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Significance

Now that some understanding of the scope and scale of wildlife trafficking has been detailed, notably within the limitations regarding the accuracy and amount of information obtainable, the reasons why it is important to combat this green crime will be analysed. The illegal wildlife trade presents a number of risks and threats to a number of different aspects of societies, communities and ecosystems around the world. The aspects can be broken down into environmental, economic, human well being and national security impacts. Each of these will be explored in turn to demonstrate why it is significant and urgent that more efforts are employed to decrease this green crime.

Environmental impacts

Environmentally, wildlife trafficking threatens biodiversity through the extinction of the species that are trafficked; by the introduction of invasive species that can then outcompete native species, disrupting ecosystems and again possibly leading to extinction; and through the introduction of diseases that might be transmitted to native wildlife, again causing ecosystem disruption and once again possibly leading to extinction. Extinction is problematic not only for the loss of life of that species, but also because loss of one species can lead to the instability of the ecosystem and in the case of timber and coral greatly impact upon climate change. When ecosystems are disrupted

and/or environmental degradation is significant this can impact upon human populations as will be discussed later. Environmental security then – having access to a safe, healthy and sustainable environment that can support long-term life of people and other species – is essential for the environment, humans and other species, but can be compromised in the ways listed above by wildlife trafficking, as will be demonstrated.

Loss of biodiversity

Biodiversity loss is often associated with habitat destruction where plant and non-human animal species get squeezed out of their natural ranges because of human encroachment. Loss of habitat and limited access to food sources then leads to a reduction in species and a decrease in biodiversity in these areas. A contributing factor to biodiversity loss, though acknowledged much less often, is the direct harvesting, collecting, hunting and poaching of wildlife for human use and consumption. Africa is a case in point where both elephant and rhinoceros populations are threatened because of poaching. In 2012, Cameroon experienced a spike in poaching where over 400 elephants were killed for their ivory (WWF 2012). As mentioned, Black rhinoceros are perilously on the edge of extinction due to demand arising from Vietnam in particular for the use of rhino horn in treating cancer (Milliken and Shaw 2012).

Many shark species, too, are imperilled because of the demand for products made from them. Shark fin soup is driving the loss of several species. Sharks are the apex predators of food webs, so the loss of this species has significant effects on the composition of the entire ecosystem (Shark Alliance 2010). Prey species can reach high numbers with no predation, which can greatly reduce and disrupt the amount of base foods, such as plankton and algae (Shark Alliance 2010). This can destabilise the entire ecosystem as the food availability for many species is then out of balance (Shark Alliance 2010). Biodiversity loss is the result of direct human consumption of wildlife. It also takes place because of the ecosystem disruption stemming from that consumption.

This is not confined to demand for non-human animal products; illegal logging also impacts significantly on biodiversity. Clear cutting, both legally and illegally, decreases species diversity in areas where it takes place. For instance, the high demand for cedar means

that it is illegally logged in Far East Russia. Yet, cedar seeds and leaves are the main food for the wild boars as well as the main habitat in which they live. Loss of the cedar forests as a place to live and loss of their main food supply are thought to be the reasons why wild boar population numbers have decreased. The Amur or Siberian tiger, of which approximately 400 remain, is reliant on the wild boar for food, so the loss of cedar is connected to the threat of the Amur tiger going extinct because of the link between species in ecosystems (Wyatt 2012a).

Furthermore, illegal logging and timber trafficking, a significant and large portion of wildlife trafficking in general, are major contributors to deforestation. Deforestation is a key factor in climate change as it accounts for, according to the United Nations Food and Agriculture Organisation (2006), 20 per cent of global CO₂ emissions. Forest cover is essential in combatting global warming as tree and plant transpiration help to regulate CO₂ and oxygen levels. Without this, the negative impacts of climate change may become unavoidable. If sea levels rise as predicted, flooding and droughts will also likely increase and these will in turn further destabilise the environment and have impacts upon biodiversity and species survival. As Norris et al. (2002) note, rising temperatures affect the thaw and freezing of sea ice in the Arctic. With fewer weeks where there are solid ice flows on which to hunt, polar bears struggle to find food (Norris et al. 2002). Less food means less fat stores to survive the winter and, for females, less fat stores to produce milk (Norris et al. 2002). Both of these lead to an increase in mortality of adult and infant polar bears and are directly tied to global warming (Norris et al. 2002). Though human well being will be discussed in more detail shortly, it is worth mentioning in the context of climate change that with severe alterations to the weather and environment of certain regions of the globe, environmental security will be impacted. It is believed that people will be displaced from their homes, becoming environmental refugees, which obviously has social, economic and political impacts on a global scale.

