



S.27

The Wildlife Trafficking Enforcement Act of 2015

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EXECUTIVE SUMMARY

In the past thirty years the illegal wildlife trade has grown exponentially with significant and devastating impacts on species populations and biodiversity in impacted regions throughout the world. Highly sophisticated criminal organizations have increasingly entered into the illegal wildlife trade due to its relatively weak regulation and associated penalties. Through both heightened demand and criminal activity, illegal wildlife trade is now the third most lucrative criminal enterprise in the world, generating approximately \$10 billion USD per year in illegally derived funds. The expansion of the trade is driven by a multitude of factors, principally the demand for food products, material products, and the exotic pet trade. With inconsistent international regulation and enforcement of penalties for violations associated with wildlife crime, the illegal wildlife trade continues to expand despite global and domestic efforts, imperiling such species as the African elephant, rhinoceroses, and Asian tiger species among many.

S.27 The Wildlife Trafficking Enforcement Act of 2015 presents a viable solution to the large-scale and high-value trade of wildlife and their associated parts and products that are valued at \$10,000 and above. This bill amplifies and supplements existent legislative acts such as the Endangered Species Act and invokes such enforcement mechanisms in place under the Racketeering and Influenced Corrupt Organizations Act to strengthen U.S. powers of enforcement in the fight to end wildlife crime. The aim of this bill is ultimately to reduce the trafficking that is leading species such as the African Elephant to extinction. Disassembling the criminal networks that engage in this large-scale wildlife trafficking is essential to achieve this goal. Analyzing the controversies and metrics associated with wildlife trafficking, in addition to this bill's future implementation, are necessary to successfully execute the provisions of this bill.

Fundamentally, this bill provides the means to address an existent gap of enforcement for high-value wildlife crime. With this legislative solution, enforcement agencies such as the United States Fish and Wildlife Service are better able to protect and preserve impacted wildlife both for today and tomorrow to the benefit of all species, including humanity.

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BACKGROUND: ILLEGAL WILDLIFE TRAFFICKING

The United States Fish and Wildlife Service defines wildlife trafficking as “the poaching or other taking of protected or managed species and the illegal trade in wildlife and their related parts and products” (USFWS, 2015a). The illegal wildlife trade generates approximately \$10 billion USD per year and is the third most profitable criminal business in the world following the trade of drugs and firearms (Bergman, 2009).

The three main drivers of this illegal trade include the consumption of wildlife and their associated parts and products in the provision of food and regional delicacies, the exotic pet trade, and material products including ivory, furs, feathers, and products for traditional medicine in Asia.

Species populations involved in the wildlife trade are declining due to its influence with widespread ramifications for the health of ecosystems, incidence and spread of zoonotic diseases, and increasingly organized criminal activity that centers on this trade (Morelle, 2014).

Due to weak penalties, inconsistent enforcement, and high profits generated by the trade, sophisticated crime syndicates have shifted their operations into these regions to fund their mobilization and expansion of power (United Nations Office on Drugs and Crime, 2013). The expansion of the illegal wildlife trade has seen concurrent growth in violent criminal and terrorist activity from regions where these animals are sourced, endangering civilian livelihoods and regional stability (Morelle, 2014).

The poaching of animals for the wildlife trade is often a destructive operation impacting both the species being harvested and the ecosystem as a whole. Ultimately, the illegal wildlife trade has negative ramifications for populations of terrestrial, freshwater, and marine species, leading to changes in the ecological structure of many of our planet’s diverse ecosystems.

Negative Impacts to Key Processes in Ecosystems and Society

Removing species from their environments have several different effects on associated ecosystems and internal ecological processes leading to negative impacts on biodiversity and consequences for the needs of humankind.

➤ Disruption to Ecological Processes

Many animals trafficked in the illegal wildlife trade are keystone species that provide essential support and maintenance of critical systems in their environment (National Geographic, 2015). Two subsets of keystone species are foundation species (e.g. African rhinoceroses) and apex predators (e.g. sharks) (Myers et al., 2007). A foundation species modifies, maintains, or creates the structure of the habitat and occupies a low trophic level, while an apex predator occupies the highest trophic levels and moderates the populations of species below it (Ellison et al., 2005). These species facilitate and maintain the physical environment in which they live. As species populations decline the environments they previously occupied will be altered, potentially permanently, and the health and prosperity of both their associated ecosystems and human societies to which they contribute will be negatively affected in complex ways.

