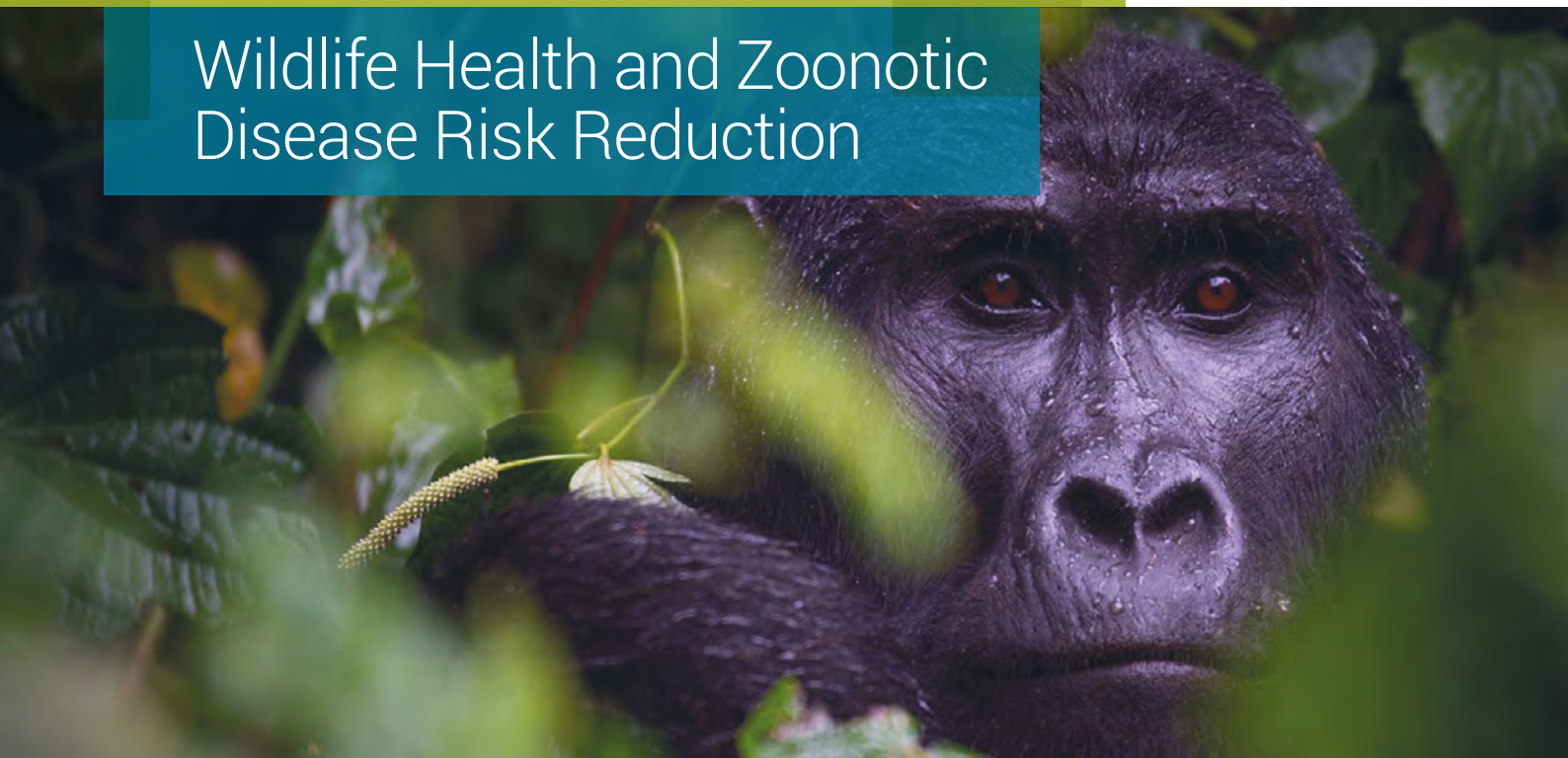
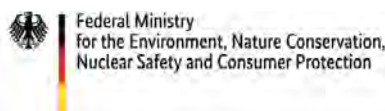


SOLUTIONS IN FOCUS:

Wildlife Health and Zoonotic Disease Risk Reduction



With the support of



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Disclaimer: All of these solutions were taken from the *PANORAMA – Solutions for a Healthy Planet* platform. Wording was very minimally corrected to preserve the integrity of how they were submitted by the original solution providers. Many have been written and contributed by non-native English speakers.