Invasive species

Linked to the loss of biodiversity stemming from wildlife trafficking, is that wildlife trafficking can be a vehicle for the entry of non-native or invasive species into an ecosystem. This clearly has environmental

security implications, as will be demonstrated, because life support systems and ecosystem services can be damaged with the introduction of disease and/or invasive species. Such occurrences are thought to be increasing around the world. For instance, records in the San Francisco Bay area show that whereas between the years of 1851 and 1960 an invasive species was found every 55 weeks, currently one is found every 14 weeks (USFWS 2005). These are only the cases where the stowaways or smuggled non-native species were actually found. As mentioned previously, it is difficult to estimate the amount of illegal wildlife trade and in this instance, the number of potential invasive species that have entered various regions. Additionally though, the smuggled non-human animal or plant may not turn out to be the invasive species. Part of the problem with illegal shipments is the lack of inspection, which creates the possibility of stowaway wildlife being transported with the smuggled wildlife and becoming an invasive species or introducing a disease to the new environment (Wyatt 2013c).

A specific example of the damage that can be done by an invasive species to the local environment can be seen in the Florida Everglades. Burmese pythons have been brought to Florida as part of the pet trade. Upon maturity, these snakes can reach up to eight feet long. Trends have shown that owners of the pythons have illegally released them into the wild, most likely because they are unable or unwilling to care for such a large snake. This has several negative impacts upon the unique and fragile Everglade and Florida Keys ecosystems. Burmese pythons are able to outcompete native snakes and other predators due in part to their adaptable and diverse diet where they will eat a variety of prey (Harvey et al. 2008). Additionally, Burmese pythons have long life spans of up to 25 years, have a high reproductive output and can travel long distances (Harvey et al. 2008). These qualities all enable them to be more successful hunters than the native species, which then lose their food supply and are decreasing as a result. Also, the Burmese python is preying upon species that are themselves endangered such as the Key Largo woodrat and round-tailed muskrat (Harvey et al. 2008). This is evidence that an invasive species can have significant impacts upon ecosystems and environmental health as they kill and outcompete native wildlife, which can reduce biodiversity and in turn disrupt the stability of the environment.

Disease transmission

Not only can invasive species brought by wildlife trafficking decrease biodiversity and destabilise ecosystems, but wildlife trafficking can also serve as a mechanism for carrying diseases. As Karesh et al. (2005) have indicated, the international dimensions of both wildlife trade and markets where non-human animals from around the world are coming into contact with each other creates the conditions for naturally occurring diseases that were once isolated to certain species to be readily passed between non-human animals. This, coupled with the speed of modern transportation enables the spreading of disease in ways not witnessed before (Karesh et al. 2005).

In the legal wildlife trade there is at least the opportunity for health and veterinary inspections to catch potential diseases. For instance, in Australia in 2002 four Green Tree pythons arriving from Singapore were found to be carrying Wamena virus, a lethal infection to a variety of cold-blooded non-human animals such as fish, amphibians and reptiles (Hyatt et al. 2002). Quarantine procedures eliminated any danger that the virus would have posed, yet in instances of wildlife trafficking there is the very real possibility that such diseases could be transferred to the native flora and fauna. This has implications for the health and stability of the ecosystems as well as potentially reducing the amount of biodiversity because of species loss to these diseases. In the extreme, it can compromise environmental security by damaging the ecosystem to such a degree that it cannot supply food for the species that inhabit it.

Additionally, non-human animal diseases have the potential to infect farm and agricultural industries. This has welfare implications as livestock would undoubtedly be culled if there was the threat that they were infected. The foot and mouth and mad cow disease outbreaks in the UK are both evidence of this fact. Furthermore, there would be economic impacts if a disease were to be transmitted into a non-human animal industry both for the businesses involved and the people employed within these areas. There is also the possibility that the disease could endanger people, as it has been documented in recent years that some diseases do have the capacity to transfer to humans as well as non-human animals, such as Severe Acute Respiratory Syndrome (SARS) and the Ebola virus, which will be discussed more shortly. The connection to industry leads to an exploration of economic impacts of the illegal trade of wildlife.

