



## The Illegal Trade in Wildlife

*An Overview*

### The Illicit Trade

On the outskirts of the remote town of Pemba in far northern Mozambique, we stopped at a small roadside curio shop offering an array of items for tourists. In plain view on the display tables were numerous ivory bracelets and carvings of animals, people, and religious figures. Out of curiosity we asked the owner what other ivory items he had available. He hesitated briefly to assess our motives and then, believing we might be free-spending tourists, left for the storeroom and soon returned with a raw elephant tusk, dirty brown in color and about thirty inches long. Even knowing we were foreign visitors, he offered to sell it to us “as is” for about \$70 USD. We declined and, while leaving, spotted two young men working in an outdoor area adjacent the shop. One man was using basic hand tools to carve an ivory tusk into an ornate and finely detailed object of art to be offered to tourists. I saw this scene repeatedly during my research work in East Africa and southern Africa over fourteen years. Ivory of questionable origins and illegally harvested endangered plants, mammals, reptiles, birds, and even insects were easily found for sale in both cities and rural areas. Little or no effort was made to conceal these natural resources from interested buyers. If such items were not visible, simply asking the proprietor of a shop about them would result in numerous illegal items being offered for sale. Seeing such items, foreign tourists might view them as legal to buy and transport home. Local police were often reluctant to confiscate the items, knowing they would just

be replaced later by more poaching. This was just one part of the illegal global trade in wildlife.

Nearly any protected species that can be used for food, clothing, decorative objects, medicine, a fuel source, building material, or a collection specimen is subject to being poached and traded in this illegal market. A comprehensive description of the multi-billion-dollar global illegal trade in wildlife would require many volumes, but the goal of this work is to provide the reader with a sound overview of the trade, including a description of some of the main species being exploited; the participants and their motivations and operations; explanations of participants' behavior; legislative and law enforcement efforts to control and prevent wildlife poaching and trafficking; and contemporary conservation initiatives. This work draws considerably from my research in East Africa and southern Africa. However, I also provide numerous examples of wildlife crimes in other regions of the world to illustrate the extent of the problem and allow for contrasts and comparisons. The objective of this first chapter is to examine the structure and operation of the illegal trade in wildlife.

Wildlife is illegally harvested either because it cannot be obtained legitimately or because consumers cannot afford to purchase the products. The chapter begins by examining the nature and extent of the illegal trade with a primary though not exclusive focus on Africa, the locations of many species that are exploited in this illegal market and the area of my extensive research. Next is a description of some of the major species that are illegally taken from the wild and sold or consumed. It is not possible in this book to list every species, so I examine instead a select wildlife whose survival is imperiled due to heavy pressure from poachers to meet consumer demand. While many illegally harvested products from endangered and threatened wildlife are consumed in their source countries, others are smuggled overseas to consumer nations, where they are prized as medicines or decorative items. Common among these are elephant ivory, rhinoceros horn, tiger pelts and body parts, and marine, bird, and reptile species. The chapter concludes with a description of the organization and functioning of the illegal transnational markets that move wildlife products from their source countries to the end user or consumer markets.

### **Defining the Trade in Wildlife: Legal and Illegal Components**

Natural resources, which include flora and fauna, represent an important national asset for a country as marketable commodities and as part of its national heritage and identity (Warchol and Kapla 2012; World Bank 2013).

The transnational illicit wildlife trade is an extensive and highly lucrative type of natural resource offense. The species exploited in this trade include rare and endangered mammals, marine life, reptiles, insects, birds, and timber and other plants (TRAFFIC 2008). The trade is driven by demand for products that cannot be obtained legally or at low cost, combined with weak levels of enforcement that make apprehension of offenders unlikely (Albanese 2011). While many researchers and the media have focused considerable attention on the plight of rhinoceroses, elephants, and tigers, whose exploitation has accelerated dramatically in recent years (Lo and Edwards 2015; Orenstein 2013; Rademeyer 2012; Swails and Magnay 2014), these species represent a small fraction of the total number of plants and animals illegally taken or killed and trafficked, both in their source countries and internationally. The trade typically includes millions of birds and reptiles shipped live to supply pet dealers with rare species; smaller mammals, both common and endangered, hunted as a source of bushmeat to meet the demand for protein; timber species harvested for home and commercial furnishings; plants collected for use in traditional medicines and in decorative landscaping; and marine life, including shark fin, beluga caviar, and abalone, harvested for use in exotic cuisine (Warchol, Zupan, and Clack 2003; TRAFFIC 2016c).

Participants in the illegal trade include individual actors and informal and formal criminal networks (Albanese 2011; Knecht 2006; Warchol and Johnson 2009) with various motivations. Furthermore, military and insurgency forces exploiting destabilized conflict zones and more recently terrorist groups in search of revenue sources have long been documented as involved in the illegal wildlife trade (Orenstein 2013; Venter 2003). Though some poaching is for individual subsistence, other offenders are motivated by the economic value of the illegal global trade in wildlife. While it is very difficult to put a precise value on an illegal enterprise, the illicit trade is clearly a multi-billion-dollar international business (U.S. Fish and Wildlife Service [hereafter USFWS] 2016), estimated at \$50 to 150 billion annually if illegal fishing and timber harvesting are included (United Nations Environment Programme 2014). This offense ranks among the top three or four types of transnational crime, behind narcotics and weapons trafficking (Lo and Edwards 2015; TRAFFIC 2016a). The profits are strong motivators for the various actors in this trade—that is, poacher, middleman, and retailer. A poacher can earn a small profit, but the value of wildlife increases as it moves from middleman to retailer (Broad, Mulliken, and Roe 2005; Warchol, Zupan, and Clack 2003).

