Wildlife Conservation and Anti-Trafficking Act of 2019 (H. R. 864)

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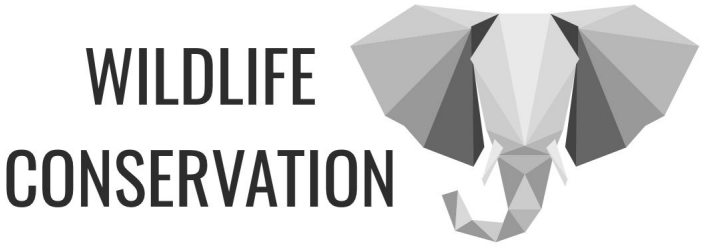

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I. EXECUTIVE SUMMARY

Wildlife trafficking is the illegal gathering, transportation, and distribution of plants and animals or animal products. It includes local and regional markets where poaching occurs, as well as international distribution markets. Wildlife trafficking poses a significant threat to environmental, social, and economic systems. After drugs and weapons, wildlife trafficking is believed to be the third most profitable illicit market in the world; it is a multi-billion dollar criminal industry (U.S. Department of State n.d.). Wildlife trafficking harms conservation efforts, supports corrupt and abusive governments, and has widespread adverse consequences on human and ecosystem well-being.

Illegal wildlife trafficking has grown in severity and scope due to unchecked demand for wild plants and animals for a variety of reasons, including, but not limited to: perceived medicinal value, cosmetics, fashion, exotic pets, food delicacies, and animal parts for jewelry and/or ornaments that are symbols of status or items of good luck in cultures around the world (United Nations Office on Drugs and Crime 2019). Despite the 1975 Convention on International Trade in Endangered Species (CITES) — where 80 participating countries agreed to focus attention on the threats that unregulated, international trade posed on flora and fauna — the illegal wildlife trafficking industry continues to expand (USFWS n.d.).

The primary impacts of illegal wildlife trafficking are twofold. First, unsustainable and unchecked poaching of wildlife poses acute stress on already fragile ecosystems and species. Second, increased animal-human interactions, coupled with the global movement of plants and animals, poses severe threats to human and ecosystem health. Studies have suspected international illegal wildlife trade has the potential to introduce and spread novel diseases into human populations, such as COVID-19 or SARS (Li et al. 2019).

H.R. 864: The Wildlife Conservation and Anti-Trafficking Act of 2019 aims to address the environmental problems of biodiversity loss and the emergence of novel zoonotic diseases by targeting illegal wildlife trafficking. Implementation of new conservation programs and support for existing programs will provide greater protection for endangered species and improve ecosystem health. Whistleblower reward programs coupled with increased trafficking penalties will dissuade participation in wildlife trafficking. The bill outlines policies and enforcement mechanisms to support wildlife conservation and limit illegal wildlife trafficking to mitigate the threats international wildlife trafficking poses on human and ecosystem health.

II. INTRODUCTION

Communities around the world have used wildlife dietarily or culturally for centuries (Hoffman and Cawthorn 2012). Over the years, demand for wildlife has followed globalization and population growth, transforming the wildlife trade into a thriving, complex international network. Increasing global demand for wildlife has led to mass illegal exportation of plants and animals, transforming sustainable wildlife trade into illegal wildlife trafficking**.** Higher wildlife demand has increased the risks accompanying international transportation and distribution of wildlife by imposing additional stress on already-fragile ecosystems and threatened animal populations.

The drivers of wildlife trafficking vary geographically but are multitudinous and involve supply-side economic and subsistence interests and demand-side cultural traditions. With regards to the supply interests: poverty, lack of access to food, and political influence contribute greatly to local involvement in wildlife trafficking (Harrison et al. 2015). With regards to the demand interests: a key driver of illegal wildlife trade is medicine (i.e. traditional Eastern medicine), such as with rhino and tiger bones and horns (Zhang, Hua, and Sun 2008). Private collectors and trophy hunters also drive wildlife trafficking.

Wildlife trafficking poses significant threats to biodiversity. The United Nation's latest report on biodiversity alerted world leaders to the dangers of one million species at risk of extinction. The report also stressed conservation and biodiversity protection as two necessary measures to take outside of reversing climate change (Brondizo et al. 2019). Given the threats wildlife trafficking poses to human and anthropogenic systems, government action is needed to prevent further consequences.