Economic impacts

Whilst the threats of wildlife trafficking have been broken down here into four aspects which they affect, the differing threats are not confined to impacting upon one aspect. As will be evident, certain threats are cross-cutting amongst the different aspects of society. That is the case with all of the above environmental impacts – loss of biodiversity, introduction of invasive species and disease transmission – all have the potential to induce economic impacts. This is because wildlife trafficking can threaten natural resources which a society might be reliant upon for income in the form of government tax revenue, business profits and personal livelihoods. Businesses can be threatened, such as within the agricultural industry when invasive species and diseases are introduced. This can then damage the livelihoods of people in those sectors as well as decrease the profits of companies and the tax revenue for governments. Food scarcity and environmental insecurity also have economic impacts as they may force people to move to new locations. The financial burden of this may be at an individual level, but arguably, if it occurs on a large scale, this type of migration from environmental degradation may be supported by governments.

Government

The economic impact upon the government mostly stems from the loss of tax revenue when wildlife is trafficked rather than legally traded. This is particularly the case with timber. It is estimated that USD 10 billion is lost within the global timber market each year due to illegal timber circumventing the legal market where taxes and Custom's duties would be charged (Schloenhardt 2008). Less revenue for governments coming from the import and export taxes on timber means that social services and the people in need of them can suffer. Lost revenue and lost natural resources, such as timber also mean that that country can struggle to develop (Brack 2007). This is because the government may not have the necessary funds to improve national infrastructure, healthcare or education.

Revenue loss in the case of the illegal timber trade also occurs because the black market skews the legitimate market, so that the real demand for timber is not truly reflected in prices or taxes on legal sales of timber (Brack 2007). In the case of Indonesia, one of the

countries struggling with large-scale illegal logging and timber trafficking, it was estimated that in 1996, USD 660 million in revenue was lost due to illegal logging (Four Corners 2002). In 1998, this was estimated to be USD 1.5 billion, a huge loss for a country unable to cover the costs of education and healthcare required for its people (Four Corners 2002). Timber trafficking then affects government revenue in terms of cheating the government out of taxes that should be paid on all timber and by distorting the true market prices.

There is also the economic impact to the government of the costs to fund law enforcement to combat wildlife trafficking. This includes the salaries of officers and agents as well as all the associated costs of equipment and training. Notably, since minimal effort and resources are often put towards wildlife trafficking, these costs are marginal. There are also costs associated with housing confiscated wildlife. The burden often falls to the government to temporarily house and find permanent homes for live non-human animals and plants that have been rescued from trafficking (Wyatt 2013c). Arguably though, most of the economic impact could be on business and industry.

Business and industry

Many global industries and businesses depend upon a healthy environment to support their practices. In fact, the UNEP (2007) estimates that half of the world's jobs are linked to fisheries, forestry and agriculture, all of which are dependent upon ecosystem stability and health. As shown, loss of biodiversity, invasive species and disease can damage the health of the environment and in turn these industries that are reliant on it. The illegal wildlife trade, because it can and does cause these environmental threats, then has a connection to the economic well being of industry, governments and individuals.

For instance, the United Nations Food and Agriculture Organisation found that in 2003 one third of the global meat trade was under embargo because of non-human animal disease outbreaks, such as mad cow disease and avian influenza (Karesh et al. 2005). Such outbreaks, as mentioned, not only have welfare consequences as thousands if not millions of non-human animals are killed to prevent the disease spreading, but there are also economic consequences for those businesses that must lose that much of their 'product'. Obviously, this has a profound impact on the agricultural sector and those people employed by it.

Another example comes from the poaching of the pangolin in Southeast Asia. The pangolin is an insectivore that is now one of the most trafficked non-human animals in Asia because of the demand for their exotic meat and traditional medicines made from pangolin scales (Pantel and Anak 2010). One pangolin eats as many as 70 million ants and other insects annually, so is essential in balancing the ecosystem as well as controlling 'pests' within farming regions (World Association of Zoos and Aquariums [WAZA] 2011). With the loss of the pangolin throughout much of its range, it is predicted that pest levels will rise in the area and more crops will suffer damage, resulting in financial losses and the threat of food scarcity. Lack of food or damage to the environment that limits its ability to support life because of overexploitation of a species within that ecosystem is further proof of wildlife trafficking's link to environmental security issues. This raises concerns for businesses, governments and people. As will be explored below, other impacts to people also come from wildlife trafficking.

Human impacts

As discussed above, there is the potential that wildlife trafficking can impact upon the revenue of businesses and governments. This of course has a personal impact upon individual people as well. So human well being can be damaged economically through the illegal wildlife trade. Additionally though, from the environmental impacts, human well being and security can also be physically threatened through the introduction of zoonotic diseases from unregulated wildlife, such as SARS from civet cats and Ebola from monkeys. Physical well being and security can also be threatened by the violent nature of some of the black markets of wildlife.

