

Reducing the risk of future emerging infectious disease outbreaks by changing social norms around urban bushmeat consumption and stopping its commercial trade

WCS Central Africa



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May 2020





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The Wildlife Conservation Society saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature.

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OUR VISION

WCS envisions a world where wildlife thrives in healthy lands and seas, valued by societies that embrace and benefit from the diversity and integrity of life on earth.

Concerted, sustained and collaborative effort is needed to implement a multi-pronged 'One Health' strategy to decrease the risk of zoonotic disease transmission by:

- preventing the degradation of ecosystems to preserve ecological integrity;
- ending rural-urban supply and urban sale of mammal species as bushmeat;
- ending urban demand for bushmeat;
- reducing the risk of wildlife-to-hunter disease transmission in rural areas;
- expanding early warning systems for emerging zoonotic diseases at the human, wildlife and forest interface; and
- improving preparedness through strengthening public health infrastructure and outreach to protect the health of Indigenous Peoples and local communities

The COVID-19 pandemic has had an unprecedented and catastrophic impact on the global population in relation to every aspect of normal life. As well as the tragic loss of human lives, the impact on the global economy and livelihoods is devastating and will have wide-ranging consequences for years to come. The human and financial costs associated with global pandemics are significantly greater than taking measures to prevent them in the first place.

Zoonotic disease risks

COVID-19 is a zoonotic disease that originated in wildlife¹. Human-wildlife contact with a bat or an intermediate host species in China likely triggered a coronavirus spillover event. This spillover may have taken place at a wildlife market and it ultimately led to the pandemic spread of COVID-19². The pandemic risk of commercial wildlife markets was recognized during the 2002-2003 Severe Acute Respiratory Syndrome (SARS) outbreak³. While bats are thought to be the ancestral hosts for all groups of coronaviruses⁴, for the specific ones that cause SARS and COVID-19, wildlife trade is suspected to have created the conditions necessary for their emergence, spillover, and amplification in humans^{2,5,6}. Research is ongoing to determine which type of animal may have acted as an intermediate host for the virus that causes COVID-19⁷, but the recommendations provided in this document for the prevention of future zoonotic spillovers apply regardless of which species is confirmed as the intermediate host.

The majority of new infectious diseases are zoonotic, which means they have spread between animals and humans. 72% of the zoonotic diseases that have emerged since the 1940s have come from wildlife, including Ebola, HIV and SARS⁸. The frequency with which these novel diseases are emerging is increasing over time. It is a consequence of more human-wildlife contact due to human encroachment into natural areas to extract resources or to clear land for farming⁸⁻¹⁰. Maintaining the integrity of Central Africa's ecosystems by preventing forest loss and degradation is therefore essential to reducing the risk of zoonotic spillover events. This is explained in detail in WCS's report on the links between ecological integrity and emerging infectious diseases¹¹. Zoonotic diseases can emerge at any time with potentially catastrophic



Bats being sold in a market © WCS

consequences. This is why they must be considered as significant and unpredictable global public health risks.

Scientists estimate that there are around 1.7 million viral species not yet discovered in mammals and birds, of which 700,000 may have the potential to cause harm if they spread to the human population¹². Although the majority of zoonotic pathogens originate in wildlife, it is not wildlife that poses a risk but the human activities that occur at the human-wildlife interface. Hunting, land clearing for agriculture, infrastructure development and other causes of deforestation are the main examples. Any attempt to remove zoonotic threats by removing wildlife populations could have negative consequences that increase the risk of disease transmission¹³⁻¹⁵. Preventing future pandemics requires a concerted effort to reconsider our interactions with our environment and to take measures to reduce the greatest spillover risks.

Priority actions during the COVID-19 pandemic

During a disease outbreak, the focus of messages disseminated to the public in Central Africa should be about the specific disease in question – in this case COVID-19. This should include an explanation of its origin, how it is believed to be transmitted, and preventative measures to stop the spread of the infection¹⁶. Guidance provided by the World Health Organization¹⁷ and other reputable scientific and public health bodies should be disseminated to the public in culturally sensitive ways, with significant efforts made to refute conspiracy theories and other messages that are not based on scientific evidence. Actions should focus on minimizing the spread and loss of life, as well as all social and economic impacts.

To avoid confusion, public messaging and policy actions aimed at reducing the risk of future emerging infectious diseases may be better disseminated and implemented in the aftermath of a disease outbreak - once the human crisis is contained and people reflect on lessons learnt. It is at this stage that interventions could bring about the required long-term changes; otherwise they may be perceived as temporary measures that can be abandoned once life returns to normal^{18,19}.