An example can be seen in the case of rhinoceros species that have declined in numbers in the African Savannah, especially in recent times, due to illegal poaching for their horns. The drivers of this illegal trade can be primarily attributed to two categories of products: medicinal and ornamental. First, its inclusion in Traditional Chinese Medicine and other alternative medicinal products and remedies throughout Asia, with unproven claims as a remedy for diseases such as cancer, has led to an exponential demand for this product. Second, rhino horn dagger handles in Middle Eastern nations such as Yemen, are a common component of traditional attire for men in certain cultures (PBS Nature, 2010).

Due to the demand for rhinoceros horn, African rhinoceros populations have decreased by 95% in the past 5 years and emphasize a robust example of a keystone species' removal from its environment (Emslie, 2012; U.S. Fish and Wildlife Service, 2014). Historic rhinoceros populations regulated the growth and nutrients in the savanna grasslands but with their near extinction, these grasslands are declining due to a lack of nutrient enrichment and overgrowth of vegetation, which can also increase the risk of high-intensity grassland fires (Sterbenz, 2014).

Another case of the alteration of an ecological process due to wildlife trafficking is via the removal of an apex predator from its environment—the scalloped hammerhead shark. Populations of this species along the Atlantic coast of North America declined 89% from 1986 to 2000, mainly due to exploitation for their fins and meat used as sustenance and for an Asian delicacy, shark fin soup. Due to this demand, unprocessed fins from the

scalloped hammerhead sharks are sold at \$50-100 per pound in Asian markets (Myers, 2007; NOAA Fisheries, 2014). This species was declared endangered in some parts of its global range in 2014 (NOAA Fisheries, 2014). The decline of this and other shark species in Atlantic coastal areas triggered a collapse of the regional food web, called a trophic cascade, wherein the loss of species at the top of the food chain altered population dynamics for other species in the ecosystem. As these sharks declined due to trafficking, their prey including stingray populations, exploded in number. These rays then consumed increased numbers of bivalves, including clams, scallops and oysters. The bivalves were unable to sustain such predation and their populations declined, negatively impacting the region's seafood industry and the overall ecosystem (Myers, 2007).

In addition to the ecological impact incurred by the removal of keystone species due to the illegal wildlife trade, another concern is found in the negative consequences of habitat degradation caused by the poachers' presence in these areas. Throughout the world, increasing instances of disruptive human contact with wildlife have been an important driver of species extinction. Specifically, in the illegal wildlife trade, poachers are not solely removing animals in ecosystems, but are also degrading these environments through the use of off-road vehicles, the intentional setting of fires to herd animal towards poachers or distract park rangers, and the clearing of vegetation for easier access to their targets. These impacts lead to fragmentation and simplification of ecosystems to which trafficked animals are native (Wyler & Sheikh, 2008; Shepard, 2008; Weragodatenna, n.d.).

➤ Disruption to Chemical Processes

Wildlife trafficking can also negatively impact chemical processes in an ecosystem. Ecosystems maintain chemical balance (nitrogen, oxygen, carbon, and phosphorous cycles) through the mediation of the living and non-living components that exist within. If a living or nonliving component of the cycle is modified, the entire input or output of nutrients and essential elements into ecosystem reservoirs is reduced or increased, resulting in negative economic and environmental impacts.

African tiger frogs, as an example, are harvested unsustainably for food and medicinal resources in Burkina Faso and Nigeria. These frogs consume large quantities of nitrogen-fixing cyanobacteria, also known as blue-green algae (Mohneke, 2011). Nitrogen is a plant nutrient that in excess quantity can lead to excess algae growth and ultimately eutrophication of aquatic environments. An algal bloom increases the organic material in

aquatic systems leading to newly available sources of food for bacteria. When bacterial levels increase, these organisms consume oxygen at rapid rates, leading to the deoxygenation of aquatic ecosystems with negative consequences for oxygen-dependent species such as fish (Art, 1993). Without the presence of African tiger frog tadpoles in these aquatic systems, the nitrogen cycle is disrupted, reducing water quality and species diversity. These effects are felt throughout the food web and can impact human societies that rely on these aquatic systems for the provision of safe drinking water and nutrition.

