime, Raphael. 2014. 'Kenya: Magic Can Catch Poachers—Elders.' *Star* (Kenya). 16 August. <http://allafrica.com/stories/201408180714.html>

Mwai, Collins. 2014. 'Disarm Unconditionally, Regional Leaders Tell FDLR.' *New Times* (Rwanda). 24 September.
<http://www.newtimes.co.rw/section/article/2014-09-24/181239/>

Ng'wanakilala, Fumbuka. 2013. 'Tanzanian President Sacks Four Ministers over Poaching Abuses.' Reuters. 21 December.
<http://www.reuters.com/article/2013/12/21/us-tanzania-politics-idUSBRE9BK04X20131221>

NRT (Northern Rangelands Trust). 2009. 'Planned Grazing to Reduce Conflict.' 18 April.
<http://northernrangelands.wildlifedirect.org/2009/04/18/planned-grazing-to-reduce-conflict/>

Ocowun, Chris. 2010. 'Nebbi Chiefs Disarm Poachers.' *New Vision* (Uganda). 22 August.
<http://www.newvision.co.ug/news/612717-Via-Kalikwani-held-in-South-Africa.html>

ODI (Overseas Development Institute). 2011. *Sustainable Natural Resource Management in Namibia: Successful Community-based Wildlife Conservation.* London: ODI. <http://www.developmentprogress.org/sites/developmentprogress.org/files/namibia_report_-_master_0.pdf>

Ogada, Darcy. 2014. 'Poisons and Poaching: A Deadly Mix Requiring Urgent Action.' National Geographic. 17 August.
<http://newswatch.nationalgeographic.com/2014/08/17/poisons-and-poaching-a-deadly-mix-requiring-urgent-action/>

Okello, John, et al. 2008. 'Population Genetic Structure of Savannah Elephants in Kenya: Conservation and Management Implications.' *Journal of Heredity*, Vol. 99, No. 5, pp. 443–52.

Onsarigo, Calvin. 2014. 'Interpol Arrests Poaching Kingpin in Tanzania.' *Star* (Kenya). 24 December.
<http://www.the-star.co.ke/news/interpol-arrests-poaching-kingpin-tanzania>

Ontebetse, Khonani. 2013. '"Execute Elephant Poachers on the Spot"—Khama.' *Sunday Standard* (Botswana). 9 December.
<http://www.sundaystandard.info/article.php?NewsID=18626&GroupID=1>

PAMS Foundation. n.d. 'Ruvuma Elephant Project.' <http://pamsfoundation.org/our-initiatives/ruvuma-elephant-project/>

Pflanz, Mike. 2014. 'The Ivory Police.' *Christian Science Monitor.* 2 March. <http://www.csmonitor.com/World/Africa/2014/0302/The-ivory-police>

Poffenberger, Michael. 2013. '5 Questions on Kony and Poaching.' Inside the LRA blog. 29 July.
<http://www.theresolve.org/2013/07/5-questions-on-kony-and-poaching/>

RFI (Radio France International). 2014. 'RDC: réoganisation des FARDC et retour en grâce du général Amisi.' 20 September.
<http://www.rfi.fr/afrique/20140920-rdc-fardc-reorganisation-general-amisi-kifwa/>

Ramsey, Scott. 2014. 'Interview with Kruger's Anti-poaching Chief.' *Africa Geographic.* 19 August.
<http://africageographic.com/blog/interview-with-krugers-anti-poaching-chief/>

Resolve, The, Enough Project, and Invisible Children. 2014. 'Kony to LRA: Bring Me Ivory, Gold, and Diamonds.' Press release. 19 November.
<http://www.enoughproject.org/files/publications/LRA-Trafficking-Presser-Enough-TheResolve-InvisibleChildren-Nov2014.pdf>

Roe, Dilys, et al. 2014. 'The Elephant in the Room: Sustainable Use in the Illegal Wildlife Trade Debate.' Briefing. London: International Institute for Environment and Development. February. <http://pubs.iied.org/pdfs/17205IIED.pdf>

Ronan, Paul. 2014. 'Crisis Tracker: Is Kony Using the Chaos in CAR as a Lifeline?' Inside the LRA blog. 11 February.
<http://www.theresolve.org/2014/02/crisis-tracker-is-kony-using-the-chaos-in-car-as-a-lifeline/>

