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## Mitigating Zoonotic Disease Threats to Prevent Future Pandemics: A Critical Analysis of Policy Favoring the Closures of Wildlife Markets in Latin America

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# **Mitigating Zoonotic Disease Threats to Prevent Future Pandemics: A Critical Analysis of Policy Favoring the Closures of Wildlife Markets in Latin America**

Melany J. Danielson\*

*The Preventing Future Pandemics Act was introduced to mitigate zoonotic disease threats around the world by focusing policy efforts on the closure of wildlife markets that gave rise to COVID-19. This Note challenges the efficacy of wildlife market closure policy by considering cultural, socioeconomic, and legal factors for the existence of wildlife market within megadiverse countries in Latin America. Based on scientific research on the animal-to-human interface and zoonotic disease transmission, this Note suggests effective policy should incorporate a targeted species ban for reservoir species, improved sanitary measures and disease surveillance, and wildlife trafficking prevention. Ultimately, this Note calls for policymakers to take into account the context of a historically undervalued Global South, the realities of human behavior, culture, and society, and the science on disease transmission.*

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I.	INTRODUCTION.....	125
II.	ZEROING IN ON LATIN AMERICA: THE CULTURAL, ECONOMIC, AND LEGAL LANDSCAPE IN MEGADIVERSE COUNTRIES .....	130
	<i>A. Blurred Lines: Cultural and Economic Drivers for the Existence of Live Wildlife Markets and the Illegal Wildlife Trade .....</i>	130
	<i>B. COVID–19’s Impact on Latin America’s Wildlife Trade and Wildlife Markets.....</i>	135
	<i>C. State of Wildlife Markets in Latin America: Peru’s Belén Market Before and After COVID–19.....</i>	136
	<i>D. Peru’s Action Plan to Reduce Illegal Trade .....</i>	139
	<i>E. Domestic Liability Laws and Response to Threats From the Sale of Live Animals.....</i>	140
	<i>F. International Environmental Laws as a Tool to Prevent Zoonoses .....</i>	144
	<i>G. Global South as an Emerging Force in International Environmental Laws .....</i>	148
III.	U.S. LEGISLATIVE EFFORT TO COMBAT FUTURE PANDEMICS .....	150
	<i>A. Leading International Cooperation to Eliminate Wildlife Markets.....</i>	151
	<i>B. USAID Involvement, Law Enforcement Attachés, and Research on Risk of Wildlife Markets on Emergences of Novel Viruses. ....</i>	153
	<i>C. Amending United States Domestic Law to Prohibit Sale of Live Wild Animals Intended for Human Consumption .....</i>	155
IV.	CRITIQUING THE PREVENTING FUTURE PANDEMICS ACT OF 2021 .....	155
V.	FINAL RECOMMENDATIONS.....	166
VI.	CONCLUSION.....	167

## I. INTRODUCTION

In March 2020, the world shut down to protect against the spread of a novel coronavirus (“COVID–19”) forcing people to stay home, requiring wide–spread mask use, halting global travel, and devastating global economic productivity.<sup>1</sup> Although COVID–19 is not the first major virus to spread across the globe, COVID–19 affected the world in ways recent viruses had not—it became a global threat seemingly overnight.<sup>2</sup> Three years later discussions of the origins of COVID–19 continue to be hotly debated, while the world continues to quell the spread and global effects of the pandemic.<sup>3</sup> There have been ardent disputes about the true origins of COVID–19, but the most popular assumption is that COVID–19 originated in bats and made the jump to humans facilitated by the conditions of a “wet” market<sup>4</sup> (“wildlife market”) in Wuhan, China.<sup>5</sup> Despite the controversy, the scientific dispute lies not in the origin of the virus from

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<sup>1</sup> Abid Haleem, et al., *Effects of COVID-19 Pandemic in Daily Life*, U.S. NAT’L LIBR. OF MED., NAT’L INST. OF HEALTH, 78 (Apr. 3, 2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7147210/>.

<sup>2</sup> Cristina Velaz, *The Preventing Future Pandemics Act Fights Global Health*, BORGEN- MAGAZINE (Aug. 27, 2021), <https://www.borgenmagazine.com/preventing-future-pandemics/>.

<sup>3</sup> Anthony Gitonga, *Agriculture Sector Yet to Fully Recover From COVID-19 Effects*, THE STANDARD (Oct. 17, 2021, 4:00PM), <https://standardmedia.co.ke/health/news/article/2001426468/agriculture-sector-yet-to-fully-recover-from-covid-19-effects> (discussing the agricultural sectors delayed recovery from COVID-19 in late 2021).

<sup>4</sup> See generally Dilys Roe et al., *Beyond Banning Wildlife Trade: COVID-19, Conservation and Development*, 136 WORLD DEVELOPMENT 1, 2 (2020) [hereinafter *Beyond Banning Wildlife Trade*] (“It is vital to understand, however, that wet markets are simply food markets which sell a range of fresh produce: fruit and vegetables, fish, live-stock and sometimes, wildlife . . . Such markets underpin the informal food systems on which millions of urban and rural people depend. Implementing indiscriminate wet market bans would further amplify the impacts of this pandemic on the world’s poorest and most vulnerable communities, without delivering commensurate benefits in terms of reducing zoonotic disease risks.”).

<sup>5</sup> *WHO Report Says COVID Originated in Bats, But Critics Claim the Study Was Biased*, PBS NEWSHOUR (Mar 29, 2021, 6:40 PM), [https://www.pbs.org/news-hour/show/who-report-says-covid-originated-in-bats-but-critics-claim-the-study-was-biased?;see%20also%20A.%20Alonso%20Aguirre%20et%20al.,%20Illicit%20Wildlife%20Trade,%20Wet%20Markets,%20and%20COVID-19:%20Preventing%20Future%20Pandemics,%2012:3%20WORLD%20MEDICAL%20&%20HEALTH%20POLICY%20256,%20257-58%20\(2020\)](https://www.pbs.org/news-hour/show/who-report-says-covid-originated-in-bats-but-critics-claim-the-study-was-biased?;see%20also%20A.%20Alonso%20Aguirre%20et%20al.,%20Illicit%20Wildlife%20Trade,%20Wet%20Markets,%20and%20COVID-19:%20Preventing%20Future%20Pandemics,%2012:3%20WORLD%20MEDICAL%20&%20HEALTH%20POLICY%20256,%20257-58%20(2020).).

bats – because the genomic sequence is like that of other bat coronaviruses – but rather in how and where the virus made the animal–to–human jump.<sup>6</sup> Even without conclusive evidence as to the true pathway, wildlife markets are nonetheless perceived to be a serious threat to public health because animals and humans exist in close proximity (often in unsanitary conditions) that may increase the risk for new zoonotic diseases.<sup>7</sup>

The emergence of COVID–19 highlights the need to closely examine the factors that contribute to new zoonotic diseases and the ability of viruses to spread quickly.<sup>8</sup> For example, unhygienic commercial wildlife markets that sell bushmeat and live animals, illegal and legal wildlife trade, and even the destruction of critical habitat expose people to non–domesticated animals in close contact where the risk of viral transmission increases.<sup>9</sup> Although COVID–19 originated in animals, human activities that are known to increase the risk of disease transmission from animals to humans are factors that

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<sup>6</sup> Polly Hayes, *Here's How Scientists Know the COVID-19 Came from Bats and Wasn't Created in a Lab*, ALLIANCE FOR SCIENCE (July 21, 2020), <https://allianceforscience.cornell.edu/blog/2020/07/heres-how-scientists-know-the-coronavirus-came-from-bats-and-wasnt-created-in-a-lab/>.

<sup>7</sup> Vanda Felbab-Brown, *Preventing Pandemics Through Biodiversity Conservation and Smart Wildlife Trade Regulation*, BROOKINGS (Jan. 25, 2021), <https://www.brookings.edu/research/preventing-pandemics-through-biodiversity-conservation-and-smart-wildlife-trade-regulation/>; see also *Zoonotic Diseases*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <https://www.cdc.gov/onehealth/basics/zoonotic-diseases.html> (The Centers for Disease Control and Prevention (“CDC”) defines “zoonotic diseases” as diseases “caused by harmful germs like viruses, bacterial, parasites, and fungi” and viruses that spread between animals and humans.).

<sup>8</sup> Felbab-Brown, *supra* note 7.

<sup>9</sup> *Id.*; see also Aguirre et al., *supra* note 5 at 258 (“Wet markets are where fresh meats, produce, and animals are often stored to be sold in open-air environments, in close proximity, with little to no health safety precautions or sanitation measures. These wet markets exist across the world and in China, they often contain foreign, rare, and sometimes endangered species that are sold, among other goods, by traveling suppliers. Wet markets facilitate and heavily contribute to the practice of illicit wildlife trade and in turn, this practice has led to the spread of zoonotic diseases among the animals and to customers at markets. Transportation and storage of animals for wildlife trade at these markets enables the spread of diseases from animals to other animals.”).

ultimately precipitated the spread into the human population.<sup>10</sup> Therefore, to prevent future pandemics, it is imperative to understand the human behavior and underlying motivations that facilitate conditions for the transmission of viruses and other pathogens from animals to humans.<sup>11</sup>

COVID-19 not only infected and killed millions of people around the world, but it also caused a global halt in work, travel, and tourism causing serious consequences, including widespread economic loss and instability.<sup>12</sup> Dire economic circumstances left some local communities vulnerable to “subsist in illegal offtake,”<sup>13</sup> especially in countries relying on ecotourism because illegal activities including poaching and selling wildlife became a viable source of necessary funds to feed families.<sup>14</sup> Even communities around the world that still depend on subsistence hunting or engage in legal forms of wildlife trade felt the economic pressures of the COVID-19 pandemic.<sup>15</sup> Despite local communities putting a high value on natural resources, the added economic pressure ultimately motivated many individuals to resort to criminal activity to make ends meet.<sup>16</sup>

Due to COVID-19’s widespread effects, some have advocated for the importance of decreasing the “animal-to-human interface” by considering a wider range of factors that contribute to public health threats from zoonotic disease and working towards being “in

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<sup>10</sup> Jimmiel Mandima, *The Critical Role of Law Enforcement at Preventing Future Pandemics*, INTERNATIONAL FUND FOR ANIMAL WELFARE (Apr. 20, 2020), <https://www.ifaw.org/journal/critical-role-law-enforcement-future-pandemics>.

<sup>11</sup> *Id.*; see also Ozgun Emre Can et al., *Dealing in Deadly Pathogens: Taking Stock of the Legal Trade in Live Wildlife and Potential Risks to Human Health*, 17 GLOBAL ECOLOGY AND CONSERVATION 1, 15 (2019) [hereinafter *Dealing in Deadly Pathogens*] (discussing the need for human behavior change initiatives in making policy decisions effective).

<sup>12</sup> Mandima, *supra* note 10; see also *Beyond Banning Wildlife Trade*, *supra* note 4, at 1.

<sup>13</sup> Mandima, *supra* note 10 (“Desperate local communities that truly value wildlife as a source of pride and identify with it for culture, tradition, religion and other sustainable livelihoods needs, end up extracting resources wantonly. Meanwhile criminal syndicate entice them and get them to be complicit to poaching.”).

<sup>14</sup> *Id.*

<sup>15</sup> Felbab-Brown, *supra* note 7.

<sup>16</sup> *Id.*

harmony with nature.”<sup>17</sup> Government or international efforts that seek to combat new viral emergence by eliminating wildlife markets known to have higher incidences of animal-to-human contact must consider the human and social elements that drive such activity, otherwise any laws or policies implemented may fail to be effective.<sup>18</sup> Addressing the overarching issue of emerging zoonotic diseases is important and should be addressed at both national and international levels. However, factors that led to the creation and operation of wildlife markets should drive the conversation to finding effective solutions and preventative measures to prevent new zoonotic diseases and viral spread from wildlife markets.<sup>19</sup> Furthermore, any legal efforts to prevent illegal wildlife trade and end live wildlife markets should include local communities as vital stakeholders and partners.<sup>20</sup> Policies that outright ban wildlife markets that sell terrestrial

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<sup>17</sup> *Beyond Banning Wildlife Trade*, *supra* note 4, at 2; *see also* Wondwossen A. Gebreyes et al., *The Global One Health Paradigm: Challenges and Opportunities for Tackling Infectious Diseases at the Human, Animal, and Environment Interface in Low-Resource Settings*, 8 PLOS NEGLECTED TROPICAL DISEASES 1, 2 (2014) [hereinafter *The Global One Health Paradigm*] (“In response to the global need for the prevention of diseases at the human, animal, and ecosystem interface, various academic, intergovernmental, and research centers are playing a central role. At the [United Nations Food and Agriculture Organization], One Health has been integrated at the interdepartmental working group (IDWG) level to focus strategically on issues common to the domains of human health, animal health, and the environment. Key issues . . . include surveillance and disease intelligence, the need to improve biosecurity in production and marketing, and mechanisms to address socioeconomic incentives.”).

<sup>18</sup> Felbab-Brown, *supra* note 7.