Livelihoods

When industries suffer because of an unhealthy environment, in this case from disease or invasive species introduced from the illegal wildlife trade, individual people are also negatively impacted. Since, as stated above, half of the world's jobs are linked to the environment (UNEP 2007), disease or degradation can have far-reaching negative consequences. The jobs referred to are within the fishery, forestry and agricultural industries, which are all susceptible to the dangers posed here. Large-scale damage to any of these sectors has the potential to

negatively affect the security and the well being of the people that are reliant on these products for food or as a means of employment.

Disease is not limited to non-human and human animals; smuggled plants and trees can also transmit disease, which could threaten forestry jobs. Parts of Europe, including the UK, are currently dealing with a disease that infects Ash trees (Forestry Commission 2013). Whilst not introduced through the illegal trade, the disease is believed to have been brought on a legal shipment of nursery plants (Forestry Commission 2013). The point here is that even with the proper checks that occur during legal trade, disease is able to be transmitted transnationally. The illegal trade, which purposely circumvents all inspections, holds even greater potential to bring a disease into a new area. In the case of the Ash trees, there are 386 sites where the infection has been found, including nurseries, newly planted areas and established woodlands (Forestry Commission 2013). It is expected that most of these trees will die from the disease (Forestry Commission 2013), which has impacts on the health of the environment and ecosystems. This incident is not necessarily out of the ordinary and live trees are not the only source for diseases (Gray 2012). Ash disease is one of ten tree diseases in the UK that are having a significant impact on the survival of certain tree species (Gray 2012). One of the other diseases is Dutch elm disease, which arrived in timber from overseas logging operations and resulted in two waves of tree deaths that were large in scale (Gray 2012). Trees have also been infected by invasive species, particularly introduced insects such as the spruce bark beetle that threatens commercial stands of forest (Gray 2012). Loss of trees and forests can affect the livelihoods of people employed in the timber industries.

Invasive species can also have a negative impact on fisheries, such as in the Great Lakes region of the US where the non-native zebra mussel has altered the ecosystems of some of the lakes, thus damaging the fishing industry and the lives of those employed by it. Zebra mussels were also not smuggled into the country, but provide a clear example of the damage that can be done by an invasive species not only to the environment, but to people as well. It is thought that the mussels were in ballast waters of ships travelling from Europe that arrived in Lake St. Clair in 1988, where the first zebra mussel colony was observed (United States Geological Survey (USGS) 2008). By 1998, all five Great Lakes were infected as well as the Mississippi,

Tennessee, Hudson and Ohio River basins (USGS 2008). Currently, some inland lakes in Michigan also have zebra mussels (USGS 2008). As the mussels filter a great deal of water daily, this alters the ecosystem because during filtering, all plankton and other life is eaten or collected; this disrupts the food chain for the other species within the lakes (USGS 2008). This has meant the near extinction of one clam species and the decline in other non-human animal populations (USGS 2008). Additionally, the immense size of zebra mussel colonies clogs water ways and water pipes affecting people's access to running water; it is expected that the management of this invasive species will cost billions of US dollars in the coming years (USGS 2008). Clearly, such an invasive species has large-scale economic impacts and also implications for the livelihoods of those living near the lakes with the threat to their water supply as well as the damage to the fishing and shellfish industries that are declining because of the zebra mussel.

Not only do disease and invasive species then have the potential to impact upon human livelihood, but there are also collecting and harvesting methods used within the illegal and legal trade that can adversely affect people. Overfishing, clear cutting and illegal logging are practices that can damage the environment in such a way that in the future, jobs will be lost because there will no longer be any of these natural resources available. The discussion in the introduction of the sturgeon in New York and the Kauri trees in New Zealand are proof of this as both of these industries ceased to operate after the species were overexploited; this cost many people their jobs as well as damaging the environment.

In addition though, there are people who are reliant on the environment outside of employment. Rural villagers and other populations of people are directly sustained by the land that they live on. Deforestation, biodiversity loss (from poaching or invasive species) and/or disease can damage people's environment to an extent that it will no longer support them; this means not a loss of income, but a loss of food and shelter, which ultimately has impacts on migration and on people's health. In Indonesia, it is estimated that tens of millions of people are directly dependent on the forests for their livelihoods (Four Corners 2002). With clear cutting of forests and illegal logging for timber trafficking, many of these people will lose access to forest products that they are reliant on (Four Corners 2002).