Wildlife trafficking is widely recognized as a highly profitable market which attracts a wide range of actors including poachers, smugglers, traders, and buyers. Poverty is a central driver to participation in wildlife trafficking and has led actors to establish extensive global networks to transport goods. The problems associated with illegal wildlife trafficking are addressed by H.R. 864 Wildlife Conservation and Anti-Trafficking Act of 2019 using several scientifically supported policy solutions. Implementing the bill and its solutions is likely to make a significant impact on illegal wildlife trafficking rates globally.

III. ENVIRONMENTAL PROBLEMS

A. BIODIVERSITY LOSS

Biodiversity is defined as the variety of all forms of life, from genes to species, and the ecological and evolutionary processes that sustain it (Gaston 1996). Humans directly benefit from biodiversity, including through food, fibers, medicines, renewable resources, as well as

through cultural experiences and moral reasons to preserve nature for its own sake (Díaz et al. 2006). Additionally, high levels of biodiversity buffers against large-scale environmental change (Díaz et al. 2006).

Biodiversity loss is a decrease in biodiversity, including numbers, genetic variability, or the variety of species within an ecosystem, a certain habitat, or the Earth as a whole (Rafferty 2019). Research suggests that illegal wildlife trafficking is putting 958 species in danger of extinction, which has larger implications for the health of ecosystems and ecosystem services (Frank and Wilcove 2019). Biodiversity loss leads to two major issues: ecosystem collapse and ecosystem service loss, both resulting in negative impacts on human wellbeing and livelihoods.

Ecosystem Collapse

Many ecosystems have a keystone species, which is a plant or animal that a biological community depends on. The removal of a keystone species can dramatically change an ecosystem structure by causing a trophic cascade, which is a change in the consumption rate in a trophic level that alters species abundance or composition in lower trophic levels (Bowman, Cain, and Hacker 2017). Trophic level refers to the hierarchical structure of food chains, which represents the exchange of energy among species in an ecosystem through consumptive relationships (Reichle 2019).

To illustrate the concept of a keystone species, consider the American alligator. American alligators are important to their ecosystems because they make alligator holes - pools of water that alligators use to stay cool and for mating. Alligator holes create habitat for fish and amphibians and thus provide opportunities for other predators, such as birds, to hunt prey. In the mid-1900s, overhunting of American alligators for their skins resulted in a subsequent decrease in alligator holes, which had unintended consequences for other species (USFWS n.d.; Mazzotti et al. n.d.). The loss of alligator holes reduced food supply for predators, creating a positive feedback loop. As alligators were over-hunted and alligator holes disappeared, food supply for alligators was weakened, creating additional stress on alligator populations (Mazzotti et al. n.d.).

Ecosystem Service Loss.

Ecosystem services are aspects of the environment from which humans benefit. Ecosystem services are broken down into four categories: supporting services, provisional services, cultural services, and regulating services. The example above of the American alligator will be used to illustrate examples of each ecosystem service:

1) Supporting services are necessary to produce other ecosystem services (Wall and Nielsen 2012). For example, American alligators provide supporting services by making alligator holes from which other species benefit (Mazzotti et al. n.d.).

2) Provisional services are benefits that humans can extract from nature (Wall and Nielsen 2012). Meat from American alligators is sometimes consumed by humans, and alligator skin can be used to make apparel (USFWS n.d.).
3) Cultural services are non-material but are important in the cultural development of humans (Wall and Nielsen 2012). The hunting of American alligators in the American South is a recreational activity that cannot take place unless alligator populations are healthy. Sustainable alligator hunting brings in millions of dollars to the economy of the American South (Baurick 2019).
4) Regulating services are benefits provided by ecosystem processes that moderate natural phenomena, such as flood control and water regulation (Wall and Nielsen 2012). Alligator holes can hold water during dry seasons and thus help many animal species such as birds, fish, and insects survive through the water-limited period ("Alligator Holes" 2017).

B. THREATS OF ZOONOTIC DISEASES

Zoonotic diseases are diseases caused by infectious microorganisms such as viruses, bacteria, parasites, and fungi that originate in non-human vertebrate animal hosts and are transmitted to humans by direct and indirect contact (Karesh et al. 2012). Examples of zoonotic diseases include the West Nile virus, rabies, and coronaviruses (SARS, MERS, COVID-19). While the bill does not specifically mention zoonotic diseases, increased animal-human interactions during wildlife trafficking increases the potential for their widespread dissemination.