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*; *see also Beyond Banning Wildlife Trade*, *supra* note 4, at 2 (“The rights of people to own, manage, and use their traditional lands and natural resources, and to participate in political and policy processes that affect their rights, are upheld in international and national laws, as well as in the UN Declaration and Resolutions including the 2018 UN Declaration on the Rights of Peasants and Other People Living in Rural Areas (Human Rights Council Resolution, 2018). Unless the people most affected by restricting wildlife trade are meaningfully included in decisions on whether and what to ban, external calls to restrict trade and use of wild resources undermine these rights, thereby contravening SDG [Sustainable Development Goals] target 16.7, which aims to ensure responsive, representative, participatory and inclusive decision-making.”).

animals for human consumption may isolate and disproportionately impact local communities.<sup>21</sup>

Based on the devastating effects of the COVID–19 pandemic, members of Congress in the United States introduced the Preventing Future Pandemics Act of 2021 (“PFPA”),<sup>22</sup> which seeks to address public health threats from emerging zoonotic diseases by focusing government efforts on eliminating wildlife markets.<sup>23</sup> Hundreds of organizations in public health, animal welfare, science, and bipartisan members of Congress support enacting policy to regulate and ultimately eliminate wildlife markets.<sup>24</sup> Even if PFPA in its current form is not enacted into law, threats of future pandemics will likely force the global community to confront the factors that led to COVID–19.<sup>25</sup>

This Note will examine PFPA in the context of Latin America, which would propel United States’ involvement around the world to combat the threat posed by the illegal wildlife trade and wildlife markets as hotspots for zoonotic disease transmission. Part II will contextualize the cultural and economic motivations for the existence of wildlife markets and the illegal wildlife trade and discuss the legal enforcement mechanisms in megadiverse countries in Latin America. Part III will describe and examine the major provisions of the PFPA. Part IV will provide a critique of the strengths and weakness of the PFPA in the context of Latin American megadiverse countries. Lastly, Part V concludes with policy recommendations

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<sup>21</sup> Felbab-Brown, *supra* note 7; *see also Beyond Banning Wildlife Trade, supra* note 4, at 2; *see generally* Hollie Booth et al., *Investigating the Risks of Removing Wild Meats from Global Food Systems*, 31 *CURRENT BIOLOGY* 1788, 1789 (2021) [hereinafter *Risks of Removing Wild Meats*] (“The sudden loss of wild meat from national food systems, and the ability of countries’ food systems to absorb these shocks, are unequally distributed, with risks of protein shortfalls in some of the world’s most food-insecure countries.”).

<sup>22</sup> Velaz, *supra* note 2 (discussing the first introduction of the Preventing Future Pandemics in 2020 that died in committee with 115 cosponsors in the House, and the newest version, House Resolution 151, introduced in January 2021 with 109 cosponsors as of February 2022).

<sup>23</sup> Press Release, Congressman Mike Quigley, Quigley, Upton Re-Introduce Bipartisan Legislation to Shut Down Commercial Wildlife Markets Which Pose a Threat to Global Public Health, (Jan. 4, 2021) (on file with author) [hereinafter Quigley Press Release].

<sup>24</sup> *Id.*

<sup>25</sup> *Id.*



informed by the cultural, economic, and legal context of Latin America to improve the efficacy of legislative action taken by Congress to prevent novel viruses that threaten public health.

## II. ZEROING IN ON LATIN AMERICA: THE CULTURAL, ECONOMIC, AND LEGAL LANDSCAPE IN MEGADIVERSE COUNTRIES

Latin America is the most biologically diverse region in the world.<sup>26</sup> In fact, out of the twenty most megadiverse countries, nine are in Latin America.<sup>27</sup> Unsurprisingly, wildlife exploitation is not a new issue in the region, but COVID–19 is requiring the world to rethink the connection between the treatment and use of wildlife and the potential for disease emergence.<sup>28</sup> This Section focuses on the discussion of the illegal wildlife trade in tandem with markets that sell live terrestrial wildlife (wildlife markets) because these markets co–exist and influence each other. Latin America has not yet experienced the crisis level of wildlife trafficking seen in Asia and Africa that captured global attention. However, global focus has shifted toward Latin America because of increasing pressure from exotic pet trade, online and traditional commerce, the assistance of organized criminal networks, and most recently the concern that close animal–to–human contact will precipitate another pandemic.<sup>29</sup>

### A. *Blurred Lines: Cultural and Economic Drivers for the Existence of Live Wildlife Markets and the Illegal Wildlife Trade*

Human cultures in tropical and subtropical areas worldwide, including Latin America, have regarded wildlife as an important source of nutrition, medicine, and spiritual value.<sup>30</sup> For example, the Waorani people of the Ecuadorian Amazon, have depended on

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<sup>26</sup> Susan Lieberman, *Finally, Latin America is Tackling Wildlife Trafficking (Commentary)*, MONGABAY (Oct. 2, 2019), <https://news.mongabay.com/2019/10/finally-latin-america-is-tackling-wildlife-trafficking-commentary/>.

<sup>27</sup> LIKE-MINDED MEGADIVERSE COUNTRIES, <https://lmmc.mybis.gov.my/countries.php?menu=63> (last visited Feb. 25, 2022).

<sup>28</sup> Lieberman, *supra* note 26.

<sup>29</sup> *Id.*

<sup>30</sup> Nathalie Van Vliet, et al., *Bushmeat And Human Health: Assessing the Evidence in Tropical And Sub-Tropical Forests*, 6:3 ETHNOBIOLOGY AND CONSERVATION 1, 2 (2017) [hereinafter *Bushmeat and Human Health*].

*carne del monte*, or bushmeat,<sup>31</sup> as a primary source of protein for hundreds of years.<sup>32</sup> Even among urban Ecuadorians, bushmeat is considered part of the culture—sought for various health benefits and, for some, the nostalgia of their native communities.<sup>33</sup> Nearly half of the bushmeat sold at Pompeya market, the main hub for bushmeat in Ecuador, will end up on dinner plates in nearby urban centers—roughly six tons based on 2011 numbers.<sup>34</sup> Comparable to the way a hearty, chicken soup can bring up memories of home and one’s childhood, members of Indigenous<sup>35</sup> communities that move to urban areas seek out the nostalgia and familiarity of *carne del monte*.<sup>36</sup> Moreover, tourists visiting Ecuador seek out bushmeat to experience exotic cuisine and “*el sabor Amazonico*.”<sup>37</sup>

Due to decades of globalization and extractive companies that created “oil roads” to access natural resources in the Amazon, bushmeat can easily be found outside traditional areas.<sup>38</sup> Although the Waorani furiously fought the intrusion of extractive industry into their native land,<sup>39</sup> oil roads have provided the Indigenous

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<sup>31</sup> See generally Wen Zhou et al., *Reframing Conservation and Development Perspectives on Bushmeat*, 17 ENVIRONMENTAL RESEARCH LETTERS 1, 1 n.4 (2022) [hereinafter *Reframing Perspectives on Bushmeat*] (“[The authors] use the term ‘bushmeat’ rather than alternative formulations (i.e., wild meat, game) as a global referent for wild animals caught for human consumption. While we acknowledge the potential limitations of the terms, including geographic association with Africa (with the ‘bush’ as the primary source of hunted wildlife) and its frequent connotations of illegality, our usage allows for us to directly engage with the history of research and policymaking on bushmeat.”).

<sup>32</sup> Sean Mowbray, *Oil Roads to Ecological Ruin: Ecuador’s Bushmeat and Wildlife Trade*, MONGABAY (Oct 29, 2015), <https://news.mongabay.com/2015/10/oil-roads-to-ecological-ruin-ecuadors-bushmeat-and-wildlife-trade/> [hereinafter *Oil Roads to Ecological Ruin*].

<sup>33</sup> *Id.*

<sup>34</sup> *Id.*

<sup>35</sup> See Christine Weeber, *Why Capitalize “Indigenous”*, SAPIENS (May 19, 2020), <https://www.sapiens.org/language/capitalize-indigenous/> (discussing the decision to capitalize the word “Indigenous”).

<sup>36</sup> *Oil Roads to Ecological Ruin*, *supra* note 32.

<sup>37</sup> *Id.* (emphasis added).

<sup>38</sup> *Id.*

<sup>39</sup> *Id.*; see also Peter Korn, *A Village in Ecuador’s Amazon Fights for Life as Oil Wells Move In*, NATURAL RESOURCE DEFENSE COUNCIL (Apr. 4, 2018), <https://www.nrdc.org/onearth/village-ecuadors-amazon-fights-life-oil-wells-move> (“ . . . they took up their spears and killed at least 20 oil workers in skirmishes that left several of their own dead as well. According to Waorani lore,

communities access to outside markets.<sup>40</sup> Moreover, modern modes of transportation, guns, and other modern items have, in many ways, changed the culture of certain segments of the Waorani community—from semi-nomadic to settled commercial hunters.<sup>41</sup>

As proud warriors and hunters, the Waorani people have traditionally depended on local wildlife populations to feed themselves.<sup>42</sup> Tribe members can now kill more than what they could traditionally carry through the utilization of modern transportation and are able to sell extra bushmeat for cash or western goods.<sup>43</sup> Relying on modern items, however, has created a cyclical reliance on excess hunting to get the cash they need to maintain modern modes of transportation.<sup>44</sup> The nearest wildlife market is in the small town of Pompeya only five kilometers from the Maxus “oil” road that penetrates the Yasuní National Park adjacent to the Waorani Ethnic Reserve, making it a short trip to sell their extra meat.<sup>45</sup>

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fighting worked. The oil crews left the people of Yasuní alone for at least a decade. Land outside the national part as just as oil-rich, and easier to access. But the Waorani’s peace didn’t last.”); see Press Release, Amazon Frontlines, Waorani People Win Landmark Legal Victory Against Ecuadorian Government, <https://www.amazonfrontlines.org/chronicles/waorani-victory/> (discussing how the Waorani continued to fight for their native land in a recent landmark victory to protect 7 million acres of the Amazon).

<sup>40</sup> *Oil Roads to Ecological Ruin*, *supra* note 32; see also E. Suarez et al., *Controlling Access to Oil Roads Protects Forest Cover, but Not Wildlife Communities: A Case Study from the Rainforest of Yasuní Biosphere Reserve (Ecuador)*, 16 ANIMAL CONSERVATION 265, 266-67 (2013) (“After construction of the Maxus road, the oil company established a control policy, which limited the access of outsiders and the impacts of colonization. The new road, however, attracted local Waorani people who settled along the road and use it as a hunting corridor. Thus, while the control strategy in this road was effective in terms of avoiding colonization and deforestation . . . cultural changes among the Waorani and the transportation subsidies that they receive from the oil company, turned them into major suppliers of bushmeat to the market located at the origin of the road.”).

<sup>41</sup> *Oil Roads to Ecological Ruin*, *supra* note 32 (indicating other ways in which the Waorani’s culture has changed—including the preoccupation with modern items). *But see* Korn, *supra* note 39 (discussing the Waorani’s division into three groups, including one group that remains totally isolated from the modern world and desires to stay isolated).

<sup>42</sup> *Oil Roads to Ecological Ruin*, *supra* note 32.

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

<sup>45</sup> *Id.*

Oil roads connecting Pompeya's prolific wildlife market, and the Waorani people, who have taken advantage of the local commerce, have also had significant, deleterious effects on the wildlife species and biodiversity in the area.<sup>46</sup> Based on results from a study on local wildlife populations, the *Minsiterio del Ambiente* banned the sale of bushmeat in 2012—however, this ban has not eliminated bushmeat in markets or local restaurants nationwide.<sup>47</sup> Instead, new bushmeat trafficking routes emerged to avoid enforcement of the ban, whereby the Waorani travelled a bit farther to make the sale.<sup>48</sup> Nonetheless, Indigenous people can sell the bushmeat to middlemen that can make a profit in restaurants in urban areas.<sup>49</sup>

Apart from the appeal that bushmeat has for urban Ecuadorians and foreigners, studies have shown that wild meat has contributed significantly to healthy diets among bushmeat-consuming populations.<sup>50</sup> Despite the need for further study in Latin America, current data suggests bushmeat provides a nutritional benefit from high levels of protein and minerals.<sup>51</sup> Wild meat also accounts for the greatest amount of daily calories, micronutrients, fat, and dietary diversity in bushmeat-consuming populations worldwide.<sup>52</sup> One study compared domestic forms of animal protein to the four most consumed bushmeat species in Peru.<sup>53</sup> Results indicated that wild meat contained higher values of protein and a lower fat content than

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<sup>46</sup> See generally Suarez et al., *supra* note 40. See also Santiago Rafael Espinosa-Andrade, Road Development, Bushmeat Extractions and Jaguar Conservation in Yasuní Biosphere Reserve – Ecuador (2012) (Ph.D. dissertation, University of Florida) (discussing jaguar populations in the Yasuní Reserve in relation to oil roads).

<sup>47</sup> *Oil Roads to Ecological Ruin*, *supra* note 32; see also Espinosa-Andrade, *supra* note 46, at 52.

<sup>48</sup> *Id.*; see generally Priyanka Sundareshan, *Prosecution for a Porpoise: Strengthen U.S. Enforcement Against Criminal Networks to Address International Trafficking of Endangered Species*, 10 ARIZ. J. ENVTL. L. & POL'Y 216 (2020) [hereinafter *Prosecution for a Porpoise*] (discussing new trafficking routes for the Totoaba, when bans for the Vaquita were introduced).

<sup>49</sup> *Id.*

<sup>50</sup> See *Bushmeat and Human Health*, *supra* note 30, at 9 (discussing lack of research in Latin America on the nutritional value of bushmeat because most studies focused on Africa or Asia).