Their health will obviously suffer if they are struggling to find food. This is the case for overfishing as well. The International Criminal Police Organisation or INTERPOL Environmental Crime Programme's (2013c) latest project, SCALE, is combatting fisheries crime in part because depletion of fish stocks will lead to food insecurity for many of the world's people. The resulting food scarcity caused by these forms of environmental degradation may lead to forced migration within a country or across borders. As is evident, there are many environmental security issues that are impacted upon by destructive environmental practices that are connected to the legal and illegal wildlife trade.

Health

In addition to economic and subsistence livelihoods suffering from environmental degradation, which is tied to wildlife trafficking, individual human health can be threatened by the smuggling of wildlife. Trading of non-human animals can pose a risk to human health through the transmission of zoonotic diseases. Zoonosis is where a disease passes from a non-human animal host to a human. Spreading of such diseases has been shown to correlate with unchecked wildlife trade (Naim 2005). SARS and the Ebola virus, as mentioned, are two of the more well-known diseases of this kind. Yet, there are a myriad others that could threaten human well being and are more prevalent than those mentioned.

Primates, which are popular as pets in the collector's item category proposed here, in particular carry a variety of transmittable diseases. These can be monkey pox, Hepatitis A and B, Herpes Simplex B, shigellosis (dysentery in a highly infectious form), cholera and tuberculosis (Green and CPI 1999). Of additional concern is that a portion of primates who fuel the pet trade are coming from laboratories, where they have been experimented upon, but now serve no purpose. For instance, medical laboratories conduct research into the connection between simian immunodeficiency virus (SIV), which is thought to be the precursor to the human equivalent, human immunodeficiency virus (HIV) (Green and CPI 1999). Once the research is complete, these primates are then sold off, sometimes entering the pet trade. There is the potential that they carry disease and additionally most likely have behavioural problems. Both of these pose a danger to the humans that come into contact with them.

Other mammals also carry diseases that are transmittable to people. Tapeworms can be carried by small mammals, which cause cysts in the liver, lungs and brains of people (Green and CPI 1999). Similarly, such non-human animals can carry roundworms that travel throughout a human host eating the organs including the brain. Human leprosy can be transmitted by armadillos, which again are part of the pet trade (Green and CPI 1999). Most recently, there was the fear over swine flu or H1N1, also a zoonotic disease. Reptiles, too, carry zoonotic diseases, such as salmonella (Green and CPI 1999). As they make up the bulk of the pet trade, both legal and illegal, this can be a cause for concern. Further concerns stem from the pet trade because birds, too, can carry zoonotic diseases and are prevalent in the pet trade. For instance birds carry the avian flu, but can also transmit parrot fever, or psittacosis, which causes a high fever, severe headache and pneumonia-like symptoms in people (Green and CPI 1999).

New diseases are appearing somewhat regularly. A new coronavirus has just emerged and cases of human infection have occurred in Saudi Arabia, Jordan, the UK and Germany (Gallagher 2013). There are only 12 cases, but six of these people have died (Gallagher 2013). The disease is similar to SARS and like SARS is more than likely transmitted from a non-human animal to a human; in this case it is suspected to come from bats (Gallagher 2013). Once a person is infected, human to human transmission is possible (Gallagher 2013). Health authorities are not worried at this stage as it appears that transmission is difficult (Gallagher 2013), but this demonstrates the potential threat to human health of an unregulated illegal trade. Smuggled wildlife bypasses essential routine health inspections and necessary quarantines that safeguard both the health of the non-human animals being traded and the individual humans that may come into contact with that wildlife.

As is evident, there are portions of wildlife trafficking that are very profitable. In such black markets, there is a large incentive for those involved to protect these profits; this then coincides with high levels of violence in order to maintain control over these markets. In these instances, such as in the illegal trades of rhino horn and elephant ivory, not only are there non-human animal victims, but there are also human victims of violence, which is employed to protect criminal profits and continue trafficking. This is demonstrated by the dozens of rangers throughout Africa in regions where gorillas, rhinos

and elephants live that have been murdered by poachers while the poachers hunt the non-human animals (Dell' Amore 2012). Sixty rangers are reported to have been killed throughout the world in 2012, but it is believed that many more deaths go undetected and unreported (Dell' Amore 2012). The violence is not confined to the rangers; the rangers, too, kill poachers as part of their job to protect the wildlife. Human physical well being and security are also at risk from this aspect of the illegal trade.

Economically and physically then the illegal wildlife trade can pose a threat to the security and well being of people. Livelihoods can be damaged, as can health. Humans engaged in protecting wildlife and those living in proximity to valuable species can also suffer insecurity because of the violence that is employed to ensure some criminals continue to profit from wildlife trafficking. Whilst there is significant danger posed to people, there is also more macro-level danger at the level of national security.

