

# Collaborating to Connect: Cross-Sectoral Efforts to Conserve Wildlife, Achieve Food Security, and Combat Zoonotic Diseases

## Introduction

This evidence brief primarily summarizes research entitled, *“Food Security, Health, and Biodiversity: Can Cross-Sector Solutions Assure Bushmeat Emerges as a 21st Century Sustainable Food?”* conducted by Dr. Heather Eves for USAID’s Africa Bureau in 2018.

Wild animal source foods are an important contributor to food security and dietary diversity for many poor people (Bennett 2002; Ntiama-Baidu 1997). However, the current level of demand for wildlife for consumption by urban, peri-urban, and international consumers diverts important food resources away from rural consumers and poses risks to human health. The current COVID-19 public health crisis shows how deeply interconnected efforts to preserve human health and food security are with the health of the planet. Biodiversity conservation and sound management of the world’s natural resources benefit us all by providing essential services including clean water, food, crop pollination, and pest and disease control. Overhunting and illegal exploitation of wild animals threaten not only wildlife but also the services that nature provides (Ripple et al. 2015).

The COVID-19 pandemic demonstrates the serious health threat of the demand for wildlife and wildlife products to human health (Congressional Research Service 2020). In recent history, viruses originating from wildlife have been the source of serious emerging zoonotic diseases, such as HIV, Ebola, and severe acute respiratory syndrome (SARS) (PREDICT 2014). These diseases have brought global attention to the risks of the wild meat trade and consumption to public health. More attention is needed on these connections as well as those between biodiversity and health with food security and nutrition.

Critical development goals of achieving food security, ensuring the health and well-being of human communities, and conserving biodiversity cannot be achieved through siloed efforts (Eves 2018). According to the 2019 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Global Assessment Report on Biodiversity and Ecosystem Services, the trend of global ecological decline will undermine progress towards 80% of the Sustainable Development Goals. Achieving these global goals requires strategic partnerships across different sectors (IPBES 2019). Despite the growing cross-sectoral engagement of food security, health, and biodiversity, the capacity to work collaboratively is still lacking; time, funding, knowledge, networks, priorities, and governance are still insufficient (Eves 2018).

## Biodiversity

Wildlife is critical to maintaining habitats and ecological services. Without wildlife to spread seeds and control large prey populations, plants and animal diversity declines, and the health of the ecosystem is threatened (Ripple et al. 2015). Biodiversity loss and global habitat fragmentation exacerbate the spillover of zoonotic infectious diseases into humans (Zohdy et al. 2019). For example, evidence of habitat fragmentation leading to the emergence of infectious diseases has been reported for the Ebola virus in the West and Central Africa region (Rulli et al. 2017).

Humans have hunted wildlife for food, nutrition, income, and cultural reasons for many thousands of years. Until recently, there was a balance between humans and wildlife populations, but that balance has been lost and we are witnessing an acceleration in the loss of biodiversity. Today, the global biomass of wild mammals has declined by 82%, and the abundance of terrestrial species has declined by 23% (IPBES 2019). Despite the staggering decline, many communities and individuals still depend on depleted wild terrestrial species for essential food, nutrition, income, and cultural well-being (Eves 2018).

## Food Security

**Many rural communities depend on wild animal foods as a source of lower-cost protein and to improve dietary diversity, particularly at times when shocks and stressors impact affordability or accessibility to healthy diets** (Bennett 2002; Ntiamoa-Baidu 1997). An analysis by the United States Agency for International Development's (USAID) Bureau for Resilience and Food Security and Bureau for Global Health of data from six Feed the Future Zones of Influence (Nepal, Rwanda, Uganda, Malawi, Zambia, and northern Kenya) found that up to 27% of rural women surveyed had eaten wild animal-source protein in the previous 24 hours. This includes wild animal flesh and organs, insects, and fish, and other seafood. In Malawi, the survey found that 2.4% of rural women surveyed had consumed *terrestrial* wild animal-source foods in the previous 24 hours; extrapolating that percentage of consumption to the nearly 1.2 million women in Malawi's Zone of Influence suggests that terrestrial wild animal-source foods fortified the diets of more than 28,000 women in the previous 24 hours. In Rwanda, Zambia, Malawi, and Uganda, wild animal-source foods comprised 50% or more of the total animal-source proteins consumed. In a special analysis of the Zambia data, multivariate analysis demonstrated that women who consumed wild animal-source foods were 7 times more likely to have a diverse diet than women who did not. These findings demonstrate the important contribution of wild animal-source foods to the diets and nutrition of rural women.