<sup>51</sup> *Id.*

<sup>52</sup> *Id.* at 2.

<sup>53</sup> *Id.* at 9 (comparing nutritional value of beef, mutton, and rabbit to the White-lipped Peccary, Yellow-footed tortoise, Lowland Paca, and Red Brocket).

domestic animal protein.<sup>54</sup> Results from further nutritional studies may be helpful to understand the impacts of a shift to alternative forms of protein in the region, although evidence has shown that tropical, forest communities are capable of substituting bushmeat for alternative protein sources.<sup>55</sup>

Furthermore, bushmeat has additional value for many communities as “zootherapy,” or the use of animal derived products to treat human ailments.<sup>56</sup> In Brazil, approximately fifty-one species are known to be consumed, either whole or in part, to treat and prevent diseases.<sup>57</sup> In Mexico, dried meat from a highly venomous pit viper is used to prevent cancer, and smoked opossum meat is used to cure skin problems and anemia.<sup>58</sup> And in Colombia, Indigenous groups use a plethora of wild animals to treat and prevent illness, from guinea pig for colds and headaches, to the giant anteater for hormonal stimulants to give birth.<sup>59</sup>

On a global scale, cultural motivators, such as strong traditional medicinal beliefs, from places like East Asia, contribute to the high demand for certain species in wildlife markets and the illegal wildlife trade in Latin America.<sup>60</sup> For instance, Chinese demand for jaguar teeth has skyrocketed in the past decade—paying up to \$100 per fang—in places like Peru and Brazil.<sup>61</sup> Chinese investment and demand have also driven the market for other species in Brazil,

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<sup>54</sup> *Id.*

<sup>55</sup> *Id.* (citing a study in Ecuador that suggested the shift away from wild meat and fish could have serious effects on communities that already tend to have low fat diets).

<sup>56</sup> *Bushmeat and Human Health*, *supra* note 30, at 10.

<sup>57</sup> *Id.* at 11.

<sup>58</sup> *Id.*

<sup>59</sup> *Id.*

<sup>60</sup> *Risky Business: How Peru's wildlife Markets are Putting Animals and People at Risk*, WORLD ANIMAL PROTECTION [hereinafter *Risky Business*], [https://dkt6rvnu67rj.cloudfront.net/cdn/ff/vi-0ur7WsaUPbKeV\\_gnA8wUmU-FfTj2bIXI6WLHyrNA/1634114584/public/media/Peru-Report-v1-3-low.pdf](https://dkt6rvnu67rj.cloudfront.net/cdn/ff/vi-0ur7WsaUPbKeV_gnA8wUmU-FfTj2bIXI6WLHyrNA/1634114584/public/media/Peru-Report-v1-3-low.pdf) at 20. See generally *Prosecution for a Porpoise*, *supra* note 48, at 221 (describing the demand for Totoaba, whose market is motivated by cultural and medicinal belief systems in China, has been depleted by unsustainable fishing).

<sup>61</sup> *Risky Business*, *supra* note 60, at 20.

including lizards, monkeys, turtles, and even sloths.<sup>62</sup> In neighboring Peru, the Chinese demand coupled with the national urban luxury demand for wildlife products continues to spur the illegal wildlife trade and enables the existence of wildlife markets not only for bushmeat, but also for a variety of animal derived products.<sup>63</sup>

*B. COVID–19’s Impact on Latin America’s Wildlife Trade and Wildlife Markets*

Cultural motivators essentially create the economic impetus for wildlife adjacent communities to engage in the profitable, but illegal wildlife trade and markets.<sup>64</sup> Economic opportunities like those created by oil roads into tropical forest communities can also push local communities to engage in the illegal wildlife trade.<sup>65</sup> Most recently, widespread job loss from the COVID–19 pandemic increased economic pressure on wildlife adjacent communities, making them even more vulnerable to engaging in the illicit market.<sup>66</sup> In just the first eight months of 2020, the Brazilian government seized over twenty–five thousand exotic animals—a 500% increase in seizures from 2019.<sup>67</sup> This exponential increase is not surprising considering how COVID–19 left jobless people vulnerable and in need of money.<sup>68</sup> When an unhatched egg of a turquoise–fronted parrot is sold for \$5 to \$11 a piece—and up to \$80 for a chick that survives a trip to the city—it is not surprising that landowners and squatters alike benefited by negotiating with traffickers during the pandemic.<sup>69</sup>

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<sup>62</sup> Chris Dalby, *Economic Hardship During Pandemic Caused Wildlife Trafficking in Brazil to Soar*, INSIGHT CRIME (Sept. 9, 2020), <https://insightcrime.org/news/brief/pandemic-wildlife-trafficking-brazil/>.

<sup>63</sup> *Risky Business*, *supra* note 60, at 19.

<sup>64</sup> Dalby, *supra* note 62.

<sup>65</sup> *Oil Roads to Ecological Ruin*, *supra* note 32; *see also Prosecution for a Porpoise*, *supra* note 48, at 220–22 (discussing local communities being barred from engaging in legal fishing turn to opportunities afforded by working with organized trafficking networks that use local community members for fishing, or other purposes).

<sup>66</sup> Dalby, *supra* note 62.

<sup>67</sup> *Id.*

<sup>68</sup> *Id.*

<sup>69</sup> *Id.*

Moreover, online commerce exploded during the pandemic.<sup>70</sup> Social media sites like Facebook, Instagram, and WhatsApp provided a convenient forum for people to buy and sell endangered species.<sup>71</sup> Despite online platforms banning the sale of endangered species and attempting to track users who violated their own policies, animal trafficking pages were prolific.<sup>72</sup> Traffickers in Mexico accepted the risks of relatively low fines and short-to-medium prison sentences in exchange for the high profit potential.<sup>73</sup> For example, on one WhatsApp chat, a spider monkey was priced at \$821 and a Mantled Howler monkey at \$362.<sup>74</sup>

In November 2021, PROFEPA, the federal agency responsible for environmental protection and prosecutions in Mexico, confiscated over fifteen thousand wildlife species discovered in Iztapalapa, Mexico.<sup>75</sup> However, much of the *online* crime has thrived because PROFEPA has been overwhelmed with the larger raids.<sup>76</sup> When animals are confiscated by PROFEPA, the agency often lacks food, medicine, and vet care to ensure their survival.<sup>77</sup> Worse yet, animals have reportedly disappeared without proper data collection, partly due to limited budgets and a lack of human resources and operational transparency.<sup>78</sup>

### *C. State of Wildlife Markets in Latin America: Peru's Belén Market Before and After COVID-19*

In the northeastern province of Loreto, Peru, the Amazonian city of Iquitos sits along the Itaya River and is home to the largest open

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<sup>70</sup> Dulce Olvera, *Parrots, Toucans and Monkeys Delivered Across Mexico*, INSIGHT CRIME (Mar. 4, 2021) <https://insightcrime.org/news/parrots-toucans-and-monkeys-delivered-across-mexico/>.

<sup>71</sup> *Id.*

<sup>72</sup> *Id.*

<sup>73</sup> *Id.* (“Trafficking or owning any at-risk species can carry a sentence of up to nine years in prison [under] Article 420 of the [Mexican] Federal Criminal Code.”).

<sup>74</sup> *Id.*

<sup>75</sup> *Id.*

<sup>76</sup> Olvera, *supra* note 70 (indicating that a report of trafficking in October of 2020 by one individual did not receive a response by PROFEPA until February of 2021 because the agency did not have a way to verify the report, which made it difficult to carry out necessary inspections) (emphasis added).

<sup>77</sup> *Id.*

<sup>78</sup> *Id.*

wildlife market in the Peruvian Amazon: Belén Market.<sup>79</sup> Trade comes in not only from the Peruvian Amazon, but likely from neighboring Brazil—only a few hundred kilometers from Iquitos and accessible by boat.<sup>80</sup> Pre-COVID-19 Belén sold over two hundred species of wild mammals, reptiles, and birds—including jaguars, sloths, river dolphins, manatees, turtles, macaws, snakes, and capybaras.<sup>81</sup> Wild animals are most commonly sold as meat, but also sold for zootherapeutic remedies, use in “magic-religious rituals,” for decorative use, or as luxury, exotic pets.<sup>82</sup> Among the most profitable species, the Amazon River Dolphin, listed as Endangered on IUCN,<sup>83</sup> is sold as an ingredient to create an aphrodisiacal perfume called “pusanga,” which is thought to “bring luck, ensure seduction or neutralize its effects when its misuse has caused harm.”<sup>84</sup> The huge diversity of wildlife products traditionally attracted large number of visitors to Iquitos, including tourists that seek animal derivatives or to pose for pictures with wild animals to take as souvenirs.<sup>85</sup>

Unsurprisingly, Belén market shut down during 2020 and 2021 in response to the COVID-19 pandemic, but then reopened during the latter half of 2021.<sup>86</sup> It is hard to determine whether the spread of COVID-19 affected the wildlife trade when compared to pre-COVID-19 levels because Belén market vendors disagree on the comparative volume of trade post-COVID-19, whereas the National Police described conditions as “business as usual.”<sup>87</sup> Also, wildlife vendors at Belén tend to operate opportunistically rather than obtaining a consistent stall—which makes it almost impossible to quantify the number of wildlife stalls that have reopened.<sup>88</sup> Nonetheless, bushmeat and animal body parts, used for medicinal and spiritual purposes, continue to be present at Belén market post-

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<sup>79</sup> *Risky Business*, *supra* note 60, at 8.

<sup>80</sup> *Id.* at 4, 13.

<sup>81</sup> *Id.* at 9.

<sup>82</sup> *Id.* at 8-9.

<sup>83</sup> See *Background and History*, IUCN RED LIST, <https://www.iucnredlist.org/about/background-history> (last visited Mar. 6, 2022), for more information on IUCN Red List status.

<sup>84</sup> *Risky Business*, *supra* note 60, at 8.

<sup>85</sup> *Id.*

<sup>86</sup> *Id.* at 15.

<sup>87</sup> *Id.* at 16.

<sup>88</sup> *Id.* at 15.



COVID–19.<sup>89</sup> One vendor, dealing in caiman meat, claimed more people have been buying caiman since the pandemic because apart from being popular meat, it is said to have medicinal properties in aiding respiratory ailments.<sup>90</sup>

Although the Peruvian National Police is present at Belén market, existing efforts by Peruvian law enforcement to prevent illegal wildlife trafficking are hampered by lack of personnel.<sup>91</sup> Peru’s Unit of the Environmental–Ecological Police, a specialized police unit, focuses on the prevention of all types of environmental crimes.<sup>92</sup> However, only one environment officer specifically deals with violations of the wildlife trade in Iquitos.<sup>93</sup> Furthermore, law enforcement are not present throughout all sectors of Belén market—making it difficult to implement the law and prevent illegal trade.<sup>94</sup>

Moreover, Belén Market is located relatively close in proximity to neighboring Brazil and Colombia.<sup>95</sup> The illegal wildlife trade among the three countries thrives essentially uncontested by authority due to lack of enforcement or supervision at river ports in the Amazon region.<sup>96</sup> All three countries lack resources, capacity, and coordination to enforce national and international laws and prevent cross–boundary trafficking—not only of wildlife, but also timber, drugs, and arms.<sup>97</sup>

Pre–COVID–19 conditions in Belén markets were dire and unsanitary, with stalls crammed next to each other and unsanitary handling and storing of bushmeat commonplace.<sup>98</sup> Not much has changed post–COVID–19 despite efforts by the Peruvian government to improve hygiene conditions in some sections of Belén market.<sup>99</sup> Some sectors of the market reportedly have better stall spacing

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<sup>89</sup> *Id.* at 16.

<sup>90</sup> *Risky Business*, *supra* note 60, at 16 (addressing uncertainty on whether the vendor’s comment was explicitly referring to the treatment of COVID-19).

<sup>91</sup> *Id.* at 21.

<sup>92</sup> *Id.* at 17.

<sup>93</sup> *Id.*

<sup>94</sup> *Id.*

<sup>95</sup> *Id.* at 19.

<sup>96</sup> *Risky Business*, *supra* note 60, at 19.

<sup>97</sup> *Id.*

<sup>98</sup> *Id.* at 8, 17.

<sup>99</sup> *Id.* at 17.

and seem to be generally more hygienic.<sup>100</sup> But in other parts of the market, vendors handle live animals and wild meat without gloves, there is little to no stall separation between animal and plant products, and dogs roam free between stalls.<sup>101</sup> Wild meat is stored on the floor or uncovered, and waste is present near the river's edge next to the market—conditions that facilitate spread of disease.<sup>102</sup>

Prior to the pandemic, the United Nations Development Programme worked with the Peruvian government to improve “marketing services of the great Belén Market.”<sup>103</sup> Once COVID-19 arrived in Iquitos in May 2020, ninety-nine out of one hundred Belén vendors tested positive for the virus.<sup>104</sup> This prompted the swift closure of Belén market and the creation of plans to redevelop the market in order to reduce COVID-19 infection rates.<sup>105</sup> The redevelopment plan sought to “safeguard the quality of food and products sold” by creating more space and “providing water, electricity, and sewage supplies.”<sup>106</sup> The redevelopment plan did not address the illegal wildlife trade that supplies the market but solely focused on sanitation and hygiene conditions.<sup>107</sup>

#### *D. Peru's Action Plan to Reduce Illegal Trade*

In 2017, Peru's government created a national action plan to reduce the illegal wildlife trade over a period of ten years.<sup>108</sup> One of the objectives of this national plan was to target live wildlife markets.<sup>109</sup> The plan relied on data that showed that the number of live animals in the illegal trade has been increasing since 2000, and that

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<sup>100</sup> *Id.*

<sup>101</sup> *Id.*

<sup>102</sup> *Risky Business*, *supra* note 60, at 17.