Beyond the peril to the survival of the species, the illegal trade represents a threat to the financial stability and potentially the security of nations dependent on natural resources for their economic growth. This is certainly the



Raw elephant tusk in curio shop near Pemba, Mozambique, offered to the author for about \$70 USD. The legality of its origins is unknown.

case in the developing world, where many nations rely on their wildlife as a major part of their economy. These resources include timber, other plants, marine life, birds, and mammals that are used for building materials, food, medicines, decorations, clothing, and tourist attractions. The significance of this resource is illustrated by the value of the *legal* global trade in wildlife—live animals and plants, as well as wildlife products—estimated at \$323 billion USD (TRAFFIC 2016a). Demand for wildlife generally increases with the growth of human populations, causing additional pressure on these resources. However, as with other types of valuable products, this resource is also illegally exploited as part of the transnational trade in wildlife, an extensive and highly lucrative type of natural resource offense.

Countries dependent on eco-tourism revenue (Chamley 2005; Frost and Bond 2007) or on marketable commodities for the domestic and international trade, such as timber and marine life (World Bank 2013), are seriously affected by natural resource crimes. In developing nations such as Kenya, Zimbabwe, or Botswana, environmental tourism constitutes a significant part of the economy (Donovan 2013). Game reserves, both public and private, attract international and domestic visitors for photo safaris, employ local residents, and generate tax revenue. Species decline due to illegal hunting, and incidents of tourists on safari spotting animal carcasses attributed to poaching and news reports of violent encounters between field rangers and

poachers in the game reserves diminish the lucrative eco-tourism industry. One part of wildlife tourism, the trophy hunting industry, provides an estimated \$120 million USD annually in South Africa (Statistics South Africa 2015) and makes up nearly 10 percent of total GDP in Tanzania and Namibia (Donovan 2013). Finally, cross-border military and insurgency poaching operations represent a threat to several East African nations targeted for their wildlife resources (National Public Radio 2003; Vira and Ewing 2014; Warhol, Zupan, and Clack 2003).

### **The Major Species under Threat**

The illegal trade in wildlife involves the full range of protected flora and fauna species, both common and endangered. This section describes the different species that are trafficked in the illegal wildlife trade, primarily focusing on Africa but with references to regions in Asia, Europe, and South America. Illegal timber harvesting and commercial fishing are not included in this work. While these two aspects of the illegal trade constitute the largest and most lucrative part due to the sheer volume of product, their harvesting often involves nation-states and/or corporations exploiting the resource via large-scale illicit commercial fishing and timbering operations. The focus here is rather directed toward the activities of individuals, informal networks, and criminal syndicates that target a range of animals and plants for personal use and profit.

#### *Elephant and Rhinoceros*

African elephants are unique among the various species of animals, having been used by humans for decoration, warfare, entertainment, and food for thousands of years (USFWS 2001). Around 3000 BC, their habitat included the whole of Africa, from the southern Cape to as far north as Egypt, where they were both captured for domestication and hunted for their ivory. The appreciation of and resulting demand for ivory dates back to at least 1000 BC. African elephants were also used for military purposes, most notably by Alexander the Great and the Carthaginian general Hannibal. Around 45 BC, the Romans commonly used elephants in addition to rhinoceros and other African animals in ceremonies and war games for popular entertainment. By about AD 500, the once large populations of North African elephants were greatly reduced in number by both overhunting and the encroachment of the Sahara Desert (Meredith 2003).

With the development of the slave trading routes into East Africa by Arabs and Persians (one center of which was the island of Zanzibar, off the coast of Tanzania), elephant hunting for ivory steadily increased to meet the





Elephants on an afternoon walk in Chobe National Park, Botswana.

demand, primarily in India and China though not the Middle East. Starting in the 1400s and lasting for centuries, pressure on elephant populations slowly increased as European explorers opened up more of Africa and exploited its natural resources, with perhaps the most notorious example being Belgium's King Leopold in the Congo Free State in the late 1800s. While indigenous Africans mainly hunted elephants as a source of food, Europeans desired the ivory as a decorative object.

Sometimes referred to as *white gold*, an elephant tusk is essentially a long dentine tooth, though only the tip has enamel. The tusk may be partly covered with a type of light brown bark, which is removed to facilitate carving. The ivory varies in hardness, color, and translucency, depending on the species of elephant (Jackson 2003). Ivory has been worked into a variety of objects, including ornate religious carvings, bracelets, piano keys, billiard balls, knife handles, combs, statues, table legs, ink pens, and bird cages, just to name a few. A common use of ivory in modern-day Japan—the largest market for ivory for most of the twentieth century until the expansion of China's economy—is for the manufacture of *hankos* (Orenstein 2013). A *hanko* is a small rectangular ivory block or cylinder, the bottom of which contains a person's or company's individual seal or signature (Jackson 2003).