Rookmaaker, L.C. and Pierre-Olivier Antoine. 2013. 'White Rhino Range Map.' Cambridge, UK: Rhino Resource Center. <http://www.rhinoresourcecenter.com/images/White-Rhino-Range-Map_i1362661062.php?type=search&keywords=map&sort_order=desc&sort_key=score>

Rooney, Richard. 2014. 'King Lets Game Rangers Shoot-to-Kill.' Swazi Media Commentary Blog. 20 January.
<http://swazimedia.blogspot.ch/2014/01/king-lets-game-rangers-shoot-to-kill.html>

Ross, Philip, 2013. 'Kenya to Microchip All Rhinos, Chips Will Provide "Crucial Evidence" to Prosecute Poachers.' *International Business Times.* 16 October.
<http://www.ibtimes.com/kenya-microchip-all-rhinos-chips-will-provide-crucial-evidence-prosecute-poachers-1428774>

San Diego Zoo and International Rhino Foundation. n.d. 'Black Rhino: Historic & Present Distribution.'
<http://library.sandiegozoo.org/factsheets/black_rhino/map.htm>

Saramba, Peter. 2013. 'Gov't Issues Shoot-to-Kill Order in Attempt to Tackle Poaching.' *Citizen* (Tanzania). 5 October.

<http://www.thecitizen.co.tz/News/Govt-issues-shoot-to-kill-order-in-attempt-to-tackle-poaching/-/1840392/2019478/-/p9b30/-/index.html>

Save the Elephants. 2014. 'Price of Ivory in China Triples in Four Years, with Grave Implications for Elephants in Africa.' Press release. 2 July.

<http://savetheelephants.org/press-releases/price-of-ivory-in-china-triples-in-four-years-with-grave-implications-for-elephants-in-africa/>

Save the Rhino. n.d. 'Poaching: The Statistics.' Accessed January 2015. <http://www.savetherhino.org/rhino_info/poaching_statistics>

Shetler, Jan Bender. 2007. *Imagining Serengeti: A History of Landscape Memory in Tanzania from Earliest Times to the Present*. Ohio: Ohio University Press.

Stiles, Daniel. 2011. *Elephant Meat Trade in Central Africa: Summary Report*. Gland, Switzerland: International Union for Conservation of Nature.

<https://portals.iucn.org/library/efiles/documents/ssc-op-045.pdf>

—. 2013. 'The Ivory War: Militarized Tactics Won't Work.' *Conversation*. 9 November.

<http://theconversation.com/the-ivory-war-militarised-tactics-wont-work-19164>

SRP (Stop Rhino Poaching). n.d. 'Rhino Poaching and Population Statistics.' Accessed January 2015. <http://www.stoprhinopoaching.com/statistics.aspx>

Sunday Standard (Botswana). 2013. 'Inside Botswana's Cocktail of Poaching Militias, Security Moles and Chinese Handlers.' 14 February.

<http://www.sundaystandard.info/article.php?NewsID=16163&GroupID=1>

Tentena, Paul. 2014. 'Shoot Poachers on Sight—Museveni.' *East African Business Week*. 3 March.

<http://www.busiweek.com/index1.php?Ctp=2&pI=678&pLv=3&srI=%2057&spI=&cI=1>

Thornycroft, Peta and Aislinn Laing. 2013. 'Poachers Kill 300 Zimbabwe Elephants with Cyanide.' *Telegraph* (United Kingdom). 20 October.

<http://www.telegraph.co.uk/news/worldnews/africaandindianocean/zimbabwe/10390634/Poachers-kill-300-Zimbabwe-elephants-with-cyanide.html>

Thwala, Phumelele. 2004. 'Country Study: Botswana.' In Chandré Gould and Guy Lamb, eds. *Hide and Seek: Taking Account of Small Arms in Southern Africa*. Pretoria: Institute for Security Studies, pp. 22–46.

Titeca, Kristof. 2013. 'Ivory beyond the LRA: Why a Broader Focus Is Needed in Studying Poaching.' *African Arguments*. 17 September.

<http://africanarguments.org/2013/09/17/ivory-beyond-the-lra-why-a-broader-focus-is-needed-in-studying-poaching-by-kristof-titeca/>

Torchia, Christopher. 2014. 'South Africa Rhino Poacher Jailed for 77 Years.' *Independent* (United Kingdom). 23 July.

<http://www.independent.co.uk/news/world/africa/south-africa-rhino-poacher-jailed-for-77-years-9623177.html>

Tsavo Trust. 2014. 'Kwaheri Satao: Saying Goodbye to a Tsavo Icon.' 13 June.