➤ Disruption to Biological Processes

The primary biological impact of the wildlife trade is the reduction in species richness and abundance in ecosystems. As species' populations decline in number, genetic diversity within the population also declines. This can lead to inbreeding depression and exacerbate risks to these species of extinction. Biological impacts of the wildlife trade also include the increasing risks of invasive species introductions into fragile habitats due to the movement of live organisms between nation borders. Invasive species can compete, inhibit, and disrupt native species health in environments, which feeds into a cycle of biodiversity loss in affected areas (Smith et al., 2009).

Human and wildlife interaction, especially in tropical ecosystems, has led to the emergence of a multitude of infectious diseases that threaten the health of humans and other species across the globe. The movement of diseases harbored in trafficked animals to regions where the native animal and human populations have no immunological resistance can lead to increasing instances of intense disease epidemics in impacted environments and those places to which these zoonotic diseases are carried by human dispersal (Karesh et al., 2005; Daszak et al., 2000; Ostfeld & Holt, 2004).

Wildlife that harbor diseases, when brought into contact with susceptible domesticated livestock and poultry, for example, can affect regional food production for human populations (Rhyan & Spraker, 2010).

Zoonotic diseases have also had large-scale impacts on other species such as the spread of the deadly Chytrid fungus from infected amphibian reservoirs to susceptible amphibian populations in remote global locations, which has played a major role in global species decline of amphibians across the board, partially due to the trafficking of frogs and other amphibians for food consumption and the pet trade (Retallick et al., 2004).

It is also worth noting that human populations, especially in dense urban areas, can be exposed to risks associated with the spread of zoonotic diseases from wild reservoirs to humans. Deadly diseases carried by animals in the wildlife trade include Severe Acute Respiratory Syndrome (SARS), Avian Influenza (H5N1 Flu), and Tuberculosis (World Health Organization, 2015; Bell et al., 2004).

A prominent historical example of such risk is found in the transmission and mutation of the Simian Immunodeficiency Virus (SIV) found in many primate reservoirs into Human Immunodeficiency Virus (HIV), known to be responsible for the pandemic that is AIDS (Wolfe, 2005). In more than one confirmed instance, the illegal poaching of great apes for “bushmeat” in food markets provided the opportunity for blood-to-blood contact between these two species and the transmission of the mutated virus into the human host, now transported person-to-person across the globe (Institut De Recherche Pour Le Développement, 2002).

Humans increase the probability and risk associated with zoonotic diseases derived from wildlife populations with the continuation of poaching of these populations for the provision of wildlife parts and products in illegal trafficking.

➤ Unknown Synergistic Impacts

There are also unknown synergistic negative impacts resulting from the loss of biodiversity and impairment of ecosystem functions due to the influence of illegal wildlife trafficking. For example, it is still unclear how the wildlife trade will impact genetic diversity of species over the long-term and research in this area continues.

THE LEGISLATIVE BILL AS A SOLUTION

Introducing S.27 The Wildlife Trafficking Enforcement Act of 2015

Regulatory efforts to stop wildlife trafficking activity are often limited in both power and scope and are largely unsuccessful in deterring large-scale, high-value trade (Robinson, 2015). The current penalties under the Endangered Species Act for trafficking of endangered species include a maximum prison sentence of 1 year and inconsequential fines. The incredibly high prices that the wildlife trade can generate, such as the amount paid for just one elephant tusk (\$2,100 per kg), increases the allure of the illegal wildlife trade as a high profit, low risk business given current penalties (Hellmann, 2014).

This bill aims to reduce those offences that include the trade of wildlife and their associated parts and products that are valued at greater than \$10,000. First, the bill defines wildlife trafficking violations as predicate offenses under the Racketeering and Money Laundering statutes and the Travel Act. All species, whether plant or animal, listed in the Endangered Species Act of 1973, the African Elephant Conservation Act of 1988, and the Rhinoceros and Tiger Conservation Act of 1988 will receive protection from illegal trafficking under the terms of this legislation.

