



TRAFFIC[®]

the wildlife trade monitoring network

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WILDLIFE TRADE,
COVID-19,
AND ZOO NOTIC
DISEASE RISKS

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KEY POINTS

ORIGINS

A new coronavirus, designated SARS-CoV-2, is causing a worldwide health pandemic with people infected by a new disease known as Covid-19, which can have fatal consequences.

Although the origins of COVID-19 are currently unproven, there are strong indications of a wild animal source and a direct link to wildlife trade in China.

SPECIES AND WILDLIFE TRADE

Two key factors are “what” animal species present the greatest risk of being a source of human disease and “where” disease transmission is a particularly high risk.

Emergency prohibitions on the sale and consumption of wild animals in key countries are a sensible response, but longer-term measures will need clear risk-based targeting and design.

RESPONSES AND SOLUTIONS

Development of appropriate short- and long-term solutions would be strengthened by better insights into the specific origins of the COVID-19 outbreak and into wider questions of zoonosis risk and management strategy.

There is a need to convene dialogue between wildlife trade specialists, specialists in the zoonotic disease field and regulatory agencies and IGOs working in the human and veterinary health sectors, and related fields such as food safety.



INTRODUCTION

WITH COVID-19 CASES, RELATED HUMAN MORTALITY AND SOCIO-ECONOMIC DISRUPTION RISING RAPIDLY AROUND THE GLOBE THERE ARE OVERWHELMING REASONS TO CONCENTRATE ON IMMEDIATE EMERGENCY RESPONSES, THE HERE AND THE NOW.

People are dying, daily life is being fragmented, businesses are failing, families and communities are suffering and there is enormous uncertainty about when things will begin to improve, never mind emerge into some new normality.

Beyond the reality of important operational challenges common to most organisations and businesses, the COVID-19 crisis has particularly poignant relevance for TRAFFIC and other organisations working in the field of wildlife trade. Although the origins of the disease are currently unproven, there are strong indications of a wild animal source and a direct link to wildlife trade in China. Specifically, a significant proportion of early cases in China involved people who had worked at or visited a market in Wuhan where wild animals were on sale and initial research results pointed to a possible transmission pathway from bats via pangolins to people.

Even if indications of this link prove in future to be mistaken, the COVID-19 outbreak has attracted strong attention to a

growing number of examples of wildlife-sourced diseases emerging as important human health concerns in recent decades. For many of these examples, there are strong indications of diseases transmission links to trade and consumption of wild animal species.

In light of initial evidence of the origins of COVID-19, China introduced emergency measures in February 2020 restricting wild animal trade and consumption. Viet Nam and other countries are considering similar emergency responses. At the time of writing, with the COVID-19 pandemic still growing fast, a wide range of organisations and public voices are calling for strong permanent prohibitions on wild animal trade to reduce risks to human health. The purpose of this paper is to dig into what we know of links between wildlife trade and zoonotic diseases and on this basis to consider implications for future wildlife trade policy and longer-term remedial measures.

WHAT LINKS ARE THERE BETWEEN **HUMAN DISEASES AND ANIMALS?**

There is a very significant body of evidence about the risks and impacts of “zoonoses”: infectious diseases caused by bacteria, viruses, fungi or parasites that spread from non-human animals (usually vertebrates) to humans.

They include a very wide spectrum including Ebola virus disease, Avian Flu and Dengue fever. The World Health Organization (WHO) website lists over 30 major zoonotic diseases (and disease groups) of concern and the Centers for Disease Control and Prevention has reported that three out of every four new or emerging infectious diseases in people come from animals. Such diseases are linked with a range of domesticated and wild animals that act as sources, reservoirs and/or vectors of transmission.

WHAT'S THE CONNECTION BETWEEN **WILDLIFE TRADE AND HUMAN DISEASE?**

Wild animal trade presents particular risks in this context, because it involves movement of individuals away from their natural range, where historical human exposure might have led to some build-up of immunity.

Such trade, by definition, brings live animals and animal products into close proximity with people engaged in commerce and consumption/use, whether as food, pets, medicinal ingredients or for other purposes. It also typically leads to species of different origin, wild and domesticated, captive or free-living being in proximity along transport routes and in markets. Animal to animal, species to species and wildlife to human transmission is therefore greatly facilitated by such trade.

IS THIS **A NEW ISSUE?**

This risk is not a new concern, it has been flagged regularly over recent decades by specialists in human and animal health fields. Concern has risen as the scope and volume of wildlife trade has grown as a component of the growing and increasingly inter-connected globalised world economy and as examples of dangerous zoonotic diseases have accumulated.

Although picked up as a specific concern in national measures related to sanitation and animal health in some countries (for example the EU's wild bird import ban), it has not so far been a prominent focus of international policy responses to wildlife trade challenges, which have tended to concentrate on the conservation impacts of over-exploitation, though there are exceptions, such as the integration of conservation and sanitary controls in marine fish trade controls.