<sup>103</sup> *Id.* at 19.

<sup>104</sup> *Id.*

<sup>105</sup> *Id.*; see also Programa de Las Naciones Unidas Para El Desarrollo, *Documento de Proyecto entre el Ministerio del la Produccion y el Programa de las Naciones Unidas para el Desarrollo*, (Dec. 29, 2020), <https://cdn.www.gob.pe/uploads/document/file/1537968/CONVENIO.pdf.pdf>.

<sup>106</sup> *Risky Business*, *supra* note 60, at 19.

<sup>107</sup> *Id.*

<sup>108</sup> Decreto Supremo, 011-2017-MINAGRI (Perú), Poder Ejecutivo, Agricultura, *Decreto Supremo que aprueba la “Estrategia Nacional para Reducir el Tráfico Ilegal de Fauna Silvestre en el Perú periodo 2017 - 2027 y su Plan de Acción* [hereinafter *Estrategia Nacional* (Perú)].

<sup>109</sup> *Id.*

wildlife carried over seventeen disease agents within wildlife markets—supporting the need to adopt measures and actions aimed at reducing illegal wildlife trafficking.<sup>110</sup> Multiple stakeholders, including state entities, border countries, the private sectors, and ordinary citizens, would coordinate to effectuate the plan.<sup>111</sup>

Moreover, populations traditionally excluded from access to forest and wildlife resources are among the stakeholder working with the Peruvian government to combat and prevent the trafficking of specifics of flora and fauna.<sup>112</sup> By 2027, Peru seeks to decrease supply markets where wildlife and derivatives are illegally sold by 50% and obtain a detailed account of locations of origin and trafficking routes.<sup>113</sup> Peru is also working to create alliances with border nations and international consumer countries.<sup>114</sup> Another goal is to increase education about the wildlife trade and threats from wildlife markets among the public, especially in areas where wild animals are sold.<sup>115</sup> Moreover, by strengthening capacity, and complementing the existing legal framework with regulatory procedures at all levels, Peru can ensure strict application of wildlife and environmental laws, and ensure effective control over illegal wildlife trafficking.<sup>116</sup>

#### *E. Domestic Liability Laws and Response to Threats From the Sale of Live Animals*

The United Nations Environment Programme developed the Montevideo Programme in 1982 and the Rio Declaration in 1992, which notably promoted the development of laws that include liability provisions and allow for compensation for environmental damage—including the trafficking of protected wildlife.<sup>117</sup> Mexico and Brazil, for example, have relatively extensive environmental liability regimes that stem from constitutional guarantees to healthy environments.<sup>118</sup> Mexico has several statutes that grant standing to

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<sup>110</sup> *Id.*

<sup>111</sup> *Id.*

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*

<sup>114</sup> *Estrategia Nacional (Perú)*, *supra* note 108.

<sup>115</sup> *Id.*

<sup>116</sup> *Id.*

<sup>117</sup> Carol Adaire Jones et al., *Tropical Conservation And Liability for Environmental Harm*, 45 ENVTL. L. REP. NEWS & ANALYSIS 11032, 11033 (2015).

<sup>118</sup> *Id.* at 11041-42.

individuals within communities adjacent to damaged areas, environmental nonprofits, and federal and state agencies to sue on claims of environmental harm.<sup>119</sup> Mexican judges may grant restoration costs, damages for harm, and impose penalties for intentional violations.<sup>120</sup> Brazilian law likewise contains various statutes directed at preventing environmental harm by imposing strict liability.<sup>121</sup> Brazil has developed robust case law on environmental liability despite its struggle to consistently calculate damages for environmental harm.<sup>122</sup>

Despite extensive statutory protections, remedies, and civil and criminal sanctions, Latin American countries often lack sufficient political will to enforce environmental laws and are confronted with widespread corruption.<sup>123</sup> In addition, there may be budgetary constraints, or other administrative deficiencies to implementation and enforcement despite ardent support for such laws.<sup>124</sup> Furthermore, the public may lack awareness related to their ability to bring suits regarding environmental harms or must otherwise overcome socio-economic constraints to access the judicial system.<sup>125</sup>

It has been argued that “laws don’t scare off traffickers.”<sup>126</sup> Ecuador’s domestic law punishes wildlife traffickers with up to three years of jail time and fines of up to \$4,000.<sup>127</sup> Even when governments are prosecuting wildlife crimes, sentences and fines may not be a sufficient deterrent for selling wildlife compared to the potential profit.<sup>128</sup> One Ecuadorian citizen was fined \$3,940 for selling a Guatuse and a Charapa turtle, and guards at the Galapagos Nature Park were caught stealing baby sea turtles from the Galapagos.<sup>129</sup> But with the international market ranging from \$1,000– \$5,000 for

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<sup>119</sup> *Id.*

<sup>120</sup> *Id.* at 11041.

<sup>121</sup> *Id.* at 11042.

<sup>122</sup> *Id.*

<sup>123</sup> Jones et al., *supra* note 117, at 11048.

<sup>124</sup> *Id.*

<sup>125</sup> *Id.*

<sup>126</sup> Maria Garcia Lopez & Evelyn Vera Puyo, *Ecuador Waging Implacable Fight Against Wildlife Trafficking*, AGENCIA EFE (Jun. 9, 2019), <https://www.efe.com/efe/english/world/ecuador-waging-implacable-fight-against-wildlife-trafficking/50000262-3996501>.

<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

<sup>129</sup> *Id.*

prized species (like a Guacamayo macaw), the hefty prize is enough to pay the maximum sanction in Ecuador.<sup>130</sup>

Political will to change or amend laws related to wildlife is necessary to combating zoonotic disease spread.<sup>131</sup> In 2019, months before the emergence of COVID–19 as a global threat, Mexico sought to amend Article 420 of its Federal Penal Code regarding the protection of biodiversity, acknowledging the risks of wildlife trafficking on species survival, ecosystem health, and the risk to public health from infectious disease outbreaks.<sup>132</sup> Mexico saw a seventy–five percent increase of wildlife being trafficked between 1992 and 2002—putting the ecosystem, flora and fauna, and health of people living in Mexico in significant danger.<sup>133</sup> The amendment increased penalties and fines for those who engage in the illicit wildlife trade—including additional penalties of up to three years and one thousand days when carried out in protected areas, and five years when carried out for commercial purposes.<sup>134</sup>

Moreover, in 2020 a Mexican legislative initiative was proposed to amend the Federal Animal Health Law, the General Health Law, and the Federal Penal Code relating to wet markets and “clandestine traces” based on the emergence of COVID–19.<sup>135</sup> The initiative sought to address the causes underlying the spread of COVID–19: the consumption of exotic animals sold in unsanitary conditions within “wet” markets.<sup>136</sup> The Mexican government acknowledged the dire need to develop a coordinated prevention mechanism and

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<sup>130</sup> *Id.*

<sup>131</sup> Hollie Booth et al., “Saving Lives, Protecting Livelihoods, and Safeguarding Nature”: *Risk-Based Wildlife Trade Policy for Sustainable Development Outcomes Post-COVID-19*, 9 FRONTIERS IN ECOLOGY AND EVOLUTION 1, 11 (2021) [hereinafter *Risk-Based Wildlife Trade Policy*] (“Lack of capacity and political will within government agencies can undermine laws, and is a commonly cited reason for the failure of many existing wildlife trade regulations.”).

<sup>132</sup> *Iniciativas de Camara de Diputados de México, Iniciativas parlamentaria que reforma el artículo 420 del Código Penal Federal, en materia de protección de la biodiversidad*, (Dec. 11, 2019).

<sup>133</sup> *Id.*

<sup>134</sup> *Id.*

<sup>135</sup> *Iniciativas Legislativas del Senado de México, Proyecto de decreto por el que se reforman y adicionan diversas disposiciones de la Ley Federal de Sanidad Animal, de la Ley General de Salud y del Código Penal Federal, de April 24, 2020 at 1* [hereinafter *Iniciativas Legislativas del Senado de México*].

<sup>136</sup> *Id.*

enhance the capacity to detect, examine, and respond to future health emergencies because a general ban would not necessarily eliminate the risk of future zoonotic spillover but rather could exacerbate conditions for new diseases.<sup>137</sup> Therefore, ingestion of live animals and unhealthy conditions in wildlife markets that facilitate the emergence of zoonotic diseases are now prohibited and punishable.<sup>138</sup>

The legislative initiative also adds a substantive section to the Federal Animal Health Law that mandates coordination with municipalities within Mexico City to close stationary markets, markets on wheels, and supply centers that intend to sell animal products and slaughter live animals.<sup>139</sup> It further imposes health standards necessary to ensure food safety that could otherwise pose epidemiological risk.<sup>140</sup> Similarly, it adds a substantive modification to the General Health Law—imposing a two-to-four year prison sentence to someone who kills any animal *for the purpose of consumption* on a public road—with the possibility of increasing the sentence by half for actually slaughtering the animal.<sup>141</sup>

The legislative modification to Mexico's Federal Penal Code states that the sale of animals without proper compliance with animal health standards, thereby posing a risk to human health, is a violation punishable by two-to-four years in prison.<sup>142</sup> Similarly, anyone who “generates” the spread of disease could be sentenced to three-to-six years in prison and anyone who manages or operates space with the intention of slaughtering as a supply animal without authorization could be sentenced to two to four years.<sup>143</sup> The question remains whether law enforcement and effective prosecution will complement the new laws to significantly reduce the illegal commercial trade of live animals intended for human consumption.

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<sup>137</sup> *Id.*

<sup>138</sup> *Id.* at 12, 13, 17 (Data on Mercado de Sonora, located in Mexico City, shows that much of market's merchandise are live animals. Birds, dogs, and barnyard animals are found to be sick or dying, not receiving proper attention, and leaving excrement that may carry pathogens. Officials determined that about sixty stalls offer live animals, translating to at least 180 people that rely on this market activity.).

<sup>139</sup> *Id.*

<sup>140</sup> *Id.* at 14.

<sup>141</sup> *Iniciativas Legislativas del Senado de México*, *supra* note 135, at 17.

<sup>142</sup> *Id.* at 18.

<sup>143</sup> *Id.*

*F. International Environmental Laws as a Tool to Prevent Zoonoses*

Two of the international treaties that directly deal with issues of wildlife and biodiversity include: the Convention on Biological Diversity (“CBD”) and the Convention on International Trade of Endangered Species of Wild Fauna and Flora (“CITES”).<sup>144</sup> CBD has three objectives: (1) “conservation of biological diversity,” (2) “sustainable use of its components,” and (3) “fair and equitable sharing of benefits arising from use of genetic resources.”<sup>145</sup> Although this is an important treaty because it addresses aspects of biological diversity, it has limited enforcement capacity for noncompliance member states.<sup>146</sup> Nonetheless, by granting responsibility to member states to mitigate threats to biodiversity, CBD can have an impact on wildlife issues such as wildlife markets and the illegal wildlife trade that undermines global biodiversity.<sup>147</sup>

In 1975, CITES sought to ensure the continuation of plants and animals by regulating international trade.<sup>148</sup> CITES assigns endangered species to one of three appendixes, which limits the trade in that species.<sup>149</sup> Species listed on Appendix I receive the highest protection, whereas species on Appendices II and III have lesser

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<sup>144</sup> See Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 818 [hereinafter CBD]; Convention of International Trade in Endangered Species of Wild Fauna and Flora, March 3, 1973, 27 U.S.T. 1087, T.I.A.S. No. 8249.

<sup>145</sup> CBD, *supra* note 144, art. 1. See generally *Introduction*, CONVENTION ON BIOLOGICAL DIVERSITY (Jan. 16, 2012), <https://www.cbd.int/intro/>.

<sup>146</sup> CBD, *supra* note 144, art. 5.

<sup>147</sup> *Id.*, art. 14. See generally *Aichi Biodiversity Targets*, CONVENTION ON BIOLOGICAL DIVERSITY (Sept. 8, 2020), <https://www.cbd.int/sp/targets/> (discussing strategic goals and targets to seek to influence causes of biodiversity loss).

<sup>148</sup> Stefan Carpenter, *The Devolution of Conservation: Why CITES Must Embrace Community-Based Resource Management*, 2 ARIZ. J. ENVTL. L. & POL’Y 1, 3 (2011).

<sup>149</sup> *Id.*; see also Ruth A. Braun, *Lions, Tigers and Bears [Oh My]: How to Stop Endangered Species Crime*, 11 FORDHAM ENVTL. L. J. 545, 554 (2000) (“CITES limits the trade of endangered species by prohibiting endangered species trade without approval in the form of permits . . . The purpose of the permit is to identify the species being transported and to ensure that authorities of a member country are satisfied that the exportation will not be detrimental to the species . . . The permit requirements for each species vary, depending on what level of protection the species should receive, which is specified in treaty.”).

limitations imposed on trade.<sup>150</sup> CITES primarily relies on member states to adopt and enforce domestic legislation consistent with the provisions of CITES.<sup>151</sup> Importantly, CITES only governs the *international* trade of listed species and does not have any power over a member state's *domestic* trade of endangered species.<sup>152</sup> This section focuses on CITES, regarded as a more powerful environmental treaty, as a tool to deal with the illegal wildlife trade and wildlife markets.