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PANORAMA - Solutions for a Healthy Planet

PANORAMA – *Solutions for a Healthy Planet* is a global partnership initiative to facilitate learning from success in conservation. It promotes examples of inspiring solutions that showcase how nature conservation can benefit society. Through a modular case study format, solutions are being dissected into their replicable "*building blocks*" and their broader application is supported through cross-sectoral learning and exchange, relying on online as well as offline mechanisms.

PANORAMA allows practitioners to share and reflect on their experiences, increase recognition for successful work, and to learn with their peers how similar challenges have been addressed around the globe.

IUCN co-leads PANORAMA together with a growing number of partner organizations including GIZ, GRID-Arendal, EcoHealth Alliance, UNDP, ICCROM, ICOMOS, IFOAM - Organics International, OCTO, Rare, UNEP and World Bank.

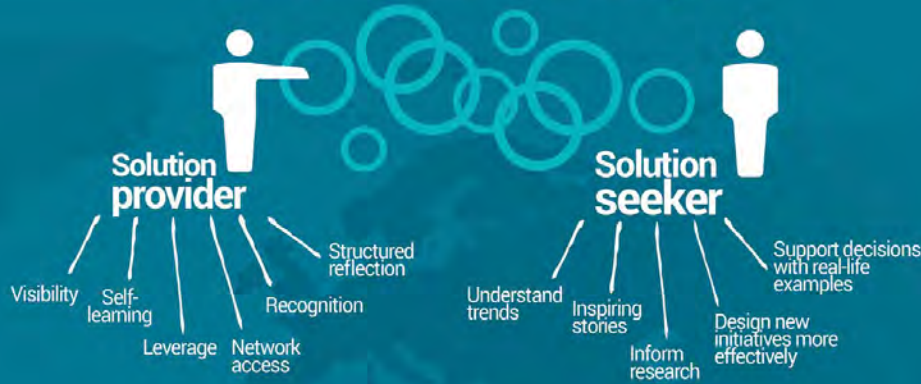
Explore over 1,200 solutions from around the world, including the ones being introduced in this brochure, through the PANORAMA web platform, and submit your own example!

www.panorama.solutions



What if
we could learn
from each other's
success?

Cross-sectoral, global
learning and exchange



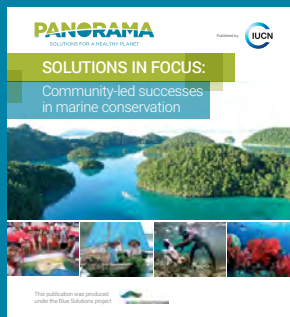
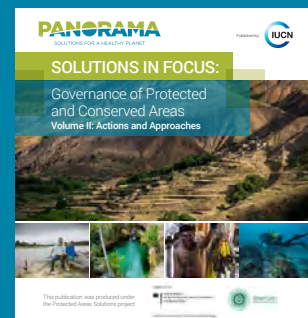
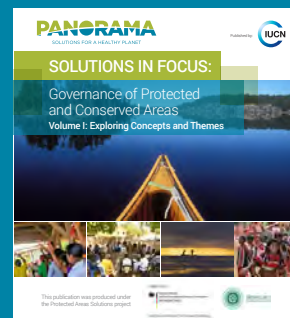
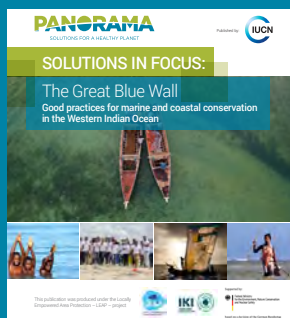
Better decision-making and implementation of
conservation and development activities
by replicating "what works"

The *Solutions in Focus* series

This booklet is part of a series of compilations assembling PANORAMA solution case studies on a defined topic. *Solutions in Focus* zooms in on a topic of interest covered by PANORAMA, allowing to explore common elements and shared learnings across success stories. It is a snapshot of the PANORAMA portfolio at a given time, rather than a representative assembly of selected “best practices” on the issue at hand.