INHERENT RISKS FROM
WILDLIFE TRADE

IMPACTS OF
INCREASING TRADE VOLUMES

WHAT ASPECTS OF WILDLIFE TRADE PRESENT THE GREATEST HEALTH RISK?

Although there are many unknowns with respect to this question, there are two main factors to consider. The first factor is “what” species present the greatest risk of being a source of human disease and in what form (i.e. as meat, live animals or other parts and products) such transmission is most likely to take place. Many highlighted examples of traded species linked to zoonotic diseases have been terrestrial mammals and birds, but other vertebrate and invertebrate animals could present similar risks (tick-borne diseases linked to livestock trade are a case in point). Furthermore, diseases such as botulism and salmonellosis are known risks linked to trade in marine and freshwater organisms and a range of pathogens are associated with wild plants. For terrestrial animals at least, live individuals and meat are likely to present the greatest risk of disease transmission as pathogens are transferred through contact with bodily fluids, excretions or by direct consumption, but again it is not unlikely that other parts or products could present disease transmission risks.

The second factor is “where” disease transmission is a particularly high risk. Strong concerns in this regard occur along the whole trade chain, from points of capture where trappers and hunters handle animals, through trade collection points, transport hubs and vehicles to end markets where people and different species may be in close proximity.

WHICH SPECIES
AND FROM WHERE

DOES THIS CONCERN EXTEND TO TRADE FROM WILDLIFE “FARMS”?

A significant proportion of trade in some wildlife species is not directly sourced free-living wild populations, but instead derived from breeding and keeping in captivity in controlled conditions. In terms of disease transmission, wildlife “farms” have potential to provide controlled sanitary conditions that reduce certain risks. They may also be located closer to end markets, which might reduce disease exposure risks along transport chains. However, in many other respects the disease risks of trade and consumption of farmed wildlife have a lot in common with wild-sourced trade. Like markets, such farms are key locations where people and wild animals are often in close proximity over significant periods of time. Sanitary control measures in wildlife farms are not always ideal, supplementary stocking of additional wild-sourced individuals may be part of the production system and exposure (animal to animal or animal to person) along trade routes and at market level remains a significant risk irrespective of whether the original point of origin is wild-sourcing or farming.

MITIGATING THE RISKS FROM
DISEASE TRANSMISSION

HOW DO CURRENT WILDLIFE TRADE REGULATIONS DEAL WITH THESE CONCERNS?

Over the past 50 years, governments have enacted a very significant body of international, national and local legislation specifically aimed to regulate trade in wild animals. CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, is the principal instrument for international co-operation in addressing conservation concerns related to wildlife trade. The primary purpose of CITES and most national wildlife trade legislation is to address problems arising from over-exploitation of wildlife species with some limited attention to associated issues such as welfare of live animals during transport. For some regional and national wildlife trade laws, there is also attention to the risks of release of invasive alien species. Implementation and enforcement of conservation-driven regulation is not consistent, often under-resourced and given insufficient priority by governments.

CITES AND ADDITIONAL
REGULATIONS

Many countries also have significant legislative provision for animal health protection, including reduction of risks from zoonotic diseases through trade restrictions, quarantine requirements and health inspection regimes in the marketplace. However, such regulations are typically designed primarily to address trade and consumption of domesticated species, the volume and value of which are orders of magnitude greater than wild animal business. As a result, provisions of such regulations are seldom tailored to the specific dynamics and risks of wild-sourced animal trade. Again, there are exceptions, particularly for marine species trade and in relation to specific risks such as quarantine controls for live wild birds to protect domestic poultry populations from specific diseases.

Like other regulatory systems, weaknesses in both conservation- and health-driven regulation are exploited by illegal actors who derive benefit from business that avoids their provisions. Regulations are also sometimes inconsistently applied along trade chains, such that animals or products that have been illegally imported may still be sold and consumed “legally” once beyond border controls.

WHAT PARTICULAR RISKS ARISE FROM ILLEGAL TRADE?

Commentary on wildlife trade health risks often places particular emphasis on illegal trade and trafficking. To some extent this may simply be a reflection of non-experts using language loosely, but this is a key point that needs clarification. Risks of transmission of animal-borne diseases to humans are not insignificant within legal trade flows, even within highly structured regulatory systems. As noted above, the principal risk factors are what is being traded, where transmission might occur and whether adequate preventative measures are being taken. Since most wildlife trade regulations are not focused on preventing disease transmission and most animal health laws are not focused on wild animal trade (again there are exceptions), there are very significant unmanaged risks within legal trade systems. That is not to say that illegal activity presents no added risks. Poor transport conditions, avoidance of quarantine controls on import or black market trade outside regulated markets and retail outlets where health inspections may be focused certainly presents incremental concerns. However, it is not simply the level of compliance or non-compliance with wildlife-specific legislation that dictates the level of risk from a disease perspective.