Because animals are reservoirs of novel microorganisms, nearly 75 percent of emerging infectious diseases come from animals, many of which can be fatal to humans (Vorou, Papavassiliou, and Tsiodras 2007). According to the US Center for Disease Control and Prevention (CDC), the proportion of diseases that originate in wild animals is increasing, with three out of four new or emerging infectious diseases in humans now expected to originate in animals (CDC 2017). Globally, zoonotic diseases are responsible for 2.7 million deaths per year (CDC 2017).

The Spread of Zoonotic Diseases

Zoonotic diseases are known to spread in three stages: 1) interaction between domestic and wildlife populations, 2) direct contact between infected animals and humans, 3) and disease dissemination among humans (National Research Council et al. 2009). Areas of high risk are those where interactions with animals are frequent, such as zoos, pet stores, nature parks, and wildlife markets. Some zoonotic diseases are vector-borne (i.e. transmitted by a vector): a bite from a mosquito, for example, can cause West Nile virus. Other common forms of disease dissemination include food and waterborne transmission or introduction through the respiratory system.

Zoonotic Diseases and Wildlife Trafficking

Wildlife trafficking increases interactions with animals via the global movement of animals and animal products through the entire trafficking route, from poaching, to transport, to trade in markets. During wildlife trafficking, sanitation practices range from limited to nonexistent, presenting a significant risk to the dissemination of future zoonotic diseases (National Research Council et al. 2009). As animals are illegally transported and sold in markets, they are often confined to tight spaces. There is evidence that animals can shed even more viruses when placed in stressful conditions, and research has shown that housing animal species near one another significantly increases the risk of disease mutation and spread (Vorou, Papavassiliou, and Tsiodras 2007; Johnson et al. 2020). Both of these circumstances are often found in wildlife trafficking.

Impact of Zoonosis

Zoonotic diseases have an immense global impact on human health and economic systems. Historically, a disease's ability to spread and infect humans has been limited to local population outbreaks. However, globalization has allowed for the ever-increasing movement of goods. A joint report by the World Health Organization and the Food and Agricultural Organization in 2004 identified the anthropogenic movement and manipulation of wild plants and animals as the biggest potential trigger of a new disease outbreak (Slingenbergh et al. 2004). Consequently, the past decade has seen the emergence of various novel diseases that have posed major threats to global health and economic stability (Karesh et al. 2007).

Zoonotic diseases affect populations on a global scale, and outbreaks of zoonotic disease from wildlife trade have cost the global economy $23 billion in damages (Karesh et al. 2005; Karesh, Smith, and Asmussen 2012). Direct losses to the public health sectors connected in large part to value losses due to morbidity and mortality in humans and animals coupled with indirect losses from economic impacts arising from reactions to diseases contribute significantly to economic fallout regionally and internationally (Martins, Häsler, and Rushton 2020).

IV. PROPOSED SOLUTIONS, SCIENCE BEHIND SOLUTIONS, AND ASSOCIATED CONTROVERSIES

The bill presents several different policy solutions for combating illegal wildlife trafficking and its consequences. The following section divides these solutions into categories depending on how they address (A) biodiversity loss, (B) the spread of zoonotic diseases, or (C) the social implications of illegal wildlife trafficking. Some policy solutions address more than one of these problems. The science behind each solution and the controversies surrounding the implementation of the solution will be discussed where applicable.

A. BIODIVERSITY LOSS SOLUTIONS

Policy Solution: Conservation Program

This bill calls for the development of the International Wildlife Conservation Program to combat biodiversity loss through US Fish and Wildlife Service (USFWS) assistance under existing species protection legislation. This legislation consists of:

- African Elephant Conservation Act
- Asian Elephant Conservation Act of 1997
- Great Ape Conservation Act of 2000
- Rhinoceros and Tiger Conservation Act of 1994
- Marine Turtle Conservation Act of 2004
- Wild Bird Conservation Act of 1992
- Critically Endangered Animals Conservation Fund
- Neotropical Migratory Bird Conservation Act

Controversy of Policy Solution: A Case Study of the Gulf of California

Conservation initiatives are often complex due to the relationship between people, their livelihoods, and the species that share the habitat,as demonstrated by a case study of totoaba, the endangered vaquita, and a local fishing community in the Gulf of California. Totoaba is a fish that shares habitat with the world's smallest endangered porpoise: the vaquita (Uribe 2017). Traditional local fishing practices did not threaten vaquitas, but the totoaba became a prized item as its swim bladder is used in traditional Asian medicine to treat liver disease and arthritis (Morell 2017). A single totoaba swim bladder can sell for $100,000 in China (Ladkani 2019). Given the potential for lucrative illegal wildlife trade, organized crime became involved.