CITES imposes a classical “top-down” approach to environmental issues because it encourages conservation legislation and policy from the “top” of society and government instead of focusing on work that can be done by local entities from the “bottom up.”<sup>153</sup> Therefore, CITES has limited efficacy in *developing countries* because those member states often lack critical economic or political will or the resources to enforce legislation consistent with the treaty.<sup>154</sup> Critics point to the increase in the illegal wildlife trade—now a billion-dollar market—and the lack of recovery of endangered species as reasons why CITES has not been particularly useful, at least not in conserving species or quelling organized crime.<sup>155</sup> Moreover, CITES may not be as powerful partly because it does not specify how provisions should be enforced—leading to inconsistent sentencing periods and inadequate financial penalties across

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<sup>150</sup> Carpenter, *supra* note 148, at 3.

<sup>151</sup> *Id.* at 7-8.

<sup>152</sup> Randi E. Alarcon, *The Convention on International Trade in Endangered Species: The Difficulty in Enforcing CITES and the United States Solution to Hindering the Illegal Trade in Endangered Species*, 14 N.Y. INT'L L. REV. 105, 106 (2001) (emphasis added); *see also* Braun, *supra* note 149, at 558 (“Another limitation of CITES is that it only *regulates* the trade of endangered species but it does not *prohibit* their trade.”).

<sup>153</sup> Carpenter, *supra* note 148, at 7-8.

<sup>154</sup> *Id.* at 6 (emphasis added).

<sup>155</sup> Carpenter, *supra* note 148, at 4; *see also* Braun, *supra* note 149, at 563 (arguing that organized crime contributes to the extinction of endangered species partly because of the lax sanctions under CITES, e.g. few risks and high profit. Organized crime rings that trade in wildlife also traffic drugs and weapons, even using them to smuggle drugs.) (“For example, boa constrictors and alligators are used to smuggle drugs from Mexico into the United States because of their large stomach cavities.”). *See generally* Mara E. Zimmerman, *The Black Market For Wildlife: Combating Transnational Organized Crime in the Illegal Wildlife Trade*, 36 VAND. J. TRANSAT'L L. 1657 (2003) [hereinafter *The Black Market for Wildlife*].



member states.<sup>156</sup> As a voluntary treaty, CITES does not have a robust mechanism or remedy against member states that do not comply.<sup>157</sup>

By primarily encouraging domestic and state sponsored conservation, CITES disregards the ability of local communities to contribute to protection efforts.<sup>158</sup> CITES's relies on a top-down approach that requires government enforcement, rather than empowering local communities with ownership rights and responsibility over habitat and wildlife; this leaves local communities out of the enforcement scheme to undermine efforts by becoming actors in the illegal trade.<sup>159</sup> There is little to no incentive prompted by CITES for local communities to fight against illegal activities in their region or to maintain critical habitat, especially when they could otherwise benefit by exploiting the resources.<sup>160</sup> Moreover, most adopted legislation imposes bans on hunting or use of protected species, and a general "off limits" approach to environmental legislation.<sup>161</sup> These "fines and fences" can actually have unintended consequences by contributing to the exploitation of protected species because it forces the market underground instead of creating a sustainable scheme that acknowledges the demand for those resources.<sup>162</sup>

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<sup>156</sup> Alarcon, *supra* note 152, at 114.

<sup>157</sup> *Id.* at 114-15; *see also The Black Market for Wildlife*, *supra* note 155, at 1166-67 ("Although the treaty itself does not make illegal wildlife trading a crime or provide for criminal sanctions against violators, it provides limited measures against member states that repeatedly violate the treaty. The CITES Secretariat has issues notifications informing member states that failure to implement the necessary legislation constitutes a violation of the treaty, and that repeated failure to enact such legislation will result in penalties, such as trade sanctions . . . However, the use of trade sanctions alone will not be effective in forcing substantial or full compliance with the treaty, or in combating the larger problem of transnational organized criminal operations in the illegal wildlife trade.").

<sup>158</sup> Carpenter, *supra* note 148, at 9.

<sup>159</sup> *Id.*

<sup>160</sup> *Id.*

<sup>161</sup> *Id.* at 6.

<sup>162</sup> *Id.*; *see also Beyond Banning Wildlife Trade*, *supra* note 4, at 2 ("When a legal source of wild meat is suddenly removed (especially if captive breeding is also banned, as some recommend) and consumer demand persists, black market prices are most likely to rise, providing increased incentives for poaching. In clandestine wildlife markets, regulations governing standards of hygiene and animal welfare would also become harder to enforce, leading to greater risk of zoonotic disease outbreaks.").

Wildlife trafficking has become a serious threat from organized crime, but neither CITES nor CBD was designed to combat serious or organized crime.<sup>163</sup> CITES does not even require member states to *criminalize* violations.<sup>164</sup> Although trade violations must be penalized under CITES, in some countries that results in mere administrative penalties.<sup>165</sup> Rather, the United Nations Convention Against Transnational Organized Crime (“UNTOC”) or the United Nations Convention Against Corruption (“UNAC”) may be better to aid in dismantling organized crime engaged in wildlife trafficking.<sup>166</sup> CITES was not created to prevent *all* illegal trade—but merely meant to regulate the international trade of vulnerable species, which may not be useful for abundant species found in local markets.<sup>167</sup>

Furthermore, neither treaty has provisions that target disease transmission from wildlife that threaten public health, but the International Health Regulations, promulgated by the World Health Organization (“WHO”), can monitor disease outbreaks that threaten public health.<sup>168</sup> Despite the direct ability to monitor zoonotic diseases, there is no provision that allows WHO to act to prevent outbreaks.<sup>169</sup> Once an outbreak has been reported, the WHO’s power is limited to supporting disease surveillance, recommending remediation, and providing technical assistance and assessments of health emergencies.<sup>170</sup> Nevertheless, WHO’s expertise in disease monitoring prior to the spread of a new zoonotic disease becoming an outbreak could assist many countries in combating conditions that facilitate zoonotic disease emergence and transmission.<sup>171</sup>

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<sup>163</sup> *Id.*; see also *The Black Market for Wildlife*, *supra* note 155; Braun, *supra* note 149; *Prosecution for a Porpoise*, *supra* note 48 (regarding more information about organized crime related to wildlife trafficking).

<sup>164</sup> John M. Seller, *Wildlife Trafficking: Time for a Radical Rethink*, GLOBAL INITIATIVE AGAINST TRANSNATIONAL ORGANIZED CRIME (May 27, 2020), <https://globalinitiative.net/analysis/wildlife-trafficking-covid/> (emphasis added).

<sup>165</sup> *Id.*

<sup>166</sup> *Id.*

<sup>167</sup> *Id.*

<sup>168</sup> Daya J. Taylor, *Improving Wet Market Regulation to Control the Spread of Disease*, 23 ASIAN PAC. L. & POLY’Y J. 97, 108-09 (2021).

<sup>169</sup> *Id.* at 109.

<sup>170</sup> *Id.*

<sup>171</sup> *Id.*

*G. Global South as an Emerging Force in International Environmental Laws*

The development of international environmental law emerged when developing countries in the Global South<sup>172</sup> were engaging in the struggle to alter the international system to promote faster economic development within their borders.<sup>173</sup> As the international community was purportedly and avowedly conscious of the intrinsic value of biological diversity, the sixth great extinction was (and still is) simultaneously having far greater effects on the global south.<sup>174</sup> Preoccupied with economic development and daily struggles of starvation and disease, the Global South perceived the 1992 United Nations Conference on Environment and Development as the Global North's attempt to impose protectionist values over things like wildlife and the atmosphere that the Global North had the luxury to prioritize.<sup>175</sup> Furthermore, international environmental issues were largely consequences of the Global North's own development efforts in the south.<sup>176</sup> The request to be environmentally conscious meant impeding the Global South's ability to develop its own economies.<sup>177</sup> As communities in the south increasingly felt the local impacts of global problems, attitudes began to change.<sup>178</sup>

The Global North accrued the economic benefits from turbocharged development, while the Global South experienced the externalities of such growth—e.g., exploited and destroyed natural

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<sup>172</sup> *What is Global North/South*, IGI GLOBAL, <https://www.igi-global.com/dictionary/economic-impact-of-digital-media/50101> (Last visited on Feb. 28, 2022) (“Terms that denote the generic geographic, historical, economic, education, and political division between North and South. North America, Europe, and developed parts of East Asia disproportionately control global resources. Disparities of wealth, housing, education, digital media access and numerous other factors underscore the power and privilege enjoyed by the Global North, while the Global South, home to the majority of natural resources and population, is excluded.”).

<sup>173</sup> Monica Feria-Tina & Simon C. Milnes, *International Environmental Law for the 21st Century: The Constitutionalization of the Right to a Healthy Environment in the Inter-American Court of Human Rights Advisory Opinion 23*, 12 ANUARIO COLOMBIANO DE DERECHO INTERNACIONAL 43, 59 (2019) (Col.).

<sup>174</sup> *Id.* at 64.

<sup>175</sup> *Id.* at 69.

<sup>176</sup> *Id.*

<sup>177</sup> *Id.*

<sup>178</sup> *Id.* at 70.

resources.<sup>179</sup> But with changing attitudes as a result of the stark geographical dichotomy, it is not surprising that the “most sophisticated and innovative thinking on international environmental law is emanating” from the Global South.<sup>180</sup> Colombia, for example, put in motion the impetus for a monumental advisory opinion from the Inter-American Court of Human Rights.<sup>181</sup> The Court essentially recognized a healthy environment as a basic human right, opening the door to human rights claims with environmental bases.<sup>182</sup> Victims of transnational environmental pollution or other corrosive behaviors like wildlife trafficking that threatens a stable and healthy ecosystem may finally be able to seek remedies to claims of violations of human rights.<sup>183</sup>

The decision concurrently places procedural and due diligence obligations on state conduct and recognizes the existing trend of assigning rights to the environment itself, or at least components of it.<sup>184</sup> Colombia has recognized the legal personality of the Colombian Amazon region, after the area had a 44% deforestation rate over two years, as well as the Atrato River, which contains the most biodiverse wildlife ecosystem in the world.<sup>185</sup> Acknowledging the environment as a rights-bearer would provide a legal basis for Indigenous communities to protect natural resources from extractive industries, assuming they had standing.<sup>186</sup> Granting legal rights to areas that contain precious endangered species or granting legal rights to species themselves may push us into the next frontier on the battle against wildlife trafficking—at a critical time when the world is viewing wildlife and environmental problems through a public health lens.<sup>187</sup>

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<sup>179</sup> Feria-Tina & Milnes, *supra* note 173, at 72.

<sup>180</sup> *Id.* at 72.

<sup>181</sup> *Id.* at 47.

<sup>182</sup> *Id.* at 53; *see* Environment and Human Rights, Advisory Opinion OC-23/17, Nov. 15, 2017, Req by Colombia.

<sup>183</sup> Feria-Tina & Milnes, *supra* note 173, at 54.

<sup>184</sup> *Id.* at 55.

<sup>185</sup> *Id.* at 57-8.

<sup>186</sup> *Id.* at 57.

<sup>187</sup> *See* Colin Scott Peros et al., *Bushmeat, Wet Markets, and the Risks of Pandemics: Exploring the nexus through systematic review of scientific disclosures*, 124 ENV'T SCI. & POL'Y 1 (2021) for a discussion on wildlife markets policy in the context of the One Health paradigm.

### III. U.S. LEGISLATIVE EFFORT TO COMBAT FUTURE PANDEMICS

The United States Congress responded to COVID–19’s purported emergence from a wildlife market by proposing PFPA,<sup>188</sup> which aims to eliminate wildlife markets that are seen as hubs for future zoonotic diseases.<sup>189</sup> PFPA seeks to address the public health risks posed by wildlife markets by enabling the United States to (1) facilitate international cooperation to end emergence and transmission of animal–to–human diseases from live wildlife markets that sell terrestrial animals intended for human consumption; (2) amend existing law to include penalties and jail time to those engaging in such activity; and (3) enable the U.S. Agency for International Development (“USAID”) to facilitate a shift in wildlife market demand in foreign countries toward reliance on alternative forms of protein.<sup>190</sup>

PFPA defines the key phrase “wildlife market” as a commercial market that “sells or slaughters terrestrial wildlife for human consumption as food or medicine, but excludes markets in areas where no other practical alternative sources of protein or meat exists, such as in rural areas on which Indigenous people rely on wild meat to feed themselves and their families.”<sup>191</sup> The definition does not distinguish between animals that originated in the wild or in captivity because the main concern is whether a community has alternative protein sources available.<sup>192</sup> This definition is important in understanding which wildlife markets would be targeted by PFPA. The subsequent major provisions of the PFPA are outlined below.

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<sup>188</sup> Velaz, *supra* note 2 (discussing the first introduction of the Preventing Future Pandemics Act in 2020 that died in committee with 115 cosponsors in the House, and the newest version, House Resolution 151, introduced in January 2021 with 109 cosponsors as of February 2022).

<sup>189</sup> Quigley Press Release, *supra* note 23.

<sup>190</sup> Preventing Future Pandemics Act of 2021, H.R. 151, 117th Cong. (2021) [hereinafter PFPA 2021].