PREVENTATIVE MEASURES,
QUARANTINE CONTROLS

WHAT EFFECT IS THE PANDEMIC HAVING ON CONSERVATION IMPACTS OF WILDLIFE TRADE?

It is too soon to judge properly how the COVID-19 pandemic is affecting wildlife trade flows and routes and the effectiveness of measures in place to reduce the impact of over-exploitation and in some cases also to support benefits from sustainable trade. The profound current changes in transport accessibility, restrictions on movement of people, closure of non-essential businesses etc. are very likely to be affecting many wildlife trade supply chains. Decreased consumer confidence may be undermining demand for higher value “luxury” products and economic hardship may be reducing consumption of what might for some be considered staple products. Instinctive shifts to “buying local and familiar” rather than exotically sourced goods may be increasing. At the same time, like other areas of the economy, there is no doubt market adaptation is happening – further shifts to online marketplaces and perhaps decisions to acquire durable goods seen to be safer investments than company shares. There is also very likely to be increased use of wild plant and animal ingredients in traditional medicine being formally prescribed or informally recommended as treatments for COVID-19 infection and as “immune system supporting” tonics in traditional Asian medicine practice both within Asia and potentially

TRANSPORT, ONLINE MARKETS,
LOCAL SOURCING

on a global scale. Similar pressures may develop within local traditional medicinal systems in Africa. There may also be increased consumption in wild-caught marine species as an alternative to other protein sources, though for now at least there is no link being claimed to domestic meat production. Looking further ahead, there are likely to be significant changes in production and consumption patterns and in the prioritisation and focus of government interventions in the coming months and years that will likely have significant impact on future wildlife trade trends and related conservation impacts and incentives. It will be very important to track these changes and adjust conservation-driven interventions accordingly.

WHAT OTHER

CONSERVATION ISSUES ARE LINKED TO THIS CRISIS?

Valid concerns are being raised about the wider environmental, including conservation, concerns under-pinning increased risk from zoonotic diseases. These include impoverishment of ecological systems, pollution and a range of other factors contributing to environmental harm. The economic, social and political conditions influencing emergence of and responses to such concerns may change significantly because of the pandemic. In addition, concerns arising from the pandemic could lead to shifts in preferences for or access to protein sources and resulting substitution and shifts in production and trade patterns that could have negative or positive conservation impacts. In terms of immediate wider conservation impacts, the COVID-19 crisis is negatively impacting wildlife-based tourism income in countries where related direct and indirect revenues are important sources of conservation financing. Looking ahead, there may be additional negative impact on conservation incentives or worse still people may be motivated to persecute wild species considered to be disease risks. There is already at least one media report of a “retaliation” attack on a bat colony apparently driven by concern about the role of bat species in zoonotic disease emergence. If the economy of wildlife farming collapses, there could also be problems arising from releases of unwanted animals outside their natural range.

EFFECT ON ECOLOGICAL SYSTEMS
AND OTHER IMPACTS

WHAT SOLUTIONS MIGHT HELP REDUCE

HEALTH RISKS ASSOCIATED WITH WILDLIFE TRADE?

Considering the very significant volume of trade in and consumption of wild animals and products globally (including for example extensive consumption of deer and other ungulates in the Americas), it appears that transmission of zoonotic diseases falls into the low probability/potentially high impact category that challenges many fields of risk management policy. COVID-19 is very likely to shift perceptions of risk a great deal. Policy responses could be pitched from a generalised precautionary risk avoidance level to more specific focused risk management measures.

“Shut down wildlife trade” is a popular slogan of the moment. As a precautionary response, with some adaptation (such as clarity that trade in wild plants and maybe marine fisheries species are excluded) there is no denying that this is an understandable reaction to current circumstances. China’s initial emergency response took this line, with few exceptions, and in the absence of evidence that helps target a narrower scope of species and parts/products of concern, it may well be the best immediate approach. However, implementation of such a policy change faces massive practical challenges. Many countries do not have the legislative provision to enact such prohibition quickly and there is no doubt that governments would face significant opposition from some of the affected private sector interests and (potentially) consumers. There is also a significant risk that such prohibition would be undermined by corruption and illegal activity, exacerbating the persistence of potentially high risk trade through illicit markets that are hard to

RISK MANAGEMENT POLICY,
PRECAUTIONARY RESPONSES

close, including online trade. There is already ample evidence that regulatory pressure on such markets tends to drive them deeper “underground”, which increases the challenges and costs of enforcement effort.