Ivory became so popular in the 1800s that today's writers refer to it as the "plastic of the era" (Meredith 2003, 107). As demand steadily increased into the twentieth century, there was a corresponding decline in elephant popula-

tions. The amount of ivory exported from Africa reached a peak in 1914 at 1,000 metric tons, potentially representing the killing of as many as 50,000 elephants. Although ivory exports rapidly declined during and after World War I, they subsequently increased slowly but steadily, reaching nearly 28 metric tons in 1950, 485 metric tons in 1964, and a staggering 1,263 metric tons in 1973, when ivory attained the status of an investment commodity under unstable global economic conditions (Jackson 2003). Retail ivory prices climbed from \$7.50 per kilogram in 1970 to \$78 per kg in 1978, then to \$150 per kg in Africa in 1989 (USFWS 2001). With a single elephant yielding about 10 kg of ivory, each one killed provided about \$1,500 in the consumer market (Vira and Ewing 2014).

As ivory increased in value during the economic recessions of those years, the final chapter in the colonial period of Africa was written as the European powers willingly or unwillingly gave up control of their colonial holdings. While some transitions were peaceful, others involved violent liberation struggles sometimes defined by Cold War politics, bringing political instability not only to the subject country but often also to its neighbors. Warring factions, now well armed with military weapons provided by communist-bloc (especially China) and pro-Western nations, soon realized that natural resources, including ivory, could be used to fund their cause and enrich corrupt officials. These factors contributed to large increases in poaching well into the late 1980s as ivory was used in part to finance the conflicts in Africa. What made this period especially devastating to elephant populations was the capacity of military units to poach large numbers of animals. Unlike individuals or small gangs of poachers, military units had the weaponry and transportation capability to take and move large quantities of ivory from the bush to ports for export to consumer nations (Vira and Ewing 2014). This tactic would define the industrial-scale poaching of the postcolonial era.

African elephant populations were estimated to be at about 1.3 million in 1979 and already in decline. By 1989, approximately 700,000 of them had been killed by poachers (Jackson 2003). Certain countries were hit exceptionally hard, while others, such as South Africa, Botswana, and Zimbabwe, were spared the brunt of massive poaching. Kenya's Tsavo National Park alone lost half of its population of 30,000 elephants in two years, while Uganda's total population fell from 60,000 to 6,000 by the mid-1970s (Meredith 2003). Between 1981 and 1987, Zambia's elephant herd of 160,000 was reduced by poachers to 43,000. Tour operators and professional hunters often commented on hearing constant volleys of automatic weapons fire in Zambia's Luangwa Valley from poachers operating with near impunity. Suffering a similar fate in the same time period, Mozambique's elephant population was reduced to about 18,600 from an estimated 54,800 in 1981 by poaching (Jackson 2003). Forest elephants of Central Africa tended to fare better, since

they were harder to locate than the savannah elephants found farther south. The situation would finally be checked with the 1989 decision to place all African elephants on Appendix I of the 1975 Convention on International Trade in Endangered Species (CITES), banning the global trade in ivory and elephant products (Thornton 1997).

The CITES agreement, which currently has 182 member nations, including the United States, was designed to regulate the trade in wildlife. In Appendix I, the member nations (known as Parties) agree to enforce its provisions by banning international commercial trade of plant and animal species threatened with extinction. The Parties via Appendix II also agree to regulate the trade via the use of CITES permits for other species that may become extinct if their trade is not controlled. Finally, Appendix III lists the species that are subject to regulation in a particular member nation and for which assistance is needed by other Parties to control cross-border trafficking (CITES 2016a, 2016b). Elephants were listed in 1989 as threatened with extinction, and the commercial trade in elephants was prohibited. It was contended by the U.S. Fish and Wildlife Service that had this listing not been done, “the African elephant would have been annihilated throughout most of its range by the end of the 20th century” (2001, 5).

Related to the CITES up-listing strategy was a public relations effort to develop an anti-ivory sentiment among consumers to further decrease demand and reduce prices. This included the distribution of graphic images of slaughtered elephants, echoing the anti-fur campaigns of the 1990s in the United States. One of the most dramatic public relations events was carried out by Richard Leakey, director of the Kenya Wildlife Service, and Kenyan president Daniel Moi when they publicly burned a massive pile of more than two thousand elephant tusks in July 1989. Leakey and Morell (2001) estimated that more than 850 million people saw the event on television or in the print media and were now aware of the plight of African elephants. Complementing these efforts were successful management practices and aggressive anti-poaching efforts, including Kenya’s “shoot on sight” directive against armed poachers. Combined, these resulted in population increases in certain East African and southern African nations to the point where some have argued that elephants should be down-listed to a CITES II species. However, the situation is grim in other African countries, where poaching is common for both ivory and wild game meat (USFWS 2001).

Although the 1990s marked a period of recovery for elephants in Africa, two developments occurred near the end of the decade that would contribute to a resurgence in poaching. In June 1997, at the CITES conference in Harare, a proposal was made by Zimbabwe, Namibia, and Botswana, which had been spared the massive poaching of the previous decades, to down-list elephants to a CITES II category, thereby allowing a renewed trade in ivory