Further *Solution in Focus* booklets:

panorama.solutions/en/resources/publication



Foreword

In these times of biodiversity and climate crises, it can be hard to be optimistic. Stresses on natural ecosystems are resulting in increased spill-over of zoonotic diseases into our societies. The issues seem so complex, beyond the scope and scale of our own individual capabilities, and seemingly impossible to untangle and address. A positive mindset, vital for creativity, innovation and motivation, can be hard to realize and maintain.

The COVID-19 pandemic truly showed the world how a single pathogen can turn life upside down, affecting our health and well-being around the globe. Among the impacts have been threats to human, animal and environmental health and further challenges to species conservation, in the form of devastation to families and incomes, interruption of vital financing flows, increased degradation of ecosystems, and the risk of transmission of SARS-CoV-2 to other species, including those critically-endangered.

At the same time, the value and critical role of the conservation community in pandemic prevention has become apparent. There have been varied, innovative, even heroic responses, breaking down the crisis into manageable actions, which while

complicated, can be addressed through targeted solutions. These actions needed to protect people, wildlife, and ecosystems in the COVID-19 pandemic and other recent disease crises – including Ebola and rabies virus epidemics – signal the urgency of a One Health approach for disease risk reduction.

The stories shared through PANORAMA and selected for this *Solutions in Focus* brief on Wildlife Health and Zoonotic Disease Risk Reduction highlight that we needn't wait until the next epidemic or pandemic to act. Indeed, communities and countries are already actively taking steps to mitigate the threat and impact of zoonotic diseases – with the conservation community playing an important role in solutions. We encourage readers to embrace these case study solutions for zoonotic and wildlife disease risk reduction, adapt them to your local context, and share what works from your experience. In doing so, the new Post-2020 Global Biodiversity Framework can signal a new era for reversing the trend of species loss and making the world a healthier place for all.

James Hardcastle
Head, IUCN Protected and Conserved Areas Team

Background

A One Health approach in action: the Protected Area Solutions for Biodiversity and Climate Change project

In the context of the 2020 COVID-19 crisis, initial global analyses show that there will be an alarming triple impact on area-based nature conservation, including formal protected areas as well as conserved areas and other effective measures, worldwide. Firstly, through the loss of management and operational functions, such as outreach, monitoring and patrolling, and a loss of staff capacity where they are not considered 'essential personnel'. Secondly, through a loss of economic productivity and finance allocations.

Management bodies are facing drastic reductions in available resources, but there is also a loss of income generation and livelihood opportunities for local actors and communities, particularly through ecotourism and small-scale market activities. Thirdly, through the potential of 'knee-jerk' policies that prohibit wildlife and plant use and related market activities, further curtailing economic opportunities and often exacerbating impacts on already threatened ecosystems and species.

In responding to the COVID-19 crisis, the 'Protected Area Solutions project' funded by the International Climate Initiative (IKI) of the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) promotes an umbrella 'One Health' principles, and seeks for emerging case studies of successful responses to zoonotic diseases. This project harvests these solutions and analyse how these triple-impacts can be overcome through global awareness and policy influence, particularly in the context of the Post-2020 Global Biodiversity Framework.

This project's *Solutions in Focus* publication on Wildlife Health and Zoonotic Disease Risk Reduction aims to enhance Green Recovery from the COVID-19 crisis by providing a 'Solutions Portfolio' of case studies and guidance on positive lessons and approaches to wildlife and human health and provides a platform for dialogue, capacity development and exchange for practitioners, legislators and decision-makers at local, national and global levels.

What is Zoonotic Disease and How Can We Prevent or Minimise Risk?

Zoonotic diseases refer to diseases transmitted between animals and humans. While these may seem like invisible threats, there are many examples of zoonoses, among them Ebolaviruses, rabies, plague, anthrax and tuberculosis. In fact, most pathogens causing infections in humans have origins in animal populations. In addition to causing disease in humans, zoonoses may also be transmitted from humans to wildlife or between domestic animals and wildlife, making them a possible threat to species survival. Both endemic and emerging diseases can have consequences for humans, animals, and in some cases the functioning of ecosystems.