It is also important to consider the balance of economic and social costs between different trade policy options. Significant economic and other livelihood benefits derive to people from some wildlife trade chains, which can play a part in supporting positive conservation incentives. These may well seem of limited significance in the context of the massive economic and social harms arising from COVID-19 at present, but they should not be ignored in considering costs and benefits of precautionary trade measures. It is also crucial to bear in mind that this is not simply a matter of trade and consumption in China and neighbouring markets. There is significant commercial use of wild animal species for food across the globe, from deer and wild boar in Europe to cane rats and various ungulates in Africa. Similarly, a wide range and large volume of live animals, skins and other parts and products of a wide range of wild species are traded worldwide.

Whether as an immediate or longer-term response, many governments are likely to look beyond the option of blanket prohibitions and consider the design of more specific risk management measures. These might include: targeted prohibitions on trade and consumption of particular species and parts/products of concern; introduction of stronger health inspection and quarantine controls on international borders; closing high risk market locations, such as wildlife meat outlets; or prohibiting co-location in markets of outlets selling different wild and domesticated animals. The main challenge for the design of any such measures is likely to be how strong or weak the evidence base is for risk-based decision-making. Such measures would also likely need new legislation and would face the same concern that the effectiveness of new regulations might be undermined by illegal activity and poor governance.

An additional consideration in making such choices is that any individual national action risks being undermined by inconsistency with measures taken by other countries. This is one of the main reasons why CITES was originally developed in the context of conservation concerns. Even now it struggles to provide a universally-accepted basis for co-ordinated adoption and enforcement of regulatory measures for wildlife trade. If there is to be a co-ordinated international response to disease risks of wildlife trade, there may well need to be a new international agreement perhaps to be developed under the auspices of bodies such as the World Health Organization (WHO) and the World Organisation for Animal Health (OIE).

Finally, as should be clear from this paper, sensible solutions to conservation challenges related to wildlife trade and sensible solutions to disease risks linked to wildlife trade may be quite different and even in tension with each other. This is a paradox that will need to be carefully addressed in the months ahead.

WHAT

KNOWLEDGE GAPS NEED TO BE FILLED?

Development of appropriate short- and long-term solutions would be strengthened by better insights into the specific origins of the COVID-19 outbreak and into wider questions of zoonosis risk and management strategy. An initial listing of knowledge gaps follows below and it is hoped that other key areas of enquiry can be identified through dialogue between specialists in relevant fields.

FOR THE COVID-19 OUTBREAK SPECIFICALLY:

- ⊗ What was the **pathway of disease outbreak in the human population** in terms of animal species involved and locations where transmission occurred?
- ⊗ Were any **disease control measures in place** in those places of transmission and, if so, why did they fail?
- ⊗ Are levels of **trade and consumption of wild plant (or animal) species changing** as a result of medicinal use for COVID-19 treatment or preventative health care?

ON WIDER RISKS OF ZOOSES LINKED TO WILDLIFE TRADE:

- ⊗ Are there aspects of wildlife trade for which current measures to prevent transmission of known zoonotic diseases are clearly inadequate?
- ⊗ Are there particular wildlife species (or species groups) from which transmission of new zoonotic diseases in future is a particular risk?
- ⊗ What is the effectiveness of predictive modelling for zoonotic disease outbreaks and how might this be improved in future?
- ⊗ For species considered as presenting significant risk as sources, reservoirs or vectors of new zoonotic diseases, do transmission concerns relate to live animals only or also to particular parts and products?
- ⊗ What sort of disease prevention measures are most effective along trade routes and in the marketplace?
- ⊗ How are wildlife consumption patterns changing in light of greater public exposure to the potential related disease risks?

ON THE POTENTIAL NEED TO ADJUST CONSERVATION-DRIVEN WILDLIFE TRADE MEASURES:

- ⊗ What shifts are taking place in flows and routes of wildlife trade and related demand and consumption patterns?
- ⊗ Is there evidence that prioritisation and design of current responses should be adjusted – e.g. more emphasis on internet-based commerce or on places, species or trade sectors where novel trade and consumption patterns are emerging?

To address these knowledge gaps and design appropriate policy responses for the future, there is clearly a need to convene dialogue and new partnerships between wildlife trade specialists, specialists in the zoonotic disease field and regulatory agencies and IGOs working in the human and veterinary health sectors, and related fields such as food safety. For design of any targeted trade prohibitions for health risk management, including some of the questions highlighted above, it would be critical to engage with leading researchers in this field.

For organisations already focused on wildlife trade, like TRAFFIC, there is a need to mobilise action in existing areas of expertise: market monitoring; design and mediation of regulatory and market-based solutions (including traceability systems); capacity-building in support of implementation and enforcement; design of consumer behaviour change messaging; and trade impact evaluation. Though largely developed from a conservation perspective, the same toolbox for wildlife trade action is directly applicable to zoonotic disease concerns.

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TRAFFIC is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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