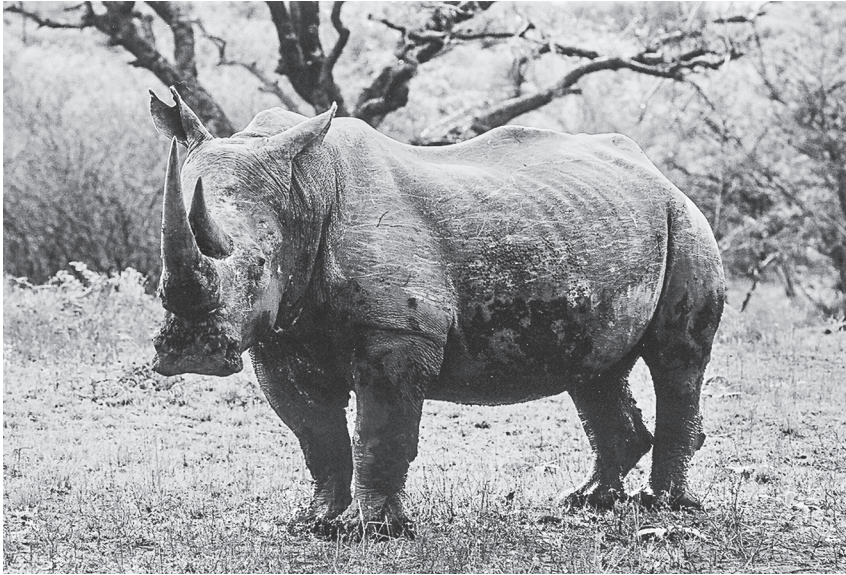
that would include a one-time sale of ivory stocks to Japan. Concerns that the sale would foster poaching by stimulating demand for ivory resulted in the establishment of new safeguards to protect existing elephant populations and the inauguration of the MIKE program (Monitoring the Illegal Killing of Elephants) to monitor the trade in ivory. However, the Environmental Investigation Agency's early analysis found these programs to be weak and ineffective at attaining their goals. It argued that if the sale was approved, which it eventually was, the new monitoring system would be unable to accurately determine if there was an increase in poaching linked to the ivory trade (EIA 2000). The down-listing of elephants and the ivory sale served to stimulate demand for additional ivory in the retail markets of China and Japan. The other development during this time was the rapid expansion of China's middle class as China opened its markets to foreign investment and new trade deals. As a consequence, consumer interest increased in luxury and status items, including ivory.

The EIA's predictions were correct: elephant poaching began to steadily increase in most of the elephant range states. Corresponding to more poaching were increases in ivory seizures by customs officials in both elephant range states and consumer nations. By the late 1990s, evidence of significantly increased poaching was uncovered in Zimbabwe, Zambia, and Tanzania. Renewed poaching would soon be found in other African states. In 2002, Tanzanian authorities seized a shipment of 1,255 ivory pieces in the capital of Dar es Salaam; additional seizures followed, also in Tanzania. The Kenya Wildlife Service concluded that its severe loss of elephants due to poaching was a by-product of lifting the ban on ivory. Tsavo National Park, located in southern Kenya, lost nearly 90 percent of its elephant population in 1980s, experienced a recovery during the ban, and then saw its progress reversed after the down-listing (EIA 2000). Poaching was not limited to East Africa, nor was it being done just by government military units in destabilized nations, as it increased in both Chad and Congo (Fay 2011). The latter had a population of more than 11,000 elephants in the 1980s but reported fewer than 1,800 remaining animals by the early 2000s. Improvements in transportation, communication, and banking infrastructure due in part to globalization facilitated the growth of transnational crime enterprises, including wildlife traffickers (Vira and Ewing 2014). These new syndicates, combined with insurgency units and, recently, terrorist groups, fostered the second wave of elephant poaching in Africa. News reports indicated that more sophisticated poaching operations were now involved, employing modern military weapons such as rocket-propelled grenades, helicopters, and automatic rifles to bring down entire herds of elephants. The guerrilla group known as the Lord's Resistance Army, under Joseph Kony, sought out ivory as a source of funding for its military operations. Reports noted that

nearly 100 elephants were being killed per day in Central Africa, totaling an estimated 35,000 lost in 2012. The result was a 50 percent decline in the population over a thirty-year period. Poaching has also been linked to the insurgencies in neighboring Sudan and Uganda, where ivory was sold by combatants to purchase weaponry. In Chad and Cameroon in north-central Africa, elephant massacres of hundreds of animals were being reported in 2013 and attributed to groups armed with military weapons (Fay 2011; Vira and Ewing 2014).

The rhinoceros has less of a storied relationship with humans than the elephant. Two species exist in Africa: the smaller black rhino and larger white. There are three Asian species—the Javan, Sumatran, and greater one-horned—all of which are endangered (World Wildlife Fund [hereafter WWF] 2016a, 2016b). Initially viewed as pests by farmers or as trophies for hunters, the once large populations of rhinoceros were first dramatically reduced in the nineteenth century. The World Wildlife Fund (2016a) reported that as many as one million white and black rhino may have existed in the mid-1800s. The population of black rhino declined due to excessive hunting to an estimated 65,000 in 1970. The southern subspecies of Africa's white rhino fared even worse with only 50–200 surviving by the first half of the 1970s (USFWS 2004). By the early 1970s, rhino were being killed for their horns, which would bring both species close to extinction. Complicating efforts at conservation was the nature of the trade in rhino horn and its application by consumers.