Totoaba fishing is done with gillnets, which have significant bycatch, such as the vaquita, because the nets are non-selective. The vaquita population has decreased by 90 percent since 2011 (Felbab-Brown 2017). In 2015, the president of Mexico, in partnership with conservation organizations, issued a gillnet ban to mitigate biodiversity loss, save the vaquita population, and deter illegal totoaba trafficking (Taylor 2015). However, data from 2016-2017 indicate that the ban did not have a notable impact on totoaba trafficking or vaquita conservation, with more than 600 illegal totoaba nets and lines intercepted and three vaquita's found dead from bycatch (Olivera and Uhlemann 2016). Conservation implementation was poor, and trafficking violations were not severe enough to deter totoaba traffickers. Consequently, vaquitas remain an endangered species, with fewer than 30 individuals remaining (Felbab-Brown 2017).

While the legislation established a precedent for species protection and brought attention to totoaba trafficking, it was unsuccessful. Vaquita populations remain unimproved, and local communities were harmed by the legislation because they lost an integral and sustainable fishing practice after the ban. The legislation needed to take a holistic approach and support locals and biodiversity while tackling the root cause of the problem: the demand for totoaba.

Policy Solution: Amendments to Current Acts

The bill amends some acts to increase the level of protection they provide for certain species. The Marine Turtle Conservation Act of 2004 is amended to protect marine turtles, freshwater turtles, and tortoises rather than the current protection of solely marine turtles. The Great Ape Conservation Act of 2000 is amended to include multi-year grants to be awarded from the Great Ape Conservation Fund for long-term conservation projects for great apes and their habitats.

Science Behind the Solution: American Alligators Case Study

The story of the American alligator demonstrates the potential efficacy of legally protecting endangered species. American alligators were listed as endangered under the Endangered Species Preservation Act of 1967 due to drastic reductions in population from unregulated hunting for alligator skins (USFWS n.d.). As discussed, American alligators provide a variety of ecosystem services.

The American alligator population was estimated at 100,000 individuals in 1950 across 10 southern states, but after 12 years of legal protection there were between 500,000 to 1 million alligators in Florida alone ("Alligator is Making a Strong Comeback" 1979). Today, American alligator populations have recovered and are sustainably hunted again bringing in millions of dollars to the economy of the American South (Baurick 2019).

Controversy of the Solution: Ineffectiveness of Legislation

While the conservation efforts paid off for the American alligator, creating legal protections for endangered species is not always an effective solution, as seen in the previously mentioned totoaba and vaquita case study.

Policy Solution: Changes in Funding

The bill proposes a change in the funding collection and use specifically for marine mammal and shark conservation. Currently, fines are collected for violations of the Marine Mammal Protection Act of 1972 and the Magnuson-Stevens Fishery Conservation and Management Act. Under the bill, these penalties would go directly to fund marine mammal and shark conservation. A similar allocation of funds would also be set in place for fines related to Illegal, Unreported, and Unregulated (IUU) Fishing Enforcement Act of 2015 to be used for fisheries enforcement.

Science Behind the Solution: Cabo Pulmo National Marine Park Case Study

Efforts in Cabo Pulmo in Baja California Sur, Mexico illustrate how resources devoted to conservation successfully helped an ecosystem on the brink of collapse recover. Cabo Pulmo was a small fishing village that practiced sustainable, local fishing. In the mid-1980s, the reef became overfished due to unregulated commercial fishing. The locals of Cabo Pulmo were concerned and petitioned to declare the reef a marine protected area in 1995. However, since the

government did not enforce the protection, locals began to monitor the reef themselves (Castañón 2019).