The penalties and length of incarceration redefined for qualifying violations under this bill would include maximum fines of up to \$500,000 USD and 20 years in prison increasing the maximum penalty from what the Endangered Species Act specifies for violations of \$50,000 or one year in prison, or both. In addition, fines generated from wildlife trafficking offences would be allocated to specific governmental funds that benefit the conservation of impacted species.

This bill will also greatly strengthen the United States Federal Government's ability to enforce extended criminal penalties through the amendment of the Racketeer Influenced and Corrupt Organizations Act (RICO), which authorizes the government to bring federal sanctions against any parties linked to the United States in violation of this act.

Scientific and Technological Considerations

The science considered in the proposed solution is threefold in that it establishes a synergy between human sociology, animal population ecology, and data analytics. The

combination of criminology, biology, and data science has historically been proven effective in the recovery of iconic species such as the American Alligator, which was restored from the brink of extinction through government utilization of increased expected punishment, a species survival plan, and internet surveillance. The solution proposed in the S. 27 Wildlife Trafficking Enforcement Act is designed to operate within the bounds of current technology. Existing technologies are being adapted to increase the response speed of teams working to detain members and associates of wildlife trafficking crime syndicates, such as DNA forensics in ivory trafficking cases (Luo et al., 2013).

➤ Criminal Psychology: Increased Penalties for Wildlife Trafficking

The principal consideration in this solution is the social science behind criminal behavior, namely the relationship between crime and punishment. The considerable profitability of participation in the trade outweighs deterrents due to weak penalties, and this bill intends to increase the perceived risk inherent in the illegal wildlife trade and trafficking-associated crime. Harsher penalties and stronger enforcement were found to reduce serious crime by up to 20% within 7 years during the study conducted by the National Bureau for Economic Research (Kessler & Levitt, 1998).

➤ Biodiversity Assessment: Population Ecology and Biology

Population ecology and biology play a valuable role in this solution by allowing the Endangered Species Act to more effectively protect declining species in the short term but also to better preserve their habitats for long term recovery. Biologists from the United States Fish and Wildlife Service must designate an essential core habitat for each listed species as well as make recommendations on minimum population requirements, monitoring necessities, measurable recovery criteria, and a variety of other applicable parameters in addition to conducting annual surveys and coordinating species survival plans (Corn et al., 2013; USFWS, 2015b).

➤ Trafficking Detection: Data Science and Surveillance

Data science is the third component of the proposed solution and enables the federal government to identify criminal activity and react more swiftly to detain violating parties. The analysis of large sets of data, also known colloquially as “Big Data” can reveal where illicit funds are being transferred, red flag suspicious shipments, and reveal hidden

relationships between trade partners and ports, as well as any connections both within and outside of those circles (Olavsrud, 2015). This gives authorities a comprehensive assessment of all active parties involved in the hierarchy and design of the highly organized illegal wildlife trade.

Controversies within Wildlife Trafficking and Increased Enforcement

In the investigation of the issues internal and external to wildlife trafficking and the S.27 proposed solution, an analysis for existing or potential controversies is important to consider. Controversial issues exist within the driving forces of the trade itself, the controversies inherent to the solution of increased penalties as a deterrent, and the controversies that lie in the solution when practically applied in regards to surveillance and its efficacy as a metric of success.

➤ A Driving Force in the Wildlife Trade: Medicinal Products

Products made from illegally poached wildlife are used for either real or supposed benefits. One example of such a product is rhinoceros horn. The usage of rhinoceros horn dates back thousands of years to the ancient Greeks who believed that it was able to purify water, and the Persians would later use it to detect poisons (USFWS, n.d.). Traditional Chinese medicine in modern times employs the use of rhinoceros horn with claims that it purportedly can cure typhoid, high blood pressure, and a range of other maladies. Scientific support for these claims is profoundly lacking and have not been observed in human trials (Larson, 2010).