<sup>191</sup> *Id.* § 2; see also Eric Wikramanayake et al., *A Tool for Rapid Assessment of Wildlife Markets in the Asia-Pacific Region for Risk of Future Zoonotic Disease Outbreaks*, 13 ONE HEALTH 1 (2021).

<sup>192</sup> PFPA 2021, *supra* note 190, at § 2

*A. Leading International Cooperation to Eliminate Wildlife Markets*

Wildlife markets are not only a public health threat for the United States, but transmission of emerging diseases from new pathogens, viruses, or zoonotic diseases from wildlife markets present a global threat that the international community should seek to quell.<sup>193</sup> PFPA would grant authority for the United States to cooperate with international partners, including intergovernmental, international, and nongovernmental organizations like the United Nations (“U.N.”), to recommend the closure of wildlife markets and the commercial trade of terrestrial wildlife that supplies those markets—while allowing exceptions for rural communities that depend on bushmeat.<sup>194</sup>

Not only would the United States work with governments under existing treaties to close wildlife markets and supply chains selling terrestrial wildlife intended for human consumption but also work together to develop new protocols to fight deforestation and ecosystem destruction.<sup>195</sup> This international cooperation would enable the “disrupt[ion] and ultimately eliminat[ion] of wildlife trafficking” and international trade associated with the operation of wildlife markets.<sup>196</sup> The global community, with the United States as a leader,<sup>197</sup> would raise awareness of the dangers of wildlife markets as a source of zoonotic disease spread while also reducing the demand of wildlife consumption “through evidence-based behavior change programs” without the encroachment onto wildlife habitat.<sup>198</sup> The

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<sup>193</sup> PFPA 2021, *supra* note 190; *see also* Aguirre et al., *supra* note 5, at 260 (“This pandemic began in China, but there is no reason a similar pandemic could not begin elsewhere in Southeast Asia, South Asia, sub-Saharan Africa, or Latin America.”).

<sup>194</sup> PFPA 2021, *supra* note 190.

<sup>195</sup> *Id.* § 4(b)(2).

<sup>196</sup> *Id.* § 4(b)(3)-(4).

<sup>197</sup> Valez, *supra* note 2.

<sup>198</sup> PFPA 2021, *supra* note 190, § 4(b)(5). *But see Dealing in Deadly Pathogens*, *supra* note 11, at 15 (“However, practitioners should be reminded of the basis assumption of knowledge-deficit theory and this is providing facts to people will translate into a change in behaviour, is rarely met in real-world. Since the demand for legal wildlife trade is parallel to demand for illegal trade, reducing the demand for legal trade by affecting consumer attitudes in Western Societies will also decrease the demand for the illegal trade. Reducing the demand for trade in the

United States would support global shifts towards alternative forms of food production like farming and dependence on domestic animal and plant-based foods to reduce demand for terrestrial wildlife and increase general hygienic standards for wildlife markets around the world.<sup>199</sup>

PFPA would enable the United States to work with the international law enforcement groups to end wildlife markets and illegal wildlife trade.<sup>200</sup> The United States, alongside Interpol, the World Organization for Animal Health, and U.N. member states would seek to urge a global ban on wildlife markets and promote the increased enforcement of existing laws to end wildlife trafficking around the world.<sup>201</sup> Foreign policy objectives would include (1) providing assistance and advice to other governments in adopting laws to close wildlife markets; (2) putting economic pressure to prevent operation of wildlife markets; (3) providing assistance to foreign government prohibition on importation, exportation, and domestic trade of live wildlife intended for human consumption; and (4) engaging with stakeholders within countries targeted by the PFPA “to mitigate the impact of any international efforts on local customs, conservation methods or cultural norms.”<sup>202</sup>

Section 4(c)(3) of PFPA would authorize the imposition of sanctions on foreign countries failing to combat wildlife markets.<sup>203</sup> Foreign countries that enable commercial wildlife markets or fail to enact regulations to eliminate wildlife markets as well as foreign nationals thought to be trafficking wildlife intended for human consumption would be reported, monitored, and investigated pursuant to presidential and Congressional oversight.<sup>204</sup> The president could impose economic, diplomatic, or other penalties as appropriate.<sup>205</sup>

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resource limited countries . . . through behaviour change remains to be a bigger challenge.”).

<sup>199</sup> PFPA 2021, *supra* note 190, § 4(b)(6)-(7); see *Dealing in Deadly Pathogens*, *supra* note 11, at 15 (“Although the human health risks associated with live animal trade can never be eliminated, proper pathogen surveillance focused on this type of international commercial activity is critical to protect global human health.”).

<sup>200</sup> *Id.* § 4(c).

<sup>201</sup> *Id.* § 4(c)(1)(A)-(B).

<sup>202</sup> *Id.* § 4(c)(2)(A)-(D).

<sup>203</sup> *Id.* § 4(c)(3).

<sup>204</sup> *Id.* § 4(c)(3)(A)(I)-(II).

<sup>205</sup> PFPA 2021, *supra* note 190, § 4(c)(3)(B)

Furthermore, the president could (1) prohibit the import of articles from such country (as permitted by international trade agreements), (2) deny visas to nationals of such country, (3) block property and transactions within the United States owned by nationals from such country, and (4) block access to international payment channels used by nationals of such country.<sup>206</sup>

*B. USAID Involvement, Law Enforcement Attachés, and Research on Risk of Wildlife Markets on Emergences of Novel Viruses.*

To comply with the PFPA's policy of eliminating wildlife markets through international cooperation, USAID<sup>207</sup> would be tasked with developing approaches to safe and sustainable food systems that support and incentivize the shift away from terrestrial wildlife diets.<sup>208</sup> USAID would also address the threats and causes of zoonotic disease outbreaks by increasing programs related to addressing “. . . biodiversity, wildlife trafficking, sustainable landscape, global health, food security, and resilience . . . “<sup>209</sup> Programs can relate to education, capacity building, strengthening disease surveillance systems and cross sector collaboration, developing alternative livelihood opportunities, conserving ecosystems and reducing fragmentation, and minimizing interactions between domestic and wild animals in wildlife markets.<sup>210</sup> The main objective for USAID would be to support shifts in wildlife markets to safe, affordable, and accessible protein from domestic animals or plants rather than terrestrial wild animals.<sup>211</sup>

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<sup>206</sup> *Id.* § 4(c)(3)(B)(i)-(iv).

<sup>207</sup> See *What we do*, USAID FROM THE AMERICAN PEOPLE <https://www.usaid.gov/what-we-do> (last visited Feb 26, 2022), for more information on how USAID advances U.S. national security and economic foreign policy.

<sup>208</sup> PFPA 2021, *supra* note 190, § 4(d)(1).

<sup>209</sup> *Id.* § 4(d)(2).

<sup>210</sup> *Id.* § 4(d)(2) (A)-(H).

<sup>211</sup> *Id.*; see also § 4(f)(1)-(2) (Both USAID and the Secretary of State would report the impacts of their activities annually. The Secretary's report would focus on identifying the impacts international cooperation in ending wildlife trafficking and the international trade of terrestrial wildlife intended for human consumption and operation of wildlife markets. USAID, similarly, would report on the impact of its efforts to reduce demand for consumption of wildlife and other measures and programs adopted pursuant to the PFPA.)



Moreover, PFPA would authorize the hire of additional staff at USAID, the U.S. Fish and Wildlife Service (“FWS”), the U.S. Department of Agriculture, the Animal and Plant Health Inspection Service, or other relevant agencies to ensure the activities aimed at reducing risks of emerging diseases have sufficient human capacity and expertise for project oversight.<sup>212</sup> PFPA would encourage the Office of Terrorism and Financial Intelligence to hire additional investigators to monitor individuals engaged in activities that could be subject to sanctions.<sup>213</sup>

PFPA would also enable the FWS to hire, train, and deploy fifty new law enforcement Attachés and other support staff at U.S. embassies around the world.<sup>214</sup> Countries listed as concern under the Eliminate, Neutralize and Disrupt Wildlife Trafficking Act of 2016 or additional countries suspected to be a source of illegal trade of endangered species would be recipients of FWS Attachés.<sup>215</sup>

Although zoonotic diseases are presumed to transmit through wildlife markets, PFPA would enable the Secretary of Health and Human Services to work alongside the National Academies of Sciences, Engineering, and Medicine to evaluate the risks of viral spread through wildlife markets.<sup>216</sup> PFPA would target research on the impact of consuming wildlife as food and medicine on the emergence and transmission of novel viral and microbial pathogens; as well as the conditions of live wildlife markets that may lead to transmission of zoonotic diseases.<sup>217</sup> Expanding the body of research focused on live wildlife markets and transmission from consumption of bushmeat could help Congress better understand the risks and influence subsequent legislative action.<sup>218</sup>

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<sup>212</sup> PFPA 2021, *supra* note 190, § 4(e)(2).

<sup>213</sup> *Id.* § 4(e)(1).

<sup>214</sup> *Id.* § 6(a).

<sup>215</sup> *Id.* § 6(a)(1).

<sup>216</sup> *Id.* § 3(a).

<sup>217</sup> *Id.* § 3(1)-(4) (emphasis added).

<sup>218</sup> PFPA 2021, *supra* note 190, § 3(b); see Zoe L. Grange, et al., *Ranking the Risk of Animal-to-Human Spillover for Newly Discovered Viruses*, 118 PROCEEDINGS OF THE NAT’L ACAD. OF SCI. OF THE UNITED STATES OF AMERICA 1, 2 (2021) (“However, several factors about the virus, host (the organism in which a virus can live and multiply), environment (the location and ecology where the host lives), and related human behavior influence the likelihood that a virus can become zoonotic and spread within human populations.”).

*C. Amending United States Domestic Law to Prohibit Sale of Live Wild Animals Intended for Human Consumption*

The PFPA would also add Section 44 to Chapter 3 of Title 18 (regarding Animals, Birds, Fish, and Plants) that would prohibit the importation, exportation, and “sale of certain live wild animals for human consumption.”<sup>219</sup> If PFPA were enacted, the amendment to title 18 would include \$35 million dollar congressional appropriations for each year to carry out the new code section by 2030.<sup>220</sup> Section 44 would define “human consumption” as all consumption of food or medicine, except consumption incident to lawful hunting, and “live wild animal” as a live wild mammal, bird, reptile, amphibian—regardless of whether it was bred and born in captivity except ruminants (cows, goats, etc.).<sup>221</sup> The new provision would outright criminalize the importation, exportation, and sale of any live wild animal intended for human consumption.<sup>222</sup> Most importantly, anyone found violating the amended statute could face five years in prison, penalties of up to \$100,000 or both.<sup>223</sup>

IV. CRITIQUING THE PREVENTING FUTURE PANDEMICS ACT OF 2021

Despite powerful provisions, the PFPA may ultimately fail to prevent future pandemics for several reasons: (1) it focuses on the human consumption of the wildlife market rather than other problematic animal-to-human contact within wildlife markets;<sup>224</sup> (2) it calls for wildlife market closures rather than prioritizing health standards for wildlife markets, facilitating its relocation underground;<sup>225</sup> and (3) it fails to implement or encourage health

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<sup>219</sup> PFPA 2021, *supra* note 190, § 3(b).

<sup>220</sup> *Id.*

<sup>221</sup> *Id.* § 5(a).

<sup>222</sup> *Id.* § 5(a)(1)-(2).

<sup>223</sup> *Id.* § 5(c)(1).

<sup>224</sup> See generally Marcos A. Bezerra-Santos, *Illegal Wildlife Trade: A Gateway to Zoonotic Infectious Diseases*, 37 TRENDS IN PARASITOLOGY 181,181 (2021).

<sup>225</sup> *Beyond Banning Wildlife Trade*, *supra* note 4, at 3; see *Risk-Based Wildlife Trade Policy*, *supra* note 131, at 11 (“Decision-makers must strike a balance between reactionary crisis-driven interventions, which may be suitable in the short-term, though can lead to perverse outcomes in the medium-term, and evidence-based preventative measures, which lead to better outcomes in the long-term . . . .” “Wicked problems” such as [COVID-19] call for adaptive management

standards and surveillance for the importation of wildlife into the United States.<sup>226</sup> Furthermore, the failure to consider the cultural and economic motivators that encourage the existence of live wildlife markets and the illegal wildlife trade may result in communities resisting policies led by the United States or other unintended consequences.<sup>227</sup>

PFPA's international policy to "close wildlife markets and the commercial trade of terrestrial wildlife that supply those markets"<sup>228</sup> is not necessarily supported by science but rather is based on the presumption that human consumption of wildlife is the true culprit of the COVID-19 pandemic and the most dangerous aspect of the animal-to-human interface.<sup>229</sup> Current scientific understanding actually suggests that targeting zoonotic, "reservoirs" species—that host most of the zoonotic viruses—would be more effective at preventing future pandemics than an outright ban on wildlife markets.<sup>230</sup> Although not all mammals host viruses that could threaten humans, 70% of known zoonotic viruses were found to be present in only a quarter of mammals present in the wildlife trade—suggesting targeted bans would be more effective at preventing disease transmission to humans.<sup>231</sup>

More generally, a policy for the complete closure of wildlife markets does not consider the role that culture, economics, law, or

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rather than definitive top-down technical solutions, so that policy interventions can be updated as feedbacks play out and knowledge of the system expands.”).