Due to the success of the locals' protection efforts, the biomass of species living on the reef increased by 463% in just 14 years (Brierley 2007; Castañón 2019). Top keystone predators like hammerhead sharks, which are endangered from shark finning, saw biomass increases of 1000% after the conservation measures were instituted (Castañón 2019). The story of Cabo Pulmo shows that species can recover when resources are dedicated to conservation. Ultimately, the recovery of the reef created a successful ecotourism industry that provides economic benefits surpassing that of fishing (Bushell 2014).

Controversy of the Solution: Effective and Community-Based Conservation.

Understanding how conservation can be implemented is crucial to its success. Initiatives within the bill can support community-based conservation. Community-based conservation engages the residents near the conservation areas to protect their natural resources through sustainable practices while creating jobs, generating revenue, and maintaining stability, as seen in the conservation efforts of Cabo Pulmo (Nilsson et al. 2016).

However, given conservation funding in the bill relies on penalties from trafficking, various issues can arise when considering how long the funding will last. Along with this, deciding which conservation initiatives need priority over others is a challenging task. Ideally, ecosystems will recover, providing adequate ecosystem services to surrounding communities without relying on continued monitoring and conservation efforts.

B. ZOONOTIC DISEASE SOLUTIONS

Policy Solution: USFWS Officers Stationed Abroad

While zoonotic diseases are not specifically mentioned in the bill, the solution presented in the bill to combat illegal wildlife trafficking limits the opportunity for zoonotic diseases to spread. The bill requires that USFWS officers be stationed in foreign countries where illegal wildlife trafficking is known to take place. USFWS officers are currently stationed in embassies in seven locations: Bangkok, Thailand; Beijing, China; Dar es Salaam, Tanzania; Gaborone, Botswana; Libreville, Gabon; Lima, Peru; and Mexico City, Mexico (Parramore 2018). In addition to these countries, USFWS officers would be stationed in at least forty other countries considered focus countries by the Secretary of the Interior (Rosen and Smith 2010). USFWS officer duties would focus on deterring illegal wildlife trafficking and reducing demand by assisting local agencies in their conservation efforts. Specific duties include assisting local agencies, facilitating the capture of wildlife traffickers, and providing technical assistance, among other tasks to reduce global demand for wildlife products.

Science Behind the Solution: Monitoring for Outbreaks

Placing USFWS officers in trafficking hotspots could act as an early detection system for the spread of zoonotic diseases. The USFWS officers stationed abroad might monitor potential outbreak epicenters, such as wet markets where animals are unhygienically packed together. Humans frequently come into contact with live animals in wet markets, which makes zoonotic disease spread possible (Woo, Lau, and Yuen 2006). For example, the 2003 SARS outbreak in Guangdong Province, China likely originated in a wet market, and the earliest reported cases of SARS were in food handlers at wet markets (Xu et al. 2004).

Controversy of the Solution: Understanding Spread of Zoonotic Disease and the Implementation of USFWS Officers

The controversy regarding science and zoonotic disease lies in understanding the mutation and transmission of diseases to humans from both legally and illegally trafficked animals. While scientific studies can explain some pathways of zoonotic disease transmission, it remains challenging to attribute a disease to a specific human-wildlife interaction (Pavlin, Schloegel, and Daszak 2009). The connection between zoonotic diseases and wildlife trafficking thus requires further research.

For example, research suggests COVID-19 originated in bats. However, the exact path of the virus before spreading to humans is uncertain. One theory is that the highly-trafficked and endangered pangolin was an intermediary species between the host of COVID-19 and humans (Lau et al. 2020).

C. SOCIAL SOLUTIONS

Policy Solution: Awards to Whistleblowers

The bill establishes a whistleblower reward system to incentivize people to come forward with information that would improve criminal investigations into wildlife trafficking. The awards are based on the extent to which the whistleblower contributed useful information to the criminal investigation, ranging from 15-50% of any money received as penalties. Total penalties must exceed $100,000 for an award to be received. If the relevant Secretary, which could be the Attorney General, Sec. of the Interior, Sec. of Commerce, Sec. of State, or Sec. of Treasury, determines the whistleblower planned or initiated the actions, the award will be reduced. If the whistleblower is convicted of criminal action for their role, they may be denied the award.

Science Behind the Solution: Whistleblower Theory.