The lack of access to wild meat can become an issue of equity—it can have severe nutritional and economic consequences for millions of impoverished populations, especially women, children, and rural communities. The presence of wildlife is an unrecognized partner in meeting food security and improved nutrition needs while supporting individual and household resilience. Sustainable management of wildlife, combined with appropriate market interventions and support for domestic animal production and other alternative proteins, is essential to supporting communities (Eves 2018).

## Health

As demonstrated by COVID-19 and SARS emerging from wildlife markets, and Ebola and HIV/AIDS from butchering and handling wild primates, the **trade and demand for wild meat have a profound impact on global health**. More than 70% of emerging infectious diseases that occurred between 1940 and 2004 originated from wildlife, and the incidence of these outbreaks has significantly increased over time, resulting in millions of deaths annually, and tens of billions of dollars of economic losses from a single outbreak (PREDICT 2014). With the COVID-19 pandemic, the estimated global economic mitigation response alone reached more than \$18.4 trillion during the first quarter of 2020 (Congressional Research Service 2020).

**According to Eves' findings, a collaboration between the health and biodiversity sectors is difficult when species of highest concern do not overlap.** The biodiversity sector has focused more on endangered species and larger mammals while the health sector has focused more on bats, nonhuman primates, and rodents as these key animal groups harbor the greatest proportion of zoonotic viruses (2018). However, viral disease spillover from animal reservoirs to other wildlife species and livestock hosts cannot be ignored. For instance, the Nipah virus outbreak in 1998 originated from bats and was transmitted to humans through direct physical contact with infected domesticated pigs (Ang et al. 2018). And recently, a developing research study links COVID-19 to smuggled pangolins in Southern China suggesting that the virus was transmitted to humans by intermediate hosts (Lam, T.T., et al. 2020).

While some impoverished communities depend on wild meat for nutrition and income, others consume it as a matter of food preference or as a delicacy. Increasing population growth and rising incomes in urban areas lead to a growing demand for wild meat as a luxury food item in commercial trade and urban markets (Eves 2018). The SARS outbreak in 2002–2004 and the COVID-19 pandemic likely emerged from urban wildlife markets. PREDICT, a project of USAID's Emerging Pandemic Threat (EPT) program, identified markets as high-risk disease transmission interfaces, and therefore recommended to focus efforts at markets to decrease disease spillover and reduce threats to biodiversity (2014). However, the entire supply chain for wildlife and wildlife products is a concern, given interfaces between wildlife, other species, and

humans in markets, at consolidating sites, in captive wildlife production centers, and is protected and other natural areas.

## Recommendations

In a series of interviews conducted by Dr. Heather Eves with more than 40 USAID staff across the Bureaus for Food Security, Forestry and Biodiversity, and Health, there was a common understanding of the importance of working across sectors to address unsustainable wild meat consumption and trade. **Interviewees indicated that USAID's food security efforts have previously been more focused on grains and not on sources of proteins and micronutrients, although there is a growing emphasis on the quality of nutrition and dietary diversity, re-emphasizing animal-source foods including fish and aquatic foods, vegetables, and fruits.** Food security and biodiversity programming are also often targeted in different geographies: food security programming is often located in areas where there are larger numbers of vulnerable people and natural resource constraints, whereas conservation programming is more concentrated in protected areas and more biodiversity-rich landscapes. They also pointed out that siloed funding mechanisms and indicator reporting requirements limit opportunities for bureaus to collaborate and engage in integrated programs.