Unlike ivory, rhinoceros horn was not widely used as a decorative object—with one exception. The highly polished horns were used to produce handles for ceremonial daggers in the Middle East, notably in Yemen. However, with the advent of high-quality synthetic materials, this application for the horns is not a significant current threat to the species (Leakey and Morell 2001). What remains a major problem is the other traditional use of rhinoceros horn—as an ingredient in natural Asian medicines for a variety of ailments. The horn is ground into a powder, mixed with other natural ingredients and even pharmaceuticals, and dispensed by traditional healers in Asia and in Asian communities in the West to consumers for a variety of maladies. During the early 1990s, Taiwan was a major center for rhinoceros horn trafficking. Its stockpile was estimated at nine tons, with a street value of \$50 million USD, representing about 3,700 dead rhino (Davies 2005; EIA 1993). The very fact that its use is rooted in centuries of tradition, myth, and mystical beliefs means that a media campaign to shame users would be of questionable value (Leakey and Morell 2001). This problem is compounded by the high value of horns in Asia. Ben Davies (2005) states, “Of all the illegal forms of wildlife trade, the trafficking of rhino horn is the world's most lucrative, secretive, profitable and dangerous. Driven by the horn's extraordinary value



Southern white rhino in Hluhluwe-Imfolozi Park, KwaZulu Natal, South Africa. After massive poaching dramatically reduced Africa's rhino population—again heavily targeted by poachers beginning in about 2007—the park became the site of a vital rhino conservation program.

(in some cases it's worth more than five times its weight in gold), it has long been the domain of powerful international syndicates" (132).

The black rhino was hit the hardest, first by excessive legal hunting and then by poaching. As a result of rampant poaching for horn, its population further declined to about 2,300 in 1996, representing a 96 percent decrease in just twenty-two years. It lost a larger percentage of individuals than any other species in the last one hundred years (USFWS 2004). Individual country data further illustrate the impact of poaching. In the early 1970s, an estimated 50,000 black rhino lived in Zambia's Luangwa Valley. By 1981, the population in this region had been reduced to about 2,000, and by 1992, it had further declined to about a dozen (Gibson 1999). Zimbabwe offered an interesting case study in which black rhino conservation was a success during the 1970s and 1980s, when the population grew to more than 1,700 (about half of the world's population at the time). However, Zimbabwe's political and economic problems in the 1990s resulted in international economic sanctions, a collapsing economy, and social turmoil. The economic sanctions prevented foreign donors from contributing to wildlife conservation projects, including rhino protection. Some rhino conservation areas, now devoid of enforcement, were quickly targeted by poachers (African Wildlife Foundation 2005).

REMAINING AFRICAN AND ASIAN RHINOCEROS SPECIES			
<i>Species</i>	<i>Current Habitat Locations by Nation</i>	<i>Estimated Population</i>	<i>Main Threats to Survival</i>
Southern White Rhinoceros	South Africa, Botswana, Kenya, Namibia, Zambia, Zimbabwe, Swaziland, and Uganda	19,600–21,000	Poaching
Northern White Rhinoceros	Extinct in the wild, remaining animals in Kenyan conservancy	3	Poaching and extremely small captive population
Black Rhinoceros	South Africa, Namibia, Swaziland, Kenya, Tanzania, Zimbabwe, Zambia, Botswana, and Malawi	5,000–5,400	Poaching
Javan Rhinoceros	Indonesia	58–61	Poaching, habitat loss owing to development, and small population
Sumatran Rhinoceros	Indonesia and Malaysia	Fewer than 100	Poaching and habitat loss owing to development
Greater One-Horned Rhinoceros	India and Nepal	3,333	Poaching, habitat loss owing to development, and human-wildlife conflict
Source: Save the Rhino, <i>Poaching Statistics</i> , 2016. Available at <a href="https://www.savetherhino.org/rhino_info/poaching_statistics">https://www.savetherhino.org/rhino_info/poaching_statistics</a> (accessed June 11, 2016).			

In another example, after being hunted to extinction in Swaziland, a few rhino were successfully reintroduced in the mid-1960s and the population increased to well over 100 by the late 1980s. However, between 1988 and 1992, the so-called rhino wars began as Zimbabwean poaching gangs crossed into Swaziland, killing an average of one rhino on the reserves every two weeks and in some instances three per day. Initially, Swazi police were ill-prepared to deal with the problem. Claims of corruption in the judiciary and game ranger service only complicated efforts to end the poaching and prosecute offenders. The poaching finally stopped following new national legislation carrying severe penalties, the introduction of a British SAS detachment to assist local law enforcement, and the deaths of more than three hundred poachers (Reilly 2004).

As a result of extensive conservation efforts since the early 1990s, black and white rhinoceros populations have rebounded somewhat in Africa, though they are nowhere near their numbers from the mid-1960s. Currently, there are about 20,000 southern white rhino; however, 95 percent of them

live in South Africa on public and private game reserves. There are only about three northern white rhino, all of which are in captivity (WWF 2016a). African black rhino currently number about five thousand. The recovery of the rhinoceros was the result of strong law enforcement and management practices (USFWS 2004). This success does not mean that the pressure from poachers has diminished, however. The Tanzanian government, for instance, has constant surveillance of its small rhino herd, located in the Ngorongoro Crater Conservation Area near the Serengeti. Rhino poaching continued in South Africa but remained at relatively low levels that did not threaten the survival of the species. But this situation would change by the early 2000s, owing to the emergence of a new market for horn.

By the early 2000s, increased prosperity in Vietnam among the middle and upper classes, combined with demand for luxury goods and a belief in the medicinal powers of rhinoceros horn, fostered demand for the product. Julian Rademeyer's (2012) investigation found that while the horn has no significant medicinal properties, the myth was still heavily promoted in Vietnam, stimulating demand for the horn. The initial efforts to obtain horn for the Vietnamese market consisted of what was termed *pseudohunting*. Commonly, young Vietnamese women without hunting experience, including prostitutes from low-income areas, were recruited by syndicates for a modest price to go to South Africa for a legal rhino hunting safari with the sole objective of obtaining the horn as a trophy. Once taken back to Vietnam, the rhino horn would quickly disappear into the marketplace, where it was sold at extremely high prices to willing buyers. Although hunting rhino and keeping the horn as a trophy was legal in South Africa, the sale of it as a commodity was illegal under CITES. Between 2003 and 2010, nearly four hundred pseudohunts occurred, with the Vietnamese dominating the legal rhinoceros hunting business in South Africa.