When there is a high personal cost to whistleblowing, the reward will have to be high to entice the potential whistleblower to come forward with information. Because most wildlife trafficking happens through organized crime, the personal cost of coming forward with information could be significant. For example, the toll on psychological or physical health, as well as the threat of

ostracism, could be high personal costs to a potential whistleblower (Givati 2016). Therefore, the reward must compensate for the potential risk incurred.

Controversies of the Solution: Backlash Against Whistleblowers and Uncertainty in Rewards

A controversy of using whistleblowers for information on illegal activities, such as wildlife trafficking, is that the whistleblowers and their families may become targets of backlash, especially if the criminal organizations uncover their identity. This can be considered a major deterrent for whistleblowers as risks can outweigh benefits ("Whistleblowers in Business" 2019). Additionally, whistleblowers may themselves be criminals, and the program would then be rewarding their behavior. The bill therefore states that involvement in the crime can lead to a reduction of the award amount and potential indictment and prosecution. However, it can be challenging to identify the degree of involvement the whistleblower had in the trafficking event being reported.

Additionally, a possible issue with this policy solution is that the relevant Secretary has discretion in how much reward money a whistleblower will receive, and this uncertainty may make potential whistleblowers hesitant to come forward with information. The bill does not outline a procedure for rewarding whistleblowers from foreign countries, but similar legislation does allow for foreign whistleblowers to receive compensation (National Whistleblower Center n.d.).

Policy Solution: Conservation Program

USFWS officers will assist in local, active conservation programs in their assigned countries. The bill adds an anti-trafficking program to the aforementioned species conservation component that provides support using current legislation, including the Endangered Species Act of 1973, subsections (a) and (d) of section 8 of the Fishermen's Protective Act of 1967, the Eliminate, Neutralize, and Disrupt Wildlife Trafficking Act of 2016, and the Lacey Act Amendments of 1981. This portion of the bill may address conservation problems by assisting with understaffed programs and resources to alleviate stresses in current programs. The USFWS officers would facilitate the capture of traffickers, support investigations, provide technical support, and advise on the ways to best use the assets of the United States government to reduce wildlife trafficking.

Controversy of the Solution: Vague Implementation Guidelines

This policy solution is vague, and does not give details on how these conservation problems will be addressed or what conservation will be done. However, it does provide a designated purview under which the program will act.

Policy Solution: USFWS Officers Stationed Abroad

As described above, USFWS officers would be placed in various wildlife trafficking hotspots abroad and tasked with reducing demand for illegal wildlife products, assisting local agencies

with conservation, and facilitating the capture of wildlife traffickers. The bill allows for some discretion in how USFWS officers achieve their goals. Caution must be taken to avoid conflicts between the USFWS officers' enforcement of conservation laws and existing policies and cultures of their host countries.

Science Behind the Solution: Further Research on Cultural Uses for Illegal Wildlife Products.

To better address social problems illegal trafficking poses, researchers must determine and understand the drivers of demand for wildlife, such as use in traditional medicine, meat, social status, or other reasons. For example, rhino horns have been used in traditional Asian medicine for more than 2,000 years (Save The Rhino n.d.). Rhino horns are highly trafficked across the world because of perceived medicinal significance and cultural value. Specifically, consumers believe that rhino horn may help treat diseases such as gout and other ailments (Save The Rhino n.d.). The horns are predominantly composed of keratin, which is the same component as human hair and fingernails (USFWS n.d.). The preparation of rhino horns for use in medicine consists of grinding up the horn, boiling the powder in water, and drinking it. In recent years, Vietnam has become a major hotspot for the use of rhino horn as a hangover cure and treatment for terminal illnesses (Save The Rhino n.d.). In Vietnamese culture, many consider the rhino horn to be a symbol of status and wealth compared to the potential medicinal value, bringing into play cultural norms and demands (Doak and Olmedo 2013).

While the use of rhino horns for medicinal purposes has been practiced for thousands of years, there is controversy over their benefits. Humane Society International has spoken out against the rhino horn usage and publicly stated there are no medicinal benefits (Humane Society International 2011). This creates tension between science and tradition.

Controversy of the Solution: Rhino Horn Use for Medicinal and Cultural Practice Case Study and Jurisdictional Conflicts

The conflict between the perceived medicinal and cultural significance of some illegal wildlife products and scientific studies can create tension when attempting to regulate illegal wildlife trafficking. The presence of USFWS officers in foreign countries as they work to reduce demand for illegal wildlife products may be construed as cultural imperialism by the host country. For the United States to avoid this perception, change in cultural medicinal practices involving illegal wildlife products must occur through research, education, and awareness of the true medicinal facts about these products and their alternatives.