National security impacts

The use of violence to gain and protect profits obtained from varying wildlife black markets uncovers the fact that the illegal wildlife trade should be and needs to be considered in traditional national security concerns. It can threaten national security because wildlife trafficking is carried out through corruption at various levels, organised crime and possibly terrorists and insurgents. All of these actors are known to challenge the rule of law and the sovereignty of various countries around the world. This can destabilise nations and regions and is therefore a national security issue. The concept of national security employed here is one that is broader than the traditional view of security that focuses on military security. Conceptualised here, national security encompasses larger territorial inviolability (Romm 1994) in addition to economic and political interests that protect the values and stability of the state (Jordan and Taylor 1981). Threats to national security occur when actions or threats of actions impact upon the state's capability to ensure these interests and values. As will be detailed below, elements of wildlife trafficking can limit the state in these ways. Additionally, wildlife trafficking, as mentioned, creates environmental insecurity and this insecurity also limits the state's ability to protect economic and political interests as well as the values

and stability of the nation. Environmental insecurity is therefore linked to national security and thus wildlife trafficking impacts upon national security in multiple ways.

Corruption

No universal definition of corruption exists, but work by Holmes (2006) has uncovered that there are several actions and non-actions which a wide, diverse range of people agree are corrupt. For instance, in countries where it is often normal for officials to demand a bribe to undertake a task that they do as part of their occupation, people in those countries tend to believe that this is corruption regardless of its normalisation (Holmes 2006). Other such actions are the diversion of public funds to personal accounts, bribes for breaking the law and bribes for ignoring criminal acts (Holmes 2006).

Official corruption is integral to much of the perpetration of the illegal wildlife trade. Much of the smuggling of non-human animals and plants that make up this black market would not occur were it not for corruption of the officials in origin, transit and destination countries as well as corruption of the employees of transportation agencies involved along the smuggling chain. Officials, who oversee the issuance of permits for procuring wildlife, and for importing and/or exporting, can be bribed to give permits that appear to make trading certain wildlife legal. This can be done by providing documentation claiming the wildlife is pre-CITES, for instance, or identifying the species as one that is allowed to be traded when in fact they are a banned species. Customs agents along the black market routes are also subject to corruption and can ignore smuggling if bribed. State officials can also unscrupulously grant property ownership to themselves or others, where illegal logging or poaching can then take place (Global Witness 2007; Wyatt 2012a).

Corruption can be beyond these individual people profiting from wildlife trafficking; it can be much more systemic in nature and occur at high levels of government. Those corrupt officials profiting from the black market may enable the trade to continue by not implementing the pertinent legislation. Additionally, there may be instances where enforcement of laws relating to wildlife trafficking are actively not enforced. There seems to be evidence of this in countries of the former Soviet Union where corrupt officials overseeing law enforcement and the courts allow wildlife trafficking to continue

(Naim 2005). The North Korean and Cambodian governments are both suspected of being active players in the trading of illegal wildlife and timber to fund political parties and maintain power (Tagliacozzo 2001; Naim 2005; Global Witness 2007).

The Cambodian government seems to have been inextricably linked (and potentially is still) to large-scale illegal logging and timber trafficking in Cambodia (Global Witness 2007). Relatives and close friends of the Prime Minister are given land that is protected and log it regardless of national laws prohibiting such activity (Global Witness 2007). There is documented evidence of senior officials selling jobs within their departments, such as within the Forestry Administration, as well as the departments producing false documentation to hide the true value of the land and timber in order to circumvent protection laws (Global Witness 2007). There are also instances of trafficking timber to China, robbing Cambodia of millions of US dollars of revenue and the profits from this trafficking going to fund a special branch of the military that is under the control of the Prime Minister (Global Witness 2007). Though Cambodia has laws to protect its natural resources, and to prosecute corruption and collusion, no one has ever been charged in cases related to forestry crime (Global Witness 2007).

Corruption, then, to maintain the illegal wildlife trade occurs in such a way that not only individual corrupt officials profit, but it also occurs in a systemic fashion to keep the black market flourishing. Such calculated circumvention of the rule of law and flouting of a nation's sovereignty are clearly threats to national security. As will continue to be demonstrated, wildlife trafficking has other impacts upon national security in addition to the challenge of the rule of law that takes place due to the corruption inherent within its perpetration.