Interviewees highlighted key opportunities to address these barriers:

- It is important to understand the **trade routes** between protected areas and the food security zones of influence in missions where there is potential for integrated programming. **Markets and market systems** can be an entry-point for the three sectors to integrate and identify solutions alongside finding alternative protein sources for the most vulnerable populations.
- Sectors need to focus joint efforts in **public-private and multi-sectoral partnerships** to increase the availability and affordability of sustainable animal source foods and other proteins and to reduce demand for wildlife and wildlife products.
- Multi-sectoral efforts need to leverage collective experience and knowledge on **existing pilot efforts** that link across sectors in population, health, and environment and show potential cost-savings while achieving sector objectives through integration.
- Include **expanding data collection** to account for the contribution of wild meat to nutrition and food security
- Use **nutrition as a shared indicator** between biodiversity and food security
- Engage **Foreign Service Nationals and field staff** across sectors in listening groups and Environment Officer annual meetings to address unsustainable wildlife hunting, trade, and market dynamics
- Support Missions in **cross-sector planning and regional programming** to address interlinked food security and nutrition, health, and biodiversity threats and opportunities.



## Conclusions

With the increasing emergence of zoonotic infectious diseases as demonstrated by the COVID-19 global pandemic, USAID needs to strengthen its effort in combating pandemic risk and promoting its One Health approach. This calls for a paradigm shift in advancing health, agriculture, and conservation policies by engaging across sectors that relate to health, land use, and the sustainability of human interactions with the natural world. USAID, as a well-positioned leader in cross-sectoral partnerships, can enable bureaus to collaborate, not only to reduce emerging global pandemic risks but to support partner countries in their journey to self-reliance.

## References Cited

- Ang, B. S., Lim, T. C., & Wang, L. 2018. Nipah virus infection. *Journal of clinical microbiology*, 56(6), e01875-17.
- Bennett, E. L. (2002). Is there a link between wild meat and food security?. *Conservation Biology*, 16(3), 590-592. doi: <https://doi.org/10.1046/j.1523-1739.2002.01637.x>
- Congressional Research Service (CRS). 2020. The Global Economic Effects of COVID-19. <https://fas.org/sgp/crs/row/R46270.pdf>
- Congressional Research Service (CRS). 2020. Wildlife Trade, COVID-19, and Other Zoonotic Diseases. <https://crsreports.congress.gov/product/pdf/IF/IF11494>
- Eves, H. 2018. Food Security, Health, and Biodiversity in Africa: Can Cross-Sector Solutions Issue Bushmeat Emerges as a 21st Century Sustainable Food. Draft Final Report.
- Lam, T.T., et al. 2020. Identifying SARS-CoV-2 related coronaviruses in Malayan pangolins. *Nature*. <https://doi.org/10.1038/s41586-020-2169-0>.
- IPBES. 2019. Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. S. Díaz, J. Settele, E. S. Brondízio E.S., H.T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K.A. Brauman, S. H. M. Butchart, K. M.A. Chan, L.A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslavich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages.
- Ntiamoa-Baidu, Y. (1997). *Wildlife and food security in Africa* (No. 33). Food & Agriculture Organisation. <http://www.fao.org/docrep/w7540e/w7540e00.htm>

PREDICT Consortium. 2014. Reducing Pandemic Risk, Promoting Global Health. One Health Institute, University of California, Davis.

Ripple, W. J. et al. 2015. Collapse of the world's largest herbivores. *Science Advances*, 1(4), e1400103. doi: [10.1126/sciadv.1400103](https://doi.org/10.1126/sciadv.1400103)

Ross, J. 2020. "COVID-19 Crash: How China's Economy May Offer a Glimpse of the Future." Visual Capitalist, March 26, 2020. <https://www.visualcapitalist.com/covid-19-economic-impact/>

Rulli, M., Santini, M., Hayman, D., et al. 2017. The nexus between forest fragmentation in Africa and Ebola virus disease outbreaks. *Sci Rep* 7, 41613. <https://doi.org/10.1038/srep41613>

Zohdy, S., Schwartz, T. S., & Oaks, J. R. 2019. The coevolution effect as a driver of spillover. *Trends in parasitology*.