Paralleling this development was a dramatic increase in rhinoceros poaching, primarily in South Africa but also in neighboring Swaziland. South Africa's Kruger National Park, which maintained large populations of rhinoceros, was heavily targeted by poaching syndicates. World Wildlife Fund (2016c) concluded that poaching increased 9,000 percent in South Africa from a loss of 13 animals in 2007 to 1,215 animals by 2014. Between 2013 and 2014, rhino poaching in South Africa increased 21 percent with 1,004 killed in 2014 and another 1,215 in 2015. In Kruger Park, 827 rhinoceros were killed in 2014. While smaller populations of rhinoceros exist in Asia, they have also been under steady poaching pressure, though not as severe as in Africa. This is partly function of their low numbers and the relative difficulty of locating the animals in remote regions of national parks. About 3,500 greater one-horned rhino, fewer than 100 Sumatran rhino, and about 65 Javan rhino survive (WWF 2016b).



*The Bushmeat Trade in Africa*

Wildlife in Africa is also commonly hunted as bushmeat. The term *bushmeat* refers to wild game, and the bushmeat trade is defined as the hunting of wildlife specifically for human consumption (Robinson and Bennett 2004). Bushmeat hunting is not focused on a single species; rather, it includes a wide range of wildlife—mammals, reptiles, and some insects. There is both a legal and an illegal component, the latter occurring on protected areas or involving prohibited species. Bushmeat had long been carried out at sustainable levels in rural Africa, arguably since the dawn of civilization (TRAFFIC 2002a). Until the late twentieth century, hunting for bushmeat was not a major conservation issue because Africa had large wildlife populations and relatively low human populations. However, from 1900 to 2000, the population of Africa increased eightfold to approximately 800 million; at the same time, wildlife habitat (and hence the size of wildlife populations) significantly declined (Bushmeat Crisis Task Force [hereafter BCTF] 2008). Interestingly, increases in bushmeat consumption were found to correspond to increases in wealth, with large volumes of bushmeat shipped to urban centers.

The origins of the bushmeat trade in several Central African nations (including the Congo, Cameroon, and Gabon) have been traced to the opening of forests for logging and mining operations, which, in turn, fueled the demand for inexpensive sources of protein for the workers (TRAFFIC 2002a). Capitalizing on the profit potential beyond feeding the laborers, hunters began to harvest more game to sell in neighboring settlements. More problematic was that hunters often remained in the forests long after the logging or mining operations ceased in order to hunt what had now become a valuable commodity, in demand in both rural and urban areas (Adams and McShane 1992; Warchol and Johnson 2009). These developments led to further social changes, making the bushmeat trade a socially acceptable but environmentally harmful practice. Beginning in the late 1980s, hunting for wild game in Central Africa and western Africa was no longer limited to in-season harvesting (Adams and McShane 1992), which hindered animal population recovery, nor were considerations made for gender selection or take-off quotas (Burgener, Snyman, and Hauck 2001). While much bushmeat hunting on unprotected lands was not illegal, once local game was exhausted, hunters often became poachers, illegally entering the public and private wildlife reserves for new sources of game (Pillinger 2003).

In regions of Africa, the illegal bushmeat trade includes poaching for subsistence and an extensive small- and large-scale illegal commercial industry (BCTF 2008). The illegal commercial trade common in Central Africa and West Africa eventually expanded into South Africa, targeting its extensive number of game reserves, both public and private (Pillinger 2003).

As a result, the hunting of wildlife for food has been determined by some to be the most significant threat to biological diversity (BCTF 2008), increasing to the point where millions of tons are harvested annually. One of the most comprehensive studies of this problem concluded that the combination of poverty, limited economic opportunities, and increasing human populations has led to the bushmeat trade being the most serious threat to southern African wildlife, including on protected areas (TRAFFIC 2002a).

### *Asian and African Big Cats*

Perhaps best known among the cat species illegally hunted and trafficked within the wildlife trade is the tiger (*Panthera tigris*). It is believed there are populations of tigers in regions of thirteen nations: India, China, Russia, Nepal, Myanmar, Laos, Thailand, Indonesia, Bangladesh, Bhutan, Malaysia, and possibly Cambodia and Vietnam (International Union for Conservation of Nature [hereafter IUCN] 2015b). Tiger populations have declined by 97 percent since 1900, from an estimated 100,000 to about 3,400 animals remaining in the wild in 2016. Furthermore, the historical tiger range has declined over time by 93 percent, with the remaining populations surviving in small and isolated habitats, making them more vulnerable to poaching (WWF 2016e). When dangerous game hunting was considered high sport, in the late nineteenth and early twentieth centuries, tiger populations were dramatically reduced. In the fifty-year period between 1875 and 1925, an estimated 80,000 tigers were taken by hunters in India (Davies 2005).