<sup>226</sup> See Grange et al., *supra* note 218, at 6; see also Mrinalini Watsa & Wildlife Disease Surveillance Focus Group, *Rigorous Wildlife Disease Surveillance*, 369 *SCIENCE* 145, 146 (2020) [hereinafter *Rigorous Wildlife Disease Surveillance*] (“More broadly, although the Convention on the International Trade in Endangered Species (CITES) regulates international wildlife trade on the basis of species’ endangered status, only a few countries use strict veterinary import controls, and there are no global regulations on pathogen screening associated with the international trade in wildlife.”).

<sup>227</sup> *Beyond Banning Wildlife Trade*, *supra* note 4, at 2; see also *Risk-Based Wildlife Trade Policy*, *supra* note 131, at 3 (“Wildlife trade also has socio-cultural significance in rural and urban contexts worldwide, such that restricting access to wildlife can harm social justice . . .”).

<sup>228</sup> PFPA 2021, *supra* note 190, § 4(b)(1).

<sup>229</sup> K. Nagaraju Shivaprakash et al., *Mammals, Wildlife Trade, and the Next Global Pandemic*, 31 *CURRENT BIOLOGY* 3671 (2021).

<sup>230</sup> *Id.*

<sup>231</sup> *Id.*

politics plays in the existence of wildlife markets within a country or region.<sup>232</sup> Even if an argument can be made that the policy is our best option, the likelihood that the entire international community will support such a monumental policy seems slim.<sup>233</sup> The widespread cultural demand for bushmeat among urban, rural, and Indigenous populations in Ecuador suggests that a wildlife market ban within Latin America's countries may not be feasible or successful.<sup>234</sup> Cultural preferences, medicinal beliefs, and traditional customs are not easily swayed because of entrenched centuries and decades of tradition—even American culture would be hard to change—yet PFPA is quick to encourage a shift in foreign diet without regard to preference, nutrition, and economics.<sup>235</sup>

The concern to reduce the animal-to-human interface, particularly the human consumption of bushmeat, is a valid concern for zoonotic disease emergence and transmission and ultimately drives the major policy objectives of PFPA. However, policymakers must consider the economic and cultural drivers that push communities to engage in the sale and slaughter of wildlife and consume bushmeat, as well as understand how local and regional statutory and agency enforcement mechanisms may hinder successful policy implementation.<sup>236</sup>

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<sup>232</sup> See *Beyond Banning Wildlife Trade*, *supra* note 4; see also *Risks of Removing Wild Meats*, *supra* note 21, at 1792 (“Fragile food systems would struggle to absorb or adapt to loss of wild meat from diets. This could intensify chronic health issues driven by malnutrition, such as stunted growth and impaired cognitive function, with further burdens on society or create severe trade-offs between food security and conservation. These consequences render complete prohibitions impractical or unacceptable in many countries; prohibitions could do more harm than good and raise serious ethical questions regarding the structural inequalities of global wildlife protection. Importantly, negative consequences would not be uniform within nations. Indigenous, rural and socially marginalized group may be most severely impacted, which could create and accentuate inequalities.”).

<sup>233</sup> John M. Seller, *Wildlife Trafficking: Time for a Radical Rethink*, GLOBAL INITIATIVE AGAINST TRANSNATIONAL ORGANIZED CRIME (May 27, 2020), <https://globalinitiative.net/analysis/wildlife-trafficking-covid/>.

<sup>234</sup> *Oil Roads to Ecological Ruin*, *supra* note 32.

<sup>235</sup> Felbab-Brown, *supra* note 7.

<sup>236</sup> *Reframing Perspectives on Bushmeat*, *supra* note 31, at 1-2 (“The global supply and demand for bushmeat must be understood in light of the complexity of behavior driven by livelihood needs, cultural beliefs, and the distance between where food is sourced and where it is sold. The widespread concern regarding wildlife trade is not misplaced, but too often, calls for bushmeat bans oblige the

Tasking USAID to develop alternative food systems and incentivize a global shift away from bushmeat is not only a huge global undertaking but it is rooted in Neo-Imperialism that seeks to change foreign behavior to fit Western values and goals rather than lead by example and implement behavior change at home.<sup>237</sup> Rather than focusing on Indigenous and local communities' ability to shift to alternative forms of protein, PFPA should consider the potential impacts that a shift towards alternative forms of protein could have on the community's overall nutrition.<sup>238</sup> Cultural preference and autonomy in diet could also present a barrier to short or long-term compliance to USAID initiated shifts in local food systems to alternative proteins sources and should not be so lightly thrown aside.<sup>239</sup>

Moreover, although USAID would attempt to create and "develop alternate livelihood opportunities," the push to rely on farming and other sources of protein could eliminate the livelihood of communities that have depended on hunting for food and economic security.<sup>240</sup> A push towards relying on domestic animal protein

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most economically insecure to shoulder a disproportionate responsibility for change. Rather than accepting the representation of 'global values' presented by conservationists and policymakers at face value, a greater effort is needed to center the local within the global, incorporating collaborations between social scientists, conservationists, local communities and policymakers.")

<sup>237</sup> See generally *id.*

<sup>238</sup> See generally *Bushmeat and Human Health*, *supra* note 30; see also *Risks of Removing Wild Meat*, *supra* note 21, at 1794 ("In some cases, it may be feasible to substitute wild meat with other forms of plant or animal protein; however, such efforts must be sustainable, respect the customs and capacities of affected people, and avoid further habitat degradation and EID risks through expanding human-wildlife-livestock interfaces. Affected communities should also be included in decision-making, for practical, ethical, and legal reasons. [Furthermore, r]isk-based regulation of wildlife use and trade would benefit from better data on wild meat consumption patterns, and the feasibility of substitutes.").

<sup>239</sup> *Reframing Perspectives on Bushmeat*, *supra* note 31, at 4 ("Development interventions to reduce the bushmeat trade must address Northern biases against the consumption of the unfamiliar, and must equally address the environmental consequences of Northern systems of industrialized meat production. Bushmeat consumption and trade are geographically and conceptually distant from the policy-making centers of Europe and North America. In consequence, successful bushmeat policy requires policymakers in the Global North to examine their own values and perspectives on wildlife, the nature of food, and development trajectories.").

<sup>240</sup> See *Oil Roads to Ecological Ruin*, *supra* note 32; see also *Beyond Banning Wildlife Trade*, *supra* note 4, at 2 ("There is clearly an urgent need to tackle

sources would increase land use changes that also affect biodiversity, climate change, and increase infectious disease risk.<sup>241</sup> This shift ironically undermines another PFPA policy objective to fight deforestation and ecosystem destruction that also contribute to increased infectious disease emergence.<sup>242</sup>

PFPA's provision for the United States to work alongside other organizations to increase enforcement of existing laws may be helpful in targeting the massive obstacle presented by organized crime—that *should* be a primary policy objective because of their major contributions to another point in the animal-to-human interface through the illegal wildlife trade.<sup>243</sup> However, language within this provision primarily focuses on assisting governments in adopting laws that close wildlife markets, on applying pressure to prevent operation of these markets, and encouraging the prohibition of wildlife trade intended for human consumption.<sup>244</sup> This focus fails to target potential key players orchestrating the illegal wildlife trade; instead targeting wildlife vendors and local community members that engage in the trade for food security, economic stability, cultural engagement, or as a way of accessing modern goods.<sup>245</sup> Furthermore, PFPA fails to account for the structural and financial constraints that contribute to the lack of human resources to enforce wildlife laws in regions like Latin America.<sup>246</sup>

Supplementing the United States criminal code to prohibit the importation, exportation, and sale of certain live wild animals for human consumption is an important part of the PFPA for quelling

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wildlife trade that is illegal or unsustainable, or that carries major risks to human health or animal welfare. However, some of the suggested actions . . . go far beyond tackling these risks. In fact, in many cases they risk exacerbating poverty, undermining human rights, damaging conservation incentives and harming sustainable development . . .”).

<sup>241</sup> *Risks of Removing Wild Meat*, *supra* note 21.

<sup>242</sup> PFPA 2021, *supra* note 190, § 4(b)(2).

<sup>243</sup> See generally *Combating Wildlife Trafficking from Latin America to the United States*, DEFENDERS OF WILDLIFE (2015) [hereinafter *Defenders of Wildlife Report*], <https://defenders.org/sites/default/files/publications/combating-wildlife-trafficking-from-latin-america-to-the-united-states-and-what-we-can-do-to-address-it.pdf>.

<sup>244</sup> PFPA 2021, *supra* note 190.

<sup>245</sup> *Oil Roads to Ecological Ruin*, *supra* note 32; see also Dalby, *supra* note 62.

<sup>246</sup> See *Risky Business*, *supra* note 60, at 17.

United States consumer demand.<sup>247</sup> However, data on *wild animals intended for human consumption* represent a small percentage of the huge wildlife trafficking industry because wildlife are imported for a myriad of reasons.<sup>248</sup> Liability with monetary penalties of up to \$100,000, jail time of up to five years in prison, or both could help deter violators.<sup>249</sup> But targeting the sale of live animals for human consumption may be too narrow and fail to address the primary objective of preventing zoonotic disease outbreaks. Over eleven million live animals were imported from 189 countries into the United States between 2012 and 2016, but not all smuggled live animals are intended for human consumption.<sup>250</sup> Imposing a health and disease surveillance system at ports of entry and the increasing capacity to monitor the importation of all animals, regardless of importer intent, will better serve epidemiological objectives.<sup>251</sup>

Furthermore, increasing personnel among key United States agencies is necessary to implement the provisions of the PFPA, but the prioritization to hire more staff could become an empty promise.<sup>252</sup> Previous acts under President Obama also authorized increases in FWS staff—but little to no additional staff were hired for operations, and wildlife monitoring at borders remains slim.<sup>253</sup> The United States must do more than merely authorize or encourage an increased workforce within agencies; it must prioritize programs related to wildlife monitoring, disease surveillance, and wildlife protection while ensuring agencies like the FWS have the capacity to do the work.<sup>254</sup>

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<sup>247</sup> See Bezerra-Santos et al., *supra* note 224, at 182 (Figure 1 shows the United States as a major importer).

<sup>248</sup> Defenders of Wildlife Report, *supra* note 243.

<sup>249</sup> See generally *The Black Market for Wildlife*, *supra* note 155, at 1678 (“If members of organized criminal groups [for example] understand that there will be a greater chance of conviction under wildlife crime laws, and that they could pay maximum penalties and serve longer sentences in prison, they may be deterred from participation in illegal wildlife trade.”).

<sup>250</sup> *Trends in Wildlife Trade from Latin America to the United States*, DEFENDERS OF WILDLIFE (2015), [https://defenders.org/sites/default/files/publications/trends\\_in\\_wildlife\\_trade\\_from\\_latin\\_america\\_to\\_the\\_us.pdf?\\_ga=1.56992681.220028149.1467216824](https://defenders.org/sites/default/files/publications/trends_in_wildlife_trade_from_latin_america_to_the_us.pdf?_ga=1.56992681.220028149.1467216824).

<sup>251</sup> *Rigorous Wildlife Disease Surveillance*, *supra* note 226, at 146.

<sup>252</sup> Defenders of Wildlife Report, *supra* note 243, at 14-17.

<sup>253</sup> *Id.*

<sup>254</sup> See generally *id.* at 67-9.

Although promoting cooperation with other countries to enforce wildlife laws is a relative strength of the PFPA, countries like Peru have sought to increase transnational cooperation to enforce wildlife laws without the assistance of the United States prior to COVID–19.<sup>255</sup> Countries within the Global South, including Latin American countries, are among leaders and key players at the forefront of environmental issues, but they generally lack the resources to enforce and prosecute domestic and international laws, and are simultaneously confronted with ancillary sociopolitical barriers to effective legal frameworks.<sup>256</sup> Peru’s national action plan and recent changes to Mexican domestic laws, nonetheless, show that there may be political will to change laws to meet both local and global problems.<sup>257</sup>

On the other hand, traffickers and violators may escape prosecution simply because local agencies tasked to enforce laws struggle to keep up with high levels of wildlife smuggling.<sup>258</sup> United States’ assistance that supports agencies on the ground, through funding or increased training for enforcement, may be more successful than simply “pressuring” governments through sanctions.<sup>259</sup> Imposing “economic, diplomatic, or other penalties” on foreign countries that seemingly “enable” commercial wildlife markets or “fail to enact regulations” that eliminate wildlife markets could alienate political leaders and discourage their participation in international cooperation.<sup>260</sup> Although Latin American countries have shown political support for enacting strong environmental legislation, enacting or implementing new legislation is often subject to the political whims of a current leader, suggesting on–the–ground support for enforcement may be more successful than top–down penalties.<sup>261</sup>

A particular strength of the PFPA is its acknowledgment that wildlife markets are critical for human populations that are

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<sup>255</sup> *Estrategia Nacional (Perú)*, *supra* note 108, at 7.

<sup>256</sup> See Feria-Tina & Milnes, *supra* note 173.

<sup>257</sup> See *Estrategia Nacional (Perú)*, *supra* note 108, at 5; *Iniciativas Legislativas del Senado de México*, *supra* note 135, at 1.

<sup>258</sup> *Iniciativas Legislativas del Senado de México*, *supra* note 135, at 10.

<sup>259</sup> See *The Black Market for Wildlife*, *supra* note 155, at 1666–67.