Controversies surrounding the jurisdictional extent of the US also present a problem for USFWS officers operating abroad. There is the potential for pushback against US interference in the host country and issues of sovereignty in enforcing international laws and treaties. However, a 2019 progress report on the Eliminate, Neutralize, and Disrupt (END) Wildlife Trafficking Act of 2016 reported that countries currently hosting USFWS officers worked collaboratively with the

US presence and had an overall positive impression of the program (Bureau of Oceans and International Environmental and Scientific Affairs 2019).

Policy Solution: IUU Fishing

The bill allows for fines from the Magnuson-Stevens Fishery Conservation and Management Act to be allocated to enforce the IUU Fishing Enforcement Act of 2015. Enforcement of illegal, unreported, and unregulated fishing measures requires expensive equipment to enforce, such as boats, satellites, trained personnel and the vast area of the ocean needing to be monitored (The Pew Charitable Trusts 2017). While IUU fishing can produce cheaper fish in marketplaces, it drastically lowers global fish stocks and supports illegal and organized crime, harms marine ecosystems, and produces bycatch (Monterey Bay Aquarium n.d.).

Controversy of the Solution: Impacts on Local Subsistence Fishers

Legislation aimed at restricting unlawful fishing by banning certain fishing practices to reduce bycatch of threatened species may jeopardize local fishers' income. Legislation should be implemented in such a way that it can support local incomes and food security while also using strong enforcement to undermine trafficking.

Policy Solution: Increasing Severity of Wildlife Trafficking Crime

The bill increases the severity of illegal wildlife trafficking crimes to deter engagement. The bill amends the Travel Act and the Racketeering Statute to include wildlife trafficking violations, which will increase fines and allow for these crimes to be prosecuted more easily. More severe punishments for crimes should reduce trafficking by increasing the risks and reducing the benefits of participating in the trade. The policy solution is not specific as to exactly how much the fines will increase by or what other criminal punishments will be added, but it does create a system that focuses more strongly on punishing these violations.

Controversy of the Solution: Ineffectiveness of Harsh Punishments on Crime Deterrence

Traditionally, the US criminal justice system employs harsher punishments to deter crime. However, some social scientists argue that there is no connection between the harshness of punishment and crime deterrence. One theory is that the threat of criminal stigmatization rather than the cost of committing a crime is a stronger deterrent force against crime. Another theory is that the perception of being apprehended and convicted deters crime, rather than the severity of the punishment. Within the criminological science community, there is debate about the true causes of crime deterrence and how to best use them in the criminal justice system (Doob and Webster 2003). To that end, one could argue that measures taken in H.R. 864 to increase the penalties associated with illegal wildlife trafficking may not be an ineffective deterrent against crime.

V. MEASURING SUCCESS

A. DEFINING SUCCESS

The solutions proposed in the bill are wide-ranging and multifaceted but are principally intended to achieve two main objectives: (1) a reduction in biodiversity loss, and (2) reduced movement of wild plants/animals and any associated zoonotic diseases. The success of the bill will therefore be measured by its progress towards achieving these overarching goals. However, a challenge in assessing these benefits in the bill is that some of its main components are not easily measurable or observable. First, the bill's goal to reduce biodiversity loss is a complex outcome to measure: variations in biodiversity consist of changes at the genetic and species levels, oftentimes meaning that the time-scale on which these variations are measured is relatively long, which is inconvenient from a policy analysis standpoint. Second, in measuring changes to the illegal wildlife trade, the bill is also presented with a challenge common in observing illicit activity. The illegal wildlife trade, much like the drug trade, gun trade, or even government corruption, is by nature intended to be hidden from public view and so it is likely that even the best thought out policies address only a fraction of the full scale of the industry (Flores-Palacios and Valencia-Díaz 2007).

To overcome this challenge, some performance indicators instead offer indirect markers of progress towards the bill's stated objectives.