While the age of legal tiger hunting is long over, tiger populations currently face three other threats to their survival in the wild: habitat loss, retaliatory killing, and poaching. Tigers require a large range with essential prey animals and habitat to survive. However, in parts of their home ranges there have been reductions in their common prey animals along with habitat destruction due to development (EIA 2006). The expansion of logging and mining operations in developing countries that are tiger range states with affected habitat brings to light the conflict between economic progress and conservation. Currently, of the original nine subspecies of tigers, three have become extinct because of hunting, habitat loss, and disease. Conflicts between humans and tigers after the animals kill livestock have also contributed to their decline. High rates of retaliatory killings by affected residents living in proximity to tiger populations in Bangladesh and India occurred between 2000 and 2010, further reducing the population (IUCN 2015b). While habitat loss owing to commercial and agricultural development has contributed to the decline of the species in recent decades in India, home to the majority of the world's remaining tigers, tiger losses since the early 1990s are attributed mainly to demand for their body parts for traditional medi-

cines and their pelts for status objects. Davies (2005) found that nearly every part of the tiger has a medicinal use, from the whiskers to the claws, with the principal consumer market being in Asia. Tiger claws sold for \$150 USD in the late 1990s, and a drug manufacturer in Japan produced a tiger penis pill that sold for \$27,000 USD per bottle. Highly desired tiger bones, believed to have anti-inflammatory properties, are marketed as a cure in China (IUCN 2015b). Tiger pelts are also a sought-after luxury item in some Asian nations.

High demand for the skins of tigers, along with those of the Asian leopard (*Panthera pardus*) and snow leopard (*Uncia uncia*), have help foster the creation of wildlife trafficking syndicates. Smugglers using ancient trading routes move contraband pelts to markets in China, Nepal, and India (EIA 2006). Syndicates rely on locals, who often operate in transient gangs with deep knowledge of tiger habitat and behavior in their ranges. One unique difference is that unlike elephant and rhinoceros poachers, tiger poachers generally avoid using firearms to kill the animals in order to protect the valuable pelt. Rather, they are more likely to employ jaw traps or poison. Once caught, the tigers are quickly processed and sold to smugglers, who move the animal parts out of the country. Although the tiger population has declined dramatically in the last 115 years, there is some positive news. Reports indicate that tiger numbers in India, Russia, and Nepal have increased because of successful conservation efforts. In 2010, the thirteen tiger range states committed to an initiative called TX2, the goal of which is to double wild tiger populations by the year 2022 (WWF 2016e).

Other species poached and trafficked for the illegal wildlife trade were large African cats. My field research in South Africa and Namibia revealed that poaching of most African cats in these countries can be attributed to three general reasons. The illegal killing of cheetahs, leopards, and lions was frequently done by farmers protecting their livestock from the actual or perceived threat posed by these predators. Second and less common, though still a problem, was the threat posed by demand for African cats for the pet and hunting business. Cheetah cubs were taken live after their mothers were killed. A small number of these animals were illegally sold and exported for the exotic pet trade, one destination being the Middle East. A small number of adult cheetahs and leopards were captured alive and sold to game farms to be hunted (Warchol, Zupan, and Clack 2003).

Finally, African cats are also poached for their body parts for use in *muti*, or traditional African medicine. This finding was confirmed during a visit I made to the traditional market in Durban, South Africa, with an official from KwaZulu Natal Wildlife Conservation. At the market we observed, on prominent display, leopard paws for sale as talismans against bad luck and numerous pelts and bones from leopards and other African cats for use in holistic remedies and for traditional African clothing for *sangomas* (tradi-



Lioness in Kenya's Masai Mara National Park. Lions have been regularly targeted as conflict animals, when they represent a real or perceived threat to local farmers and their livestock, and for body parts used in traditional medicines.

tional African healers). Even though the legality of these items was in doubt, the wildlife authorities would not consider confiscation. When questioned on the subject, the officials responded that if the illegally harvested wildlife body parts were confiscated from the market, they would only be restocked in a few days or a week, resulting in the deaths of many more protected animals. Given that these items sell rather slowly, leaving these products in the market was considered the lesser of the two evils (Warchol, Zupan, and Clack 2003). Interestingly, the use of African wildlife for traditional medicines has of late expanded into Asia. The difficulty of obtaining tiger parts has led to the development of a new market for African lion bones as a substitute in the traditional Asian medicine trade. This trade, which principally originates in South Africa, includes both a legal and illegal component because of the private ownership of captive lions and the lion's status as a CITES II species (TRAFFIC 2015b). While wild lion bones and other body parts cannot be exported for commercial purposes, South Africa's commercial breeding op-

erations are allowed an export quota for these products. The inability to determine if the products are from wild or captive lions complicates efforts at enforcement. A proposal by nine African countries to up-list lions to Appendix I to end the bone trade failed at the September–October 2016 CITES meeting. With about 30,000 wild lions remaining in Africa, their survival may be in additional jeopardy if the trade expands to other range states (Animal Defenders International 2016).

### *Birds and Reptiles*

Elephant, rhino, and large cats are poached and trafficked in Africa and Asia, but they constitute a minority of the species in the illegal wildlife market. Rather, the illicit wildlife trade includes a thriving global business in reptiles and birds. Given the volume of animals and the numerous source and consumer nations involved, it is impossible to place an accurate estimate on the total number of reptiles and birds that are illegally taken from the wild and traded in consumer markets. Yet a sense of the scale of the trade can be found in seizures by police and counts of protected animals found at retail markets. In southern Africa alone, reptiles are poached for resale by local pet shop owners, exported to U.S. and European buyers of exotic live wildlife (who commonly purchase via the Internet), and even trafficked to Asia for use in exotic cuisine. Reptile collectors and pet shop owners from Germany, the Netherlands, and the Czech Republic have often been apprehended by South African and Namibian police with the illegally obtained protected reptiles in their possession. Research indicates that South Africa is also a major importer of illegally caught snakes and other reptiles from various African nations to supply its domestic pet trade (Warchol, Zupan, and Clack 2003).