Handling of fresh bushmeat during food preparation © L. Vanegas

Disease risks associated with bushmeat in Central Africa



Pangolin in Pointe Noire Market, Congo
© M. Wieland

The hunting, trade and consumption of wild meat, or bushmeat, in Central Africa is a past, current and potential future zoonotic disease risk. Pathogens that have spread to humans from bushmeat include HIV, simian foamy virus, monkeypox virus, Ebola viruses, anthrax, herpesviruses, retroviruses and paramyxoviruses²⁰. The risk of disease transmission from bushmeat is greatest when handling and butchering fresh carcasses. Bats, rodents and primates pose the greatest risk to humans, followed by carnivores and ungulates^{21,22}.

Although zoonotic disease transmission can occur at any point along the bushmeat supply chain, from hunting in the forest to the point of consumption, markets in large urban areas are particularly dangerous. Bushmeat is transported long distances to satisfy urban demand, yet this means that novel pathogens from remote forest areas are transported into the heart of populous cities. The

mixing of several species of wildlife and domestic animals, along with the slaughtering and butchering of fresh carcasses in busy urban markets creates a conducive environment for zoonotic disease transmission and spread. The high demand for bushmeat in urban areas encourages rural populations to hunt more animals than is necessary for their own consumption, thereby putting these communities at added risk of zoonotic disease transmission.

The priority for governments, the international community and local populations across the Central Africa region should be to **end the urban consumption and associated commercial trade in mammal species as bushmeat**. This would significantly reduce the risk of zoonotic disease transmission and the possibility of another global pandemic, while simultaneously allowing rural communities without alternatives to hunt for subsistence. Communication and reporting systems should be designed to ensure that subsistence hunting is done in such a way that the risk of zoonotic disease transmission is reduced. Early warning systems to detect emerging zoonotic diseases should be expanded and integrated into healthcare and public health systems, with access to healthcare and public health messaging improved in rural areas to ensure better preparedness and rapid diagnosis, containment and treatment²³. Creating political will and administrative capacity needs to be included in policy design.

Barriers to implementing and enforcing an immediate ban on bushmeat

There are many barriers to ending the bushmeat trade in Central Africa that need to be acknowledged. Consuming bushmeat is a social norm in urban as well as rural areas, there are innumerable people whose livelihoods depend on this trade. The capacity to effectively enforce laws is limited. People have multiple reasons to consume and trade in bushmeat which make sense to them. Instigating an immediate ban, without public support, could have unintended consequences (see box below), and the trade in bushmeat would likely continue in a more hidden manner²⁴. To overcome these barriers, policy change should be accompanied by a sustained and targeted effort to change deep-rooted practices and secure public support. This paper outlines a proposed way forward to address this.

Strategic actions to prevent future infectious disease outbreaks caused by bushmeat

COVID-19 has had a fundamental impact on the world and it is the responsibility of governments, ordinary people, the international community and NGOs to prevent further pandemics of zoonotic origin. Interim measures are necessary but not sufficient; focus must be on long-term change.

Concerted, sustained and collaborative effort is needed to implement a multi-pronged 'One Health' strategy to decrease the risk of zoonotic disease transmission by:

- 1) preventing the degradation of ecosystems to preserve ecological integrity;
- 2) ending rural-urban supply and urban sale of mammal species as bushmeat;
- 3) ending urban demand for bushmeat;
- 4) reducing the risk of wildlife-to-hunter disease transmission in rural areas;
- 5) expanding early warning systems for emerging zoonotic diseases at the human, wildlife and forest interface; and
- 6) improving preparedness through strengthening public health infrastructure and outreach to protect the health of Indigenous Peoples and local communities.

To address the commercial bushmeat trade a combination of policy and behavior change mechanisms will be required to fulfil these aims, using insights from the fields of criminology, behavioral science, social marketing, economics and anthropology among others. Engagement with all stakeholders and sustained effort will ultimately lead to sustained change. Specific guidance related to addressing strategies 2-4 are outlined below.

- *Ending rural-urban supply and urban sale of mammal species as bushmeat*

Stopping the transportation of mammal species from rural to urban areas and permanently closing urban bushmeat markets through legislation and enforcement will significantly reduce opportunities for future zoonotic disease emergence and transmission within Central Africa. However, a consultation process should first be conducted to understand the perspectives of actors in the supply chain and its political economy context, as well as virologists, epidemiologists, disease ecologists, public health experts, veterinarians, national governments, law enforcement agencies, political economists and conservationists. Alternative protein sources must be readily available to enable consumers to switch, so market closures are most feasible in large metropolitan areas initially. Recognizing bushmeat actors as experts in their field and taking their local knowledge into account is essential because this knowledge can circulate just as much, if not more, than scientific arguments in the media. The barriers and benefits to change for bushmeat trade actors should be discussed in a transparent way with legitimate concerns acknowledged and addressed. Capacity building needs must be taken into consideration to create the enabling environment for change.