Reducing risks from zoonotic and wildlife diseases is relevant to conservation for several reasons, including:

- Wildlife can face serious impacts from disease, as seen recently with wildlife mortality events linked to avian influenza in wild birds, rabies virus in wild canids, respiratory infections in great apes, Peste des Petits Ruminants in saiga antelope, white nose syndrome in bats, and chytrid in amphibians, among many other examples.
- Wildlife serve as reservoirs or hosts for a large number of known and novel viruses, some of which pose a threat to other species of wildlife and humans.
- Conservation authorities are on the front lines of wildlife monitoring and may be the first to detect changes in health status of wildlife, which can be potentially important information for public and animal health surveillance systems.
- Many of the same drivers of biodiversity loss are also driving disease emergence risks. These broadly include land use change and the degradation of ecosystems, encroachment into wildlife habitat, climate change, and the wildlife trade. Addressing the main factors driving disease emergence and spillover can also help tackle key threats to biodiversity.
- Misunderstanding about the causes of disease risk can lead to villainization of wildlife, potentially leading to ineffective (and often detrimental) control measures and undermining conservation efforts.

- Wildlife serve as reservoirs or hosts for a large number of viruses, some of which pose a threat to human health.

It is important to note that human activity is creating the conditions that increase the frequency and impact of disease spillover and spread events. The changes in interactions between human, domestic animal, and wildlife populations are facilitating opportunities for spillover. Reducing these interactions is necessary to reduce the risk of spillover, and thus pandemics, occurring. Identification of “interfaces” where such contact occurs, which may vary by country or site, is a practical starting point, along with detection and risk analysis capabilities.

As part of the “One Health” approach (see Box), conservation authorities have an important role to play in reducing disease risk, including in the prevention, detection, and effective response to disease threats. This *Solutions in Focus* booklet showcases 21 solutions from the [PANORAMA - Solutions for a Healthy Planet Species Conservation community](#). While risk reduction remains under-emphasized in disease management, these solutions demonstrate that there are practical, conservation-led solutions already being taken on and delivering public health and conservation benefits.

One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent.

(One Health High-Level Expert Panel, 2021)

Key Lessons Learned Summary and Recommendations

The 21 solutions selected here provide practical strategies that are reducing the risk of zoonotic and wildlife diseases. Key lessons and recommendations are summarized under five themes (Capacity Strengthening, Awareness Raising, One Health Assessment, Surveillance and Laboratory, and Reducing Human-Animal Contact). The solutions are sourced from different geographic, socio-economic, and environmental contexts, showing that each theme can be adapted to a range of relevant situations.

Capacity Strengthening: Tackling the threat of zoonotic and wildlife diseases often requires additional skills, processes, or infrastructure to support risk reduction. Solutions involving in-service, applied training for protected area and wildlife managers are presented from Côte d'Ivoire and Viet Nam, including a “train-the-trainer” approach. In addition, many solutions demonstrate how capacity was strengthened in the process of risk assessment, surveillance, and laboratory system development, and One Health coordination.

Awareness Raising: Increasing awareness about zoonotic disease risks and safer practices are

important components of risk reduction. Risk communication and community engagement are important for conveying public health messages; through a One Health approach, they can also create awareness about the importance of biodiversity and ecosystems to ensure that risk reduction measures encouraging living in harmony with wildlife. Awareness campaigns focused on the drivers of biodiversity loss (e.g. to reduce demand and manage rescues for high-risk wildlife trade) can assist risk reduction for wildlife and zoonotic diseases.

One Health assessment: A “One Health” approach in risk assessment - as well as management actions when warranted – allows for a comprehensive understanding of the trade-offs and co-benefits of a potential decision. Wildlife disease risk analysis is a key tool that can inform conservation strategies and human and animal health decision making. Examples of how a One Health approach has been incorporated into land planning, species management, and analysis of wildlife trade laws demonstrate how One Health assessment can help identify gaps and balance stakeholder needs and priorities.

Surveillance, Laboratory, and Control Measures:

Surveillance may refer to ongoing monitoring as well as the detection of disease events, which may be relevant to human, domestic animal, and wildlife health (including through “sentinel” surveillance). Surveillance systems may involve many stakeholders – such as rangers, hunters, tour operators, or community members that may find and report sick or dead animals. It is vital that protected areas maintain a link to veterinary and laboratory services to ensure timely investigation and diagnosis of disease events to determine the cause. Doing so can guide rapid and science-based action (e.g. vaccination). Access to laboratory services also supports disease screening prior to animal releases.