The illegal trade in birds is also multinational with high demand for live animals, primarily as pets. There is internal trafficking of native wild birds within countries for their domestic markets and international trafficking of species from source to consumer nations. A study of the domestic bird trade in Indonesia found over 19,000 wild-caught native birds offered for sale in its three largest bird markets. Demand for the species is due to long-held cultural reasons for keeping rare avians and songbirds in Indonesia. It was found that 98 percent of the birds were native species, making their capture and sale illegal (Chng et al. 2015). A recent analysis of the international trade found that Singapore serves as a major conduit for exotic birds, including CITES I and II species sourced from parts of Africa, the South Pacific, Europe, and Asia. Dubious figures reported on shipping data and problems with CITES permits in the country have raised serious questions about the legality of a segment of the bird trade (Poole and Shepherd 2016). Similarly,



research in Brazil described a dynamic and widespread illegal trade in domestic birds in all parts of the country. Nearly three hundred different species were found to be illegally traded, including some listed as critically endangered, endangered, or vulnerable on the IUCN Red List (Alves, Lima, and Arujo 2013). A somewhat surprising example of a regional domestic trade was found in the European Union. TRAFFIC (2008) reported on a trade in birds in southeastern and central Europe controlled by organized crime. Native birds were hunted in southeastern Europe and smuggled through Hungary and Croatia to Italy and Malta for resale as a delicacy food.

The trade in birds also constitutes a major segment of the illegal wildlife market in South Africa and Namibia. Like the market for reptiles, the trade in birds is highly specialized and dominated by collectors, breeders, and dealers in rare and exotic species. South Africa is classified as both an exporter and importer of birds. In addition to the export of native birds, large numbers of rare African birds from other nations are illegally imported to South Africa for the pet trade and/or for eventual transshipment overseas. My research determined that the bird trade is far more organized than the illegal market in ivory, rhino horn, or African cats. Networks of bird breeders and collectors rely on verbal agreements, e-mail, and Internet sites to buy, sell, or trade birds. While many birds poached from the wild remain in-country to meet domestic demand, large numbers are exported to Europe, Asia, and the United States by air to fill orders from overseas collectors. The situation in southern Africa had become so serious that the very rare specimens were often found only in private ownership and not in zoos or aviaries, which were targeted by enterprising poachers (Warchol, Zupan, and Clack 2003).

### *Flora and Marine Life*

Excluding large-scale illegal timber and fishing operations, poaching of plants and marine species by individuals and criminal networks is another common part of the global illegal wildlife trade. Plant species are illegally harvested for ornamental and medicinal use and, to a lesser extent, for scientific collections. One example of a valuable plant species targeted by poachers is the cycad. Cycads, a palm tree of prehistoric origins, are popular ornamental trees with homeowners and collectors in South Africa and are also used in the traditional medicine trade. With demand outstripping legal supply, poaching and theft of valuable cycads from protected nature reserves, public parks, landscape nurseries, and private homes has become rampant. Immature trees have even been stolen to fuel domestic demand for exotic plants. Furthermore, cycad root balls and sections have also been found for sale at the Durban, South Africa, traditional market for use as a home remedy (Warchol, Zupan, and Clack 2003). Unusual cases of academics and scientists poaching plant

specimens that are rare and difficult to legally obtain for private collections were found in a nature reserve in the Western Cape of South Africa, where well-known foreign scientists were apprehended with protected flora (Herbig and Warchol 2011). The illegal plant trade is not limited to southern Africa. It also occurs with regularity within the United States and Europe. World Wildlife Fund (2003) has described an unsustainable trade in cacti and other desert plants harvested from parts of northern Mexico and the southwestern United States and smuggled to Europe and Japan, where demand is high. Wild ginseng and Venus flytraps are also poached in the United States for use as both medicines and decorations (Vallery 2015).

Another large part of the illegal wildlife trade involves marine species. While some fish poaching is done by individuals fishing without a license or exceeding their limit for common species, another aspect involves larger amounts of protected species being illegally harvested for profit. Aside from the industrial-level, illegal ocean-fishing operations, marine species poaching is done by small criminal networks seeking valuable protected species for either resale or export. World Wildlife Fund (2016d) notes that illegal fishing is a major contributor to overfishing and habitat destruction and also may pose a threat to food security. Marine life poaching in South Africa includes the extensive overfishing of a variety of species, with abalone, a protected rare shellfish found around the Cape, being the most high-profile animal. Abalone is a very popular and expensive delicacy in seafood restaurants in South Africa and Asia. However, the poaching of abalone is widespread, both to meet the increasing demand in South Africa and Asia and as an easy source of income for local fishermen. While obviously detrimental to the desired protected species, illegal fishing activities result in two additional environmental problems. One is the issue of *bycatch*, or the accidental capture of other species, including protected wildlife such as the various sea turtle species or the vaquita porpoise near Mexico. Finally, illegal fishing methods, including the use of poisons or even explosives, destroy not only marine life but also marine habitats (WWF 2016d).