Organised crime

Wildlife trafficking, as indicated, is highly profitable and at the same time there is a low risk of detection and/or punishment; this has presumably been the factors that have drawn organised crime to participate in the smuggling of wildlife (Cook et al. 2002). Additionally, as it can be a complicated operation with the capturing or killing, then smuggling and selling of illegal and sometimes live wildlife, there is a level of sophistication required to manage the

chain of events and be successful (Wyatt 2012a). Organised crime with its large networks and experience in smuggling other illegal goods is capable of smuggling wildlife. Evidence has been found in Germany (van Duyne 1996), Cambodia (Tagliacozzo 2001), Japan and Russia that this is the case, particularly in the trafficking of whale and caviar (Lemonick 1994).

Since organised crime has traditionally been involved in other black markets, there is evidence that they combine the smuggling of the different commodities. In Brazil, 40 per cent of drug seizures are connected to wildlife (Lemonick 1994) and the same is true in the US where 33 per cent of cocaine seizures also have wildlife seizures (The Scotsman 2002). There are multiple other drug connections as described in the Introduction. The World Bank has found evidence that wildlife trafficking occurs in conjunction with weapons and human trafficking (International Bank for Reconstruction and Development/The World Bank (IBRD) 2005). There is a clear connection then of wildlife trafficking to other national security concerns such as people and weapons smuggling, but the involvement of organised crime is also part of the national security threat. This stems from the influence that organised crime can have on politics, the media, the public, the courts and the economy (Levi 1998).

Politicians can be bribed or in 'the pocket' of organised crime and this can affect the legislation that gets enforced and implemented. Organised crime can also control or impact on the media, which has political implications as well as implications as to what the public are made aware of. Keeping criminal activity that might outrage the public out of the media is one possible scenario for how organised crime could use their influence. The courts could also be targets for bribery to affect convictions and/or sentencing. The economic consequences of wildlife trafficking, and other black markets like it, were detailed earlier and organised crime can play a role in such disruptions to incomes and government revenues through their illegal activities. Organised crime can also be powerful enough to challenge the state or have some control over it.

There is both historical and current evidence of this. The drug cartels that developed in Colombia in the 1980s provide proof of previous organised crime groups that were powerful enough to challenge the state. As Bunker and Sullivan (2010) theorised, the Medellin cartel model, or the first phase in the evolution of cartels, rivalled the

state because they employed extreme levels of violence and did not hesitate to challenge the authority of the state. The reason why these cartels did not continue to challenge the state was because of their hierarchical model with a single person as the leader; with the fall of Pablo Escobar, the cartel essentially ended (Bunker and Sullivan 2010). In the second phase, the cartels, again from Colombia, but in Cali, are flexible and networked rather than hierarchical and they utilise corruption more than violence (Bunker and Sullivan 2010). Bunker and Sullivan (2010) argue that while the reduction in violence appears to be less of a challenge to the state, corruption is far more insidious as it co-opts the state from the inside and actually exerts much more control over it.

The current evidence that organised crime can impede the rule of law and challenge national sovereignty again comes from drug cartels, but now from Mexico. With on-going corruption and co-option of politicians, the military and the police in Mexico, Bunker and Sullivan (2010) predict the emergence of a third phase of cartels. This one will be a 'criminal state successor' as it will have its own parallel polity as part of its criminal enclave and supersede the state's monopoly on use of force. Again, organised crime is involved in the highly profitable wildlife black markets, and such groups could potentially act in the ways of the cartels described. This presents the possibility that wildlife trafficking by organised crime can threaten national security in a more traditional way of challenging the authority of the government.

So if organised crime manipulates the government through corruption or challenges outright the authority of the state, either way, the country risks further economic damage stemming from the isolation brought about when government legitimacy is lost or in doubt. Stability in such nations is lacking as they cannot govern without interference. Similar consequences arise in areas where terrorists and insurgents are active and as evidence is beginning to show, these actors, too, are involved in wildlife trafficking.

Terrorism and insurgency

An obvious part of traditional and mainstream security agendas are terrorism and insurgency. Little attention has been paid though, certainly from an academic context, to the connection of terrorism and other conflicts to natural resource theft like wildlife trafficking.

Terrorism is conceptualised in line with Schmid's (2008) research, which found that terrorism has two distinct parts. First, it is a doctrine, which employs certain tactics for generating fear. Second, it involves coordinated violence targeted to produce the desired effects on multiple audiences (Schmid 2008). Organisations that fit this definition, such as Al Qaeda, are thought to play some role in wildlife trafficking so that they receive the profits from the black market to fund these violent activities (Wyler and Sheikh 2008; Wyatt 2011).