- *Ending urban consumer demand for bushmeat in general*

Changing long-standing consumer practices is a behavior change process and the principles of behavioral science and social marketing should be applied. Long-term change takes time and will require sustained donor support to ensure the end result is

a fundamental shift in the social norm around eating bushmeat in Central African cities. Although scientifically validated messages about the process of zoonotic disease transmission should be made available in easy-to-understand formats – making clear that while the likelihood of transmission may be low the consequences are high. Messages based on fear tactics are unlikely to lead to long-term changes on their own, especially in an environment where there are many daily risks and widespread poverty. Messages must instead be conceptualized locally so that they resonate with people from the city in which they will be disseminated, and should reflect a deep understanding of the specific audience(s) they seek to target. Messages should also be adapted as opinions change.

- ***Reducing the risk of wildlife-to-hunter disease transmission in rural areas***

Communication and reporting systems for rural hunters should be established, with training provided on how to minimize the risk of zoonotic disease transmission. Creating a rural hotline or similar can enable the reporting of animals found dead in the forest, but an accompanying message must be disseminated to emphasize that *'if you find a carcass in the forest, never touch it, never move it, never bury it, but contact the local authorities and the veterinary service to determine the cause of death'* (where such services and expertise are available). Additional health messaging can include hand washing after handling wildlife or bushmeat. Alternative protein supply issues in rural towns and peri-urban areas need to be addressed to reduce the dependency of these types of settlements on bushmeat. This will ultimately ensure that rural hunting is for village consumption only and hunting can be reduced to sustainable levels. Livelihood support should be provided to actors in the bushmeat value chain to enable them to engage in other income generating activities and reduce their reliance on income from bushmeat.



Indigenous Mbuti hunter using traditional methods © I. Ayaya / WCS

Anticipating and addressing unintended consequences of immediate bans on bushmeat: lessons learned from Ebola^{19,24,25}

- Banning bushmeat during an outbreak associates the ban with the outbreak - after the outbreak the situation may return to normal because people no longer see the relevance of the ban. Instead, stakeholders must be engaged and public support obtained in the aftermath of an outbreak to facilitate well-planned and permanent change.
- A ban without sustained enforcement will not be respected. Instead, political will must be cultivated and enforcement capacity increased to ensure that changes in the law result in permanent changes on the ground.
- Bans on bushmeat can encourage consumers to stockpile. It is therefore essential that consumers understand and support the reasons for the ban and are intrinsically motivated to change their own behavior. This can be achieved through sustained behavior change efforts.
- Bans can lead to a proliferation of informal networks supplying bushmeat directly to restaurants and consumers, thereby bypassing observable trade hubs such as markets. Governments should be supported to improve their intelligence gathering systems and work in coalition with other law enforcement partners, such as NGOs, to strengthen intelligence-led approaches to law enforcement. Situational crime prevention strategies can be implemented to deter actors in the bushmeat supply chain from continuing with this trade.
- Messages about zoonotic disease risk contrast with people's own experiences of having never contracted a disease from handling or eating bushmeat, thus reducing the legitimacy of a ban. Messages should instead be built around the target audience's perceptions of bushmeat and what they believe are the barriers and benefits of changing their own behavior.
- The criminalization of bushmeat can fuel fears and rumors about the ulterior motives of governments, NGOs and outbreak response teams. Transparency is key. Behavior change messaging about bushmeat can take a variety of forms, but there should always be a way for those interested to learn more about the underlying motives and organizations involved.
- Outright and nationwide bans on bushmeat consumption should be avoided. Instead distinctions should be made between rural and urban areas based on the availability of alternative proteins, and appropriate measures must be taken to create the necessary enabling environment for change in each.
- Interventions with the greatest likelihood and scale of impact should be prioritized. Since the risks posed by urban markets extend beyond the market itself to the whole rural catchment that supplies that market with bushmeat, galvanizing support for the well-planned and permanent closure of these markets must be one of the first priorities in the Central Africa region.

About WCS

The Wildlife Conservation Society (WCS), a US non-profit, tax-exempt, private organization, saves wildlife and wild places worldwide through science, conservation action, education, and inspiring people to value nature. Established in 1895, WCS currently maintains an on-the-ground presence in around 60 countries in Africa, Asia and the Americas.

The WCS Urban Bushmeat Project operates across three cities in the Democratic Republic of Congo and the Republic of Congo. The project has developed an evidence-based approach to reducing bushmeat supply and demand in urban settings, with a focus on behavior change, situational crime prevention and law enforcement.

The WCS Wildlife Health Program works around the world on a range of threats facing wildlife, livelihoods and human health. WCS has been collaborating for 16 years on research at the forefront of the global effort to detect emerging zoonotic diseases. Using a One Health approach, WCS addresses global health challenges at the nexus of human, animal, and ecosystem health. By engaging partners across conservation, public health, agriculture, and beyond, WCS provides critical information that influences policy and action.



Seizure of bushmeat destined for the city © J.R. Onononga

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