Even in cases where products derived from animal and plant species provide benefits for human health and consumption, these benefits do not outweigh the costs of species extinction to society at large. Indeed, any enterprise that drives a species to extinction is not a sustainable use of a resource, including uses of wildlife for products, food, or pets that result in population decline (Nasi et al., 2008).

➤ Effectiveness of Increased Penalties Used to Deter Wildlife Trafficking

Research shows that increased penalties can result in decreased rates of crime. Crime and punishment display an inverse relationship; that is to say that as expectations of punishment increase, crime rates in certain categories decrease (National Center for Policy Analysis, 1998).

The aforementioned study that indicated harsher penalties and stronger enforcement decreased serious crimes by 20% over a 7-year period lends credence to the bill's solution to address wildlife trafficking (Kessler & Levitt, 1998). Imposing lengthy prison sentences has also been shown to provide greater incentives for criminals to avoid participating in these crimes in the future (National Center for Policy Analysis, 1998).

This inverse relationship holds true for many crimes, but depends on the strength of its relationship with the welfare of the population to which it is applied and the demographic makeup of the population involved.

One study "failed to find an effect for severity" when certain individuals discounted their future welfare due to social circumstance such as extreme poverty, or a large enough proportion of the population involved in the criminal action are impacted by such factors as mental illness, addiction, or other such societal and genetic factors that would reduce the efficacy of increased penalty on crime (Wright, 2010; Lee, 2005). These factors are currently being studied in the social sciences for more depth of clarity.

In a broader sense, the cost-benefit model of crime and punishment holds true for serious crimes over time and has great potential to act as a solution in deterring the large scale illegal trade of wildlife.

➤ Reliability of Surveillance in Combating Wildlife Trafficking

Surveillance has been shown to effectively combat serious crime, such as illegal wildlife trafficking. Endangered cat pelts, migratory birds and rhinoceros horn and elephant ivory were confiscated due to their violation of the Endangered Species Act during Operation WildWeb, a USFWS initiative to reduce internet-related violations (Flocken, 2013). Operation Crash, another USFWS initiative that targets ivory traffickers, has resulted in over 30 arrests and 12 convictions in just a few years (USFWS, 2015a). This success is noteworthy but is of limited impact in comparison to the global rates and quantities of wildlife illegally traded that is valued at billions of dollars.

Despite successes, difficulties remain in this strategy's use and application. Without proper tools and training for Customs Agents and other officials tasked with surveilling the illegal wildlife trade, this task is a challenging endeavor.

In considering the use of Big Data, researchers can potentially detect and eventually predict patterns of behavior of illegal activity and can determine trends in illegal activity. The possible manipulation and misuse of data to support corrupt or misinformed conclusions is also to be avoided when analyzing large data sets (Taleb, 2013).

Overall the surveillance and seizure of illegal goods and the penalizing of bad actors is vitally important to reducing any criminal activity. In the process of this surveillance, the collection and correct interpretation of data can be an invaluable tool in discerning trends and information regarding illegal trade.

Measuring Success of the S.27 Wildlife Trafficking Enforcement Act

This bill intends to reduce the occurrence of wildlife trafficking by increasing the perceived risk by criminal organizations and actors of committing trafficking-associated crime. Through the reduction of wildlife trafficking, the ultimate outcome of the bill is to maintain or increase the populations of endangered species affected by the wildlife trade.

➤ Indicators of Success

In regards to enforcement metrics such as number of convictions, collected fines, shipments and seizures, the USFWS and cooperating agencies would look to establish short and long-term measurement objectives post-implementation of this bill.

First, officials could expect to collect data on the number of convictions and penalties assessed to violators that relate specifically to this bill. A short-term measure of success here would be in the increasing amounts of convictions and fines collected, which would be necessary as a demonstration of this legislation's effectiveness.

As a long-term objective, officials can look to metrics that demonstrate this bill's impact on disincentivizing wildlife crime—that is, the reduction in criminal participation (especially by sophisticated crime syndicates) in the high-value wildlife trade. A reduction in the quantity of shipments, animals or items seized worth \$10,000 or more will indicate that the program has been successful in disincentivizing this value-category of trafficking.