<sup>260</sup> *Id.* (referring to CITES trade sanctions as not being effective to force compliance with the threat of combating the illegal wildlife trade and “[T]here may be multiple states that refuse to comply with trade sanctions recommendations for political or economic reasons.”).

<sup>261</sup> *Rigorous Wildlife Disease Surveillance*, *supra* note 226.



dependent on bushmeat as their only available animal protein source.<sup>262</sup> But as previously discussed, treating bushmeat as merely a protein source does not consider other motivators for the existence of wildlife markets or underlying reasons for why humans consume wild meat.<sup>263</sup> Nor does it combat the potential for Indigenous populations, influenced by modernization or economics, to be actors in the illegal sale of wild animals and meat.<sup>264</sup> Despite the importance of prioritizing and centering Indigenous and tropical forest communities' culture and practice, a general ban with an exemption for these communities may have unintended consequences considering that some Indigenous communities already participate in the a global trade of wildlife and bushmeat.<sup>265</sup> Focusing on geographical or nutritional limitations of available protein, albeit a necessary consideration, ignores recent historical changes that many Indigenous and rural communities are interconnected to the global community.<sup>266</sup>

Furthermore, outright eliminating or criminalizing wildlife markets may have a disparate impact on rural, poor, and Indigenous populations that may be targeted by enforcement schemes instead of actors in organized criminal networks who are better able to escape prosecution.<sup>267</sup> Ecuador's ban on the sale of bushmeat is a perfect example of a government ban that does not eliminate a problem but rather pushes the market underground because bushmeat is available "as long as you know who to ask" and for those who can afford to pay the right price.<sup>268</sup>

PFPA also seeks to assist the international community in developing measures to fight deforestation and ecosystem destruction to prevent future pandemics, another important aspect of animal-to-

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<sup>262</sup> *Beyond Banning Wildlife Trade*, *supra* note 4.

<sup>263</sup> *Oil Roads to Ecological Ruin*, *supra* note 32; *see also Risky Business*, *supra* note 60.

<sup>264</sup> *See generally Oil Roads to Ecological Ruin*, *supra* note 32.

<sup>265</sup> *Beyond Banning Wildlife Trade*, *supra* note 4, at 2.

<sup>266</sup> *Id.*

<sup>267</sup> *Risk-Based Wildlife Trade Policy*, *supra* note 131, at 12 ("A further challenge relates to how people and institutions respond to new policies, particularly if they are negatively affected, and therefore how to design effective and equitable compliance management systems.").

<sup>268</sup> *Oil Roads to Ecological Ruin*, *supra* note 32.

human interface that could prove dangerous to human health.<sup>269</sup> When humans move onto or destroy critical habitat, wildlife must fight for space and resources by moving towards human communities, thereby interacting with domestic species and comingling animal excretion that increases the risk of disease transmission.<sup>270</sup> Preventing continued human encroachment onto wildlife habitat is a critical objective in preventing zoonotic disease transmission.<sup>271</sup> Unfortunately, deforestation in tropical forests increased during 2020, and unemployed people not only sought money through engaging in the wildlife trade<sup>272</sup> but also desperately sought jobs in illegal logging, mining, and poaching—because COVID-19 spurred reverse migration from urban to rural areas.<sup>273</sup> Programmatic efforts through USAID to “conserve intact ecosystems and reduce fragmentation to prevent new pathways or transmission” would be beneficial to combat future pandemics and save critical habitat and forests.<sup>274</sup> But the potential benefit could be negated by another goal—to shift food systems towards domestic animal proteins that require increased change in land use (e.g., deforestation).<sup>275</sup>

In addition, encouraging the use of the United States’ enforcement arm to focus on ending the illegal wildlife trade may be much more helpful to the prevention of pandemics than an outright ban on wildlife markets<sup>276</sup> The brief inclusion of increasing the FWS Attaché program, that assist foreign countries with investigating wildlife trafficking at United States embassies worldwide, suggests Congress wants more feet on the ground to tackle wildlife trafficking that now presents a real threat to global public health.<sup>277</sup> PFPA

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<sup>269</sup> Shivaprakash et al., *supra* note 229, at 3675.

<sup>270</sup> See generally Kimberly Brown, *Road to Recovery in Latin America*, WORLD WILDLIFE FUND (2021), <https://www.worldwildlife.org/magazine/issues/fall-2021/articles/road-to-recovery-in-latin-america>.

<sup>271</sup> Shivaprakash et al., *supra* note 229.

<sup>272</sup> Dalby, *supra* note 62.

<sup>273</sup> Felbab-Brown, *supra* note 7; see also *Beyond Banning Wildlife Trade*, *supra* note 4.

<sup>274</sup> PFPA 2021, *supra* note 190, § 2(F).

<sup>275</sup> *Risk of Removing Wild Meat*, *supra* note 21.

<sup>276</sup> Shivaprakash et al., *supra* note 229.

<sup>277</sup> Dehara Weeraman, *What are U.S. Fish and Wildlife Service attachés and why are they so important?*, ONENATURE (Feb. 2, 2022), <https://onenatureinstitute.org/stories/what-are-u-s-fish-and-wildlife-service-attaches-and-why-are-they-so-important/> (“In 2014, the USFWS/OLE [Office of Law Enforcement]

would significantly increase the Attaché program by adding fifty new Attachés—currently at only twelve Attachés.<sup>278</sup> This is a huge strength of PFPA because Congress recognizes that animal-to-human contact from illicit wildlife trade as a threat to global public health. Megadiverse countries in Latin America that experience high smuggling traffic would likely benefit from FWS Attachés.<sup>279</sup> Despite the FWS Attaché program focus on intelligence support, PFPA must nonetheless ensure that the mechanisms used to fight the illegal wildlife trade are rooted in an understanding of economic, social, and political trends because the wildlife trade is a complex system with a myriad of actors.<sup>280</sup>

Furthermore, the directive to address the causes of zoonotic disease outbreaks is an important policy objective.<sup>281</sup> Improving animal disease surveillance and strengthening surveillance systems with multidisciplinary collaboration is supported by science despite

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launched the attaché program, with the support of the U.S. State Department . . . throughout the years, the attaché program has expanded to 12 attaches stationed at U.S. embassies . . . Attachés are strategically placed in areas around the world to assist with the coordination and consulting of enforcement on illicit wildlife trade by facilitating intelligence sharing and investigative support amongst affected nations.”).

<sup>278</sup> See generally Defenders of Wildlife Report, *supra* note 243, at 68 (Before the expansion of attachés to twelve countries worldwide, Defenders of Wildlife recommended that, at a minimum, Mexico be sent a FWS attaché, because Peru was the only country in Latin America that had an attaché stationed at the U.S. embassy.).

<sup>279</sup> *Id.*

<sup>280</sup> *Risk-Based Wildlife Trade Policy*, *supra* note 131, at 11 (“ . . . it is not only important to consider the direct impacts of wildlife trade on public health and the SDGs, but also interactions and feedbacks. For example, bat trade may provide nutritional benefits for some people, but pose risks of zoonotic disease outbreaks for others; while a ban on wild-sources wildfowl, to protect wild populations from overexploitation, could drive expansion of high-risk illicit markets, or agricultural expansion of poultry from, which exacerbate other anthropogenic drivers of biodiversity loss and zoonosis emergence . . . Policy formulation should also consider costs and feasibility of implementation, based on resources for monitoring and enforcement, and legitimacy of new measures as felt by stakeholders most likely to be affected . . . [Furthermore] Lack of capacity and political will within government agencies can undermine laws, and is a commonly cited reason for the failure of many existing wildlife trade regulations.”)

<sup>281</sup> *Beyond Banning Wildlife Trade*, *supra* note 4, at 2 (“Some attention to live animal markets and wildlife trade is clearly justified, given their potential contribution to the emergence and/or spread of zoonotic diseases.”).

the potential for administrative and socioeconomic challenges at the local and regional level.<sup>282</sup> Agencies that already lack human resources to enforce current laws may have trouble updating systems and holding onto COVID-19 inspired momentum in the long run if capacity is not increased.<sup>283</sup>

Much is still unknown about the transmission rates of zoonoses within commercial markets and through the consumption of bushmeat—partially limited by the lack of zoonotic disease surveillance, especially in Latin America.<sup>284</sup> This is important because PFPA presumes zoonotic disease spreads through wildlife markets. However, the inclusion of a provision to commission research on zoonotic disease spread is an essential component to combat future pandemics because it provides the impetus for the National Academies of Science, Engineering, and Medicine—as well as the overall scientific community—to further study transmission rates of disease from wildlife markets and bushmeat consumption.<sup>285</sup> Recent studies prompted by COVID-19 have already proffered mitigation strategies to target and prevent future pandemics and research results suggest a strong association between the overall wildlife trade and zoonotic disease risk, particularly with reservoir species.<sup>286</sup> Therefore, the explicit directive by Congress to study the risk associated with human consumption of wildlife and the conditions within wildlife markets will ultimately lead to better policies.<sup>287</sup>

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<sup>282</sup> See *Rigorous Wildlife Disease Surveillance*, *supra* note 226, at 146-47 (“Centralized bio surveillance efforts produce results but are expensive, maintained by a select few countries, and subject to political whims . . . . Because ill-conceived restrictions would affect millions of people and likely drive [illegal wildlife trade] deeper underground, further impeding regulation, the first step is to establish a more cost-effective, decentralized disease surveillance system . . . . Local wildlife scientists and health care workers can be trained on how to safely use facilities with broadly accessible molecular equipment in local facilities with standard biosecurity practices to prevent risk of pathogen spillover into the community.”).

<sup>283</sup> Olvera, *supra* note 70.

<sup>284</sup> *Rigorous Wildlife Disease Surveillance*, *supra* note 226, at 145 (“EID [Emerging infectious diseases] risks associated with the wildlife trade remain the largest unmet challenge of current disease surveillance efforts . . . .”).

<sup>285</sup> PFPA 2021, *supra* note 190.

<sup>286</sup> Shivaprakash et al., *supra* note 229.

<sup>287</sup> Grange et al., *supra* note 218, at 6 (“We aimed to begin to address this gap in knowledge by conducting virus detection and discovery in regions forecasted to be hot spots for emerging disease. In addition to expanding the general

## V. FINAL RECOMMENDATIONS

The ease and convenience of online commerce, the precarious nature of economies and economic incentives, and the strength of cultural beliefs, as well as the current albeit slim understanding about the risks associated with the animal-to-human interface, are all important considerations from the discussion prompted by the PFPA aimed at addressing underlying COVID-19 causes and future zoonotic disease spread. Viewing PFPA through the Latin American megadiverse lens suggests that the PFPA could be modified to consider critical components necessary to make preventing future pandemics successful.<sup>288</sup> Economic pressure felt by local communities to engage in illegal sale of wildlife could be a huge impediment to preventing disease outbreak and should be a major consideration of the PFPA. Alongside economic considerations are the cultural pressures that the PFPA seemingly ignores and simultaneously seeks to change by encouraging a shift to alternative forms of protein. Ignoring the transnational and regional demands driven largely by cultural and medicinal beliefs will simply push the market underground, making enforcement of laws more difficult.

To increase efficacy, the PFPA should seek to support country initiatives and actions plans that incorporate disease surveillance and provide support for increased capacity for implementation of health standards and zoonotic disease surveillance among megadiverse countries—that already show political support to prevent illegal trade and health risks associated with wildlife markets. The United States should encourage international cooperation, rather than impose sanctions, to strengthen prosecutorial, judicial, legislative, and societal capacity to enforce current statutes intended to protect the environment and hold wildlife traffickers and violators

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knowledge of our world, virus discovery efforts have the potential to allow characteristics of viruses, hosts, environmental factors, and their associated interactions to be analyzed and acted upon to target surveillance, improving cost-effectiveness, as well as epidemic preparedness and prevention activities to reduce impact of spillover events.”).

<sup>288</sup> *Risks of Removing Wild Meat*, *supra* note 21, at 1794 (“By highlighting the potential negative consequences of wide-spread prohibitions of wild meat trade and consumption, we urge decision-makers to adopt a risk-based approach to managing wildlife use in response to COVID-19; one which considers all costs and benefits of wildlife trade – and proposed regulations – on a case-by-case basis.”).

accountable for harms to wildlife. Finally, the PFPA should modify its focus away from the outright closure of wildlife markets towards (1) setting increased health standards for existing markets, (2) establishing targeted bans for reservoir species, and (3) increasing focus on reducing U.S. domestic consumer demand and the inclusion of a disease surveillance system for imported live animals regardless of the reason for importation.

## VI. CONCLUSION

The COVID–19 pandemic prompted an important discussion about whether and how to mitigate future zoonotic disease threats influenced by human activities that increase the risk of zoonotic spillover events, including consuming bushmeat, conditions in wildlife markets, the wildlife trade, and the deforestation and destruction of wildlife habitat. The United States Congress proffered new legislation to tackle many of these activities, going so far as to promote the closure of wildlife markets worldwide. Despite strong policy initiatives to cooperate with foreign nations and organizations to tackle disease threats from wildlife markets and combat illegal wildlife trafficking—the proposed methods to reduce the threats are not rooted in socio–cultural, economic, or legal realities of developing countries that demand more nuanced and risk–based approaches to the pandemic prevention. The Preventing Future Pandemics Acts of 2021 must incorporate science-based solutions informed by human and social realities to effectively prevent future pandemics.