B. BIODIVERSITY INDICATORS

Conservation Program

Improved conservation outcomes for the species authorized under the bill would be an effective marker of success. Species health can be measured in several ways, including estimating the total number of individuals in a species, the number of different species in an area, or the geographic spread of a species. There is a range of scientific methods for wildlife population measurements (canopy fogging, aerial photography, etc.), as well as sampling methods such as transect and quadrat sampling. These are distance sampling methods used to estimate wildlife populations. Lines with markers are placed across a study area, usually in a grid, and using data on where and how many individual animals of your target species interact with each line, you can model the probability of detection and from there, estimate population sizes.

Amendments to Existing Acts

The success of making amendments to the Marine Turtle Conservation Act of 2004 and The Great Ape Conservation Act of 2000 can be determined by whether the new grants and the proposed expansion of protections helped to improve conservation outcomes. Comparisons can be made between the welfare of great ape and marine turtle populations before and after the additional grants are made available. Similarly, comparisons can be made between tortoise and

turtle conservation efforts before and after these species were added to conservation programs authorized under the Marine Turtle Conservation Act.

IUU Fishing

Success is defined as improvements in marine mammal and fish conservation. This can be determined by comparing the health of marine mammal and fish populations before and after the redirection of fines and penalties from the Marine Mammal Protection Act of 1972 or the Magnuson-Stevens Fishery Conservation and Management Act to conservation programs. Methods such as seining (net capture) and electrofishing provide effective analyses of fish populations such as population density and habitat saturation (Vincent 1971). Seining Mark and recapture and other fish trapping methods also help identify any other density-dependent behavior. Establishing marine mammal populations is a slightly different proposition and requires different methods of measurement. Marine turtle populations, for example, can be evaluated using a range of methods including conducting ground and aerial surveys on nesting beaches and foraging habitats, or using transect and mark-recapture techniques as previously described.

C. WILDLIFE MOBILITY INDICATORS

USFWS Officers Stationed Abroad

This program is successful if the presence of USFWS officers in a country of concern can reduce its observed instances of trafficking. Countries with USFWS officers can be compared to countries without them, focusing specifically on measures such as the number or volume of seizures, the number of trafficking arrests, or the number of engagements by customs officials. Other measures that can be implemented at the local level include regular testing of animals at live markets — as these are often the initial selling point of trafficked products — or counting the number of these markets that are shut down for selling wildlife products; this could serve as an indicator of successful enforcement.

Awards to Whistleblowers

Success would be determined by whether the implementation of the system led to significantly improved outcomes in terms of arrests and seizures of trafficked products in the instances where they are utilized. Tracking payments to whistleblowers over time or the number of whistleblowers that come forth are effective measures of the program's growth and how successful efforts have been to publicize it.

Increase Severity of Trafficking Crimes

Success would be determined by measuring the number of indictments for trafficking crimes, the number of convictions, or the lengths of prison terms. The intention would be for the threat of long jail sentences to be enough incentive to dissuade would-be traffickers.

VI. CONCLUSION

Illegal wildlife trafficking and the unsustainable taking of animals from their environment leads to biodiversity loss, which severely impacts the functioning of healthy ecosystems and ecosystem services. Illegal wildlife trafficking also increases the frequency of interactions between humans and wild animals, which increases the chances that a zoonotic disease may spread from animals to humans. Both of these outcomes of wildlife trafficking have serious consequences for human health, ecological health, and the economy. Because ecosystems provide material and cultural benefits for humans, conserving natural resources has far-reaching benefits. Conserving biodiversity also decreases the risk of disastrous zoonotic disease outbreaks, such as the COVID-19 virus that has caused significant social upheaval at the time this document was written.

Given the significant threats wildlife trafficking poses to the health of both our natural habitats and human society, swift action must be taken to address any potential causes of concern regarding biodiversity loss and zoonotic disease dissemination. By increasing conservation funding, biodiversity can be conserved in areas where the rate of biodiversity loss is of particular concern, which will in turn protect ecosystem services. Placing USFWS officers abroad to assist in conservation will help stem trafficking, biodiversity loss, and disease spread by leveraging the United State's scientific and enforcement expertise. Lastly, increasing penalties for illegal wildlife trafficking and bolstering information channels by awarding whistleblowers larger sums of money will improve information attainment and decrease the proliferation of criminal activity related to wildlife trafficking. By implementing H.R. 864, the United States can enhance its efforts to combat wildlife trafficking, and therefore biodiversity loss, the emergence of novel zoonotic diseases, and other associated problems.

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