As the Racketeering Influenced and Corrupt Organizations Act (RICO) is invoked in this bill, an additional mid-term metric of showing reduced advertisement of trafficked goods for consumption, can be obtained by the measurement of internet related pathways and sales of trafficked goods (IFAW, 2008).

Domestically, the agencies responsible for monitoring inspections, shipment, and enforcement data associated with the wildlife trade are the U.S. Fish and Wildlife Service and the U.S. Customs and Border Protection (CBP, 2014). At the international level the International Consortium on Combating Wildlife Crime, a collaborative effort of five inter-governmental organizations, will work to compile inspections data and share this information to the public (CITES, 2013).

Finally, as another long-term objective, agencies will look to demonstrate measured increase in targeted wildlife populations (post-implementation of the bill) of endangered species being trafficked. To analyze this, a baseline population needs to be established at the time of the bill's implementation followed by an increasing trend over time of reduction of trafficking-related mortality (via reduced carcass counts, missing transmitters, and other such measures) and an overall increase in threatened/endangered species population size.

One method commonly used to assess animal population size is referred to as a line transect survey. A biologist travels a standard chosen distance and counts individuals or dung piles in that transect while estimating elephant distance from the transect. This process is repeated multiple times by vehicle or aurally. This data is then sent to data analysis software, which uses statistical modeling to estimate a probable range of population size. (Hedges, 2012).

Using the data collected from these methods scientists can estimate the vital rates of annual survival, recruitment and population change through time (Hedges, 2012). These metrics are important in estimating long-term success of outside efforts to stop mortality from trafficking on population size.

➤ Relating Trafficking Reduction and Population Growth

In order to prove that this bill both results in reducing trafficking and a causal-correlated increase in population size, there must be evidence of a significant long-term relationship between the trafficking reduction (in the \$10,000+ range) and increase in populations of those trafficked species. This can be done by conducting a statistical analysis adjusted for the biases in data collection mentioned above.

The final step in this process is isolating for the effect (in this case wildlife trafficking) by controlling for other variables (in this case, confounding factors such as disease, habitat

degradation and human conflict) that affect the statistical analysis. A causal relationship between increased penalties and a subsequent stabilization or increase in population size of those species most heavily impacted by trafficking would prove to be a successful outcome of S.27 The Wildlife Trafficking Act of 2015.

CONCLUSIONS AND RECOMMENDATIONS

The S.27 Wildlife Trafficking Enforcement Act of 2015 aims to provide a viable solution to the environmental and societal issue that is wildlife trafficking. Illegal wildlife trafficking threatens hundreds of species with extinction and overexploitation around the world. It is important to ensure that biodiversity is preserved and protected from the influence of illegal trade, as the variety of life on the planet provides many valuable benefits to the ecosystems in which these species interact and to human society. Current enforcement of penalties for violations under the Endangered Species Act has not provided the power of deterrent necessary to reduce large-scale trade in wildlife, especially for critically endangered and threatened species. Indeed, violations are on the rise for the endangered African elephants and rhinoceroses, sharks, tigers, and other such species. If the potential economic benefit that can be accrued through participation in the illegal wildlife trade outweighs the perceived costs and risks of penalties associated with said crime, bad actors will continue to pursue these financial gains.

S.27 invokes the powers of three federal acts associated with criminal violations and alters the U.S. criminal code to increase penalties applied to large-scale violations. All with the intended consequence of deterring and reducing instances of illegal trafficking of endangered species and their associated parts and products for unsustainable and illegal human consumption.

Ultimately, reducing large-scale, high value wildlife trafficking will reduce this negative pressure on species population numbers, increasing the health and resiliency of the ecosystem at large. Many trafficked species are key to the function and maintenance of their environments and provide valuable economic and ecological services to humankind. Thus, through the preservation of species, we act to preserve the productivity of our planet's ecosystems. It is in the interest of the U.S. government to increase the severity of penalties associated with violations of already existent governmental law that works to protect and preserve species, especially those already at risk of extinction. Through the increase of penalties for violators, another key tool and strategy exists for enforcing agencies of the Endangered Species Act and CITES to dismantle the illegal wildlife trade and protect the planet's biodiversity. The S.27 Wildlife Trafficking Enforcement Act presents a viable solution for this challenge.

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