<http://tsavotrust.org/news/2014/6/13/kwaheri-satao-saying-goodbye-to-a-tsavo-icon>

UK (United Kingdom). 2014. 'London Conference on the Illegal Wildlife Trade 2014.'

<https://www.gov.uk/government/topical-events/illegal-wildlife-trade-2014/about>

UNEP (United Nations Environment Programme). 2007. 'Sudan: Post-conflict Environmental Assessment.' Nairobi: UNEP. June.

<http://postconflict.unep.ch/publications/UNEP_Sudan.pdf>

— et al. 2013. 'Elephants in the Dust—The African Elephant Crisis: A Rapid Response Assessment.' Arendal, Norway: UNEP et al.

<http://www.unep.org/pdf/RRAivory_draft7.pdf>

UN (United Nations) News Service. 2014. 'UN-backed Treaty, INTERPOL Operation Targets "Most Wanted" Environmental Fugitives.' 17 November.

<http://www.un.org/apps/news/story.asp?NewsID=49361#.VHxK5YeLac8>

UNODC (United Nations Office on Drugs and Crime). 2013. *Transnational Organized Crime in Eastern Africa: A Threat Assessment*. Vienna: UNODC.

<http://www.unodc.org/documents/data-and-analysis/Studies/TOC_East_Africa_2013.pdf>

UNSC (United Nations Security Council). 2012. 'Letter Dated 12 October 2012 from the Group of Experts on the Democratic Republic of Congo Addressed to the Chair of the Security Council Committee Established Pursuant to Resolution 1533 (2004) Concerning the Democratic Republic of Congo.' S/2012/843 of 15 November.

<http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2012_843.pdf>

—. 2013a. *Report of the Secretary-General on the Activities of the United Nations Regional Office for Central Africa and on the Lord's Resistance Army-affected Areas*. S/2013/671 of 14 November. <http://www.un.org/en/ga/search/view_doc.asp?symbol=S/2013/671>

—. 2013b. *Report of the Secretary-General on the Activities of the United Nations Regional Office for Central Africa and on the Lord's Resistance Army-affected Areas*. S/2013/297 of 20 May. <http://www.un.org/en/ga/search/view_doc.asp?symbol=S/2013/297>

—. 2014a. Resolution 2134. S/RES/2134 of 28 January. <http://www.un.org/ga/search/view_doc.asp?symbol=S/RES/2134%20%282014%29>

—. 2014b. 'Final Report of the Group of Experts on the Democratic Republic of the Congo.' S/2014/42 of 23 January.

<http://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/s_2014_42.pdf>

—. 2014c. Resolution 2136. S/RES/2136 of 30 January. <http://www.un.org/en/ga/search/view_doc.asp?symbol=S/RES/2136(2014)&referer=http://www.un.org/en/sc/documents/resolutions/2014.shtml&Lang=E>

Vira, Varun and Thomas Ewing. 2014. 'Ivory's Curse: The Militarization and Professionalization of Poaching in Africa.' Born Free USA and C4ADS. April.
<http://www.all-creatures.org/articles/ar-Ivorys-Curse-2014.pdf>

—, and Jackson Miller. 2014. *Out of Africa: Mapping the Global Trade in Illicit Elephant Ivory.* Hong Kong: C4ADS and Born Free.
<http://www.c4ads.org/#!project-highlights/c21l1>

Wasser, Samuel, et al. 2008. 'Combatting the Illegal Trade in African Ivory with DNA Forensics.' *Conservation Biology*, Vol. 22, No. 4, pp. 1065–71.
<http://stephenslab.uchicago.edu/MSpapers/Wasser2008.pdf>

WESSA (Wildlife and Environment Society of South Africa). 2014. 'Current Rhino Poaching Stats.' 23 November.
<http://wessa.org.za/get-involved/rhino-initiative/current-rhino-poaching-stats.htm>

Wittemyer, George, et al. 2014. 'Illegal Killing for Ivory Drives Global Decline in African Elephants.' *Proceedings of the National Academy of Sciences,* Vol. 111, No. 36. 9 September. <www.pnas.org/cgi/doi/10.1073/pnas.1403984111>

WWF (World Wildlife Fund) International et al. 2014. *Living Planet Report 2014: Species and Spaces, People and Places.*
<http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/>

WWF (World Wildlife Fund) New Zealand. 2013. 'Poachers Kill at Least 89 Elephants in Chad.' 21 March.
<http://www.wwf.org.nz/?10521/Poachers-kill-at-least-89-elephants-in-Chad>