In the case of falcon smuggling, buyers of falcons are thought to place an order for a particular species of bird of prey and possibly even a colour of that bird (Wyatt 2011). Middle Eastern organised crime groups that are supposedly connected to offshoots of Al Qaeda arrange for this order to be filled by employing specialists to capture the birds from their ranges; this historically has been Central Asia, but is occurring more in Russia now, where the falcon populations are higher, but dwindling (Wyatt 2011). Profits from obtaining the falcon, potentially up to USD 100,000, are then supposedly used to buy weapons and support the training camps of the terrorists (Wyatt 2011).

Insurgent groups are rebel groups that are challenging the rule of the state. Some evidence suggests that insurgents are also funding their activities through the profits obtained from the illegal wildlife trade. This is the case in parts of Africa where it is known rebel militia groups kill elephants to poach ivory and that, in Sudan for instance; the ivory is sold to buy weapons, and in Somalia sold to pay the salaries of the militia (Naylor 2004). This has also been documented in Mozambique and Angola (Warchol et al. 2003; Naylor 2004).

The most recent and potentially most worrisome account of insurgent groups involved in wildlife trafficking is the testimony of a man who had escaped from the Lord's Resistance Army (LRA). The LRA is a militant rebel group that has been operating in central Africa since the late 1980s and is responsible for widespread human rights violations including forced child soldiers, mass murders and rapes (The Resolve and Invisible Children 2013). The escapee from this rebel group has said that he and others had been ordered by their leader, Joseph Kony, to kill elephants and bring him the ivory (The Resolve and Invisible Children 2013). Rangers in Garamba National Park in Congo believe that they have chased off LRA rebels who were trying to poach elephants and other escapees from the LRA have

reported the rebels are being given food for ivory that they poach (The Resolve and Invisible Children 2013). This particular connection and the overall trend that wildlife trafficking is connected to national security issues in various countries around the world has caught the attention of the United Nations Security Council, who discussed this in late 2012 (The Resolve and Invisible Children 2013).

Further risk to national security associated with terrorism and insurgency comes from the speculation that in addition to receiving profits from wildlife trafficking, such groups may resort to using illegal wildlife as a vector for transferring disease (Wyler and Sheikh 2008). As mentioned, zoonotic diseases can be transmitted from infected wildlife to people or non-human animal diseases could be transmitted between wildlife and domesticated non-human animals, thus infecting the farming and agricultural industries. It is thought that this may be a means that terrorists could use for a bioterrorist attack, which could take human lives, instil fear and/or cause costly economic losses by damaging major industries. Wildlife trafficking's link to corruption, organised crime, terrorism and insurgency are profound proof that it is a significant crime, which can have large-scale consequences and therefore needs to be addressed.

Conclusion

There are many important reasons why the illegal wildlife trade is a significant crime that warrants more attention from governments and others engaged in the fight against all types of crime. The threats to the environment posed by wildlife trafficking arise from the loss of biodiversity that it can cause, and the disease and invasive species that can be transmitted and transported with the illegal wildlife. All of these can produce instabilities in ecosystems that can then disrupt human lives and industries thus having far-reaching effects beyond environmental damage. Environmental insecurity of this kind could potentially force the movement of large numbers of people who live in proximity to degraded environments.

There are separate economic and human concerns as well. National revenues can be lost when trafficking circumvents proper channels where taxes would be collected. This could well result in fewer social services and less money for infrastructure or other projects that could draw corporate and international investment. Disease within

the agricultural sector can compromise food supplies causing lost income and endangering human life. Food scarcity is another aspect of environmental security that could be linked to the illegal wildlife trade. Disrupted ecosystems may no longer produce food for wildlife or for people. Without access to food people may become environmental refugees, which not only affects individual people, but could also have large-scale economic implications for governments and aid agencies. Wildlife trafficking is facilitated by corruption, organised crime, terrorists and insurgents, so is also linked to powerful criminal elements that challenge the rule of law and the legitimacy of some nations. These elements also pose risks to human physical well being and security by employing violence and potentially destabilising government institutions.

These more traditional criminological and security studies concerns connect green crimes, such as wildlife trafficking, to the more mainstream debates of criminology and to the larger security agenda. Green crimes and wildlife trafficking are interwoven into this sphere and therefore taking them seriously and investing more resources in them is important and highly relevant. Better understanding of how the varying wildlife black markets function and developing tactics to combat them will not only help to save wildlife and the environment, it will also aid in combatting other crimes, threats and harms. Just as people are not removed from the environment, green crimes do not occupy a separate sphere that does not impact upon the other crimes and harms in society. The combination of risks and threats in multiple aspects of society and the links to conventional crimes and human well being makes the illegal wildlife trade a significant danger that needs to be targeted for concerted efforts to curb the amount of wildlife that fuels this black market.