Reducing human-wildlife contact: Avoiding close contact between humans and wild animals is important for reducing the risk of spillover of some pathogens. Examples of “interfaces” where spillover can occur may include occupational settings (e.g., hunting, guano harvesting), tourism practices, human-wildlife conflict situations, and other

situations where human-animal interactions occur and facilitate exposure to pathogens. A key example of a risk reduction solution is ensuring sufficient physical distancing during great ape viewing activities.

Additional solutions from [PANORAMA's Species Conservation](#) community capture other aspects of disease management, including ways that tourism-focused communities are increasing their resilience during disease disruptions. Government agencies have led inspiring risk reduction strategies, including a glass-enclosed platform to promote safe bat viewing (avoiding exposure to bat-borne pathogens and reducing cave ecosystem degradation) and distancing requirements between orchard trees and pig farms (a biosecurity measure to avoid pig contact with bats that may feed on the trees). The IUCN *Guidelines for Prevention, Detection, Response and Recovery from Disease Risks in and around Protected and Conserved Areas* provide further advice on zoonotic disease risk reduction for protected area managers.



Solutions in Focus:

Wildlife Health and
Zoonotic Disease Risk
Reduction



Training on Disease Prevention, Detection, Response and Recovery for Protected Area Managers in Viet Nam

Solution Provider:

Jimmy Lee

Other Contributors:

Tom Hughes, Conservation Medicine; Lee Mei Ho, Conservation Medicine; Fernandes Opook, Conservation Medicine; Velsri Sharminie, Conservation Medicine; Cadhla Firth, EcoHealth Alliance; Catherine Machalaba, EcoHealth Alliance; Thong Pham, Save Viet Nam's Wildlife; Thai Nguyen, Save Viet Nam's Wildlife; Nguyen Van Chinh, IUCN; Dao Nguyen, IUCN; Thierry Lefebvre, IUCN; Ulrika Åberg, IUCN.

Implementing Organization:

Conservation Medicine

Other Organizations:

EcoHealth Alliance; Save Viet Nam/Viet Nam's Wildlife; and IUCN

Impacts: Prior to the training, most participants were unfamiliar with the concept of One Health and were unaware of the zoonotic diseases carried by bats, rodents, non-human primates, and small mammals. After the presentations, they identified risks that are present in their daily work routine. Recognizing that some biosafety measures had already been implemented in their rescue centres and national parks (e.g. setting up quarantine areas, PPE stations prior to entering the animal cages, and safe distance while observing wildlife in the centre), participants saw the need to revisit existing protocols to ensure they meet the standard biosafety requirement. In addition, bio-risk scenarios allowed participants to build their practical experience in conducting risk assessments for activities at their rescue centre or national park. A pre- and post-training exam was administered to measure participants' understanding of the theories and techniques taught over the two days, finding a marked improvement while also identifying key opportunities for further training and implementation. All members of the rescue centre and national park management expressed an interest in following the IUCN guidelines in the future.





Glo Germ was applied on 20 participants to emphasize the importance of proper hand washing procedures © EcoHealth Alliance

SUMMARY:

In September 2022, a training was held in Viet Nam's Cúc Phương National Park on the recently developed IUCN *guidance for Prevention, Detection, Response and Recovery from Disease Risks in Protected and Conserved Areas* and accompanying *One Health Principles for Sustainable and Healthy Tourism*. The training was designed for professionals, wildlife handlers and park rangers to introduce the One Health concept, IUCN guidance, sampling, human safety, risk assessment, biosafety, personal protective equipment (PPE), and biohazard waste disposal. Forty participants from various agencies in Viet Nam including Cát Tiên, Pù Mát and Cúc Phương National Parks took part in the two-day training. The field experience and expertise of the training team and adaptation to the relevant context ensured practical application of the guidance. Sessions such as the 'Glo Germ' test, which demonstrated the importance of proper PPE donning and doffing and handwashing procedures, helped make the training interactive and reinforce key concepts.

Read more:

<https://panorama.solutions/en/solution/training-disease-prevention-detection-response-and-recovery-protected-area-managers-0>

Country-to-country Capacity Strengthening for Wildlife Disease Surveillance

**Solution Provider:**

Catherine Machalaba and the PREDICT Liberia team

Other Contributors:

Jackson Y. Poultonor, Society for the Conservation of Nature of Liberia; Amos G. Kollie, Society for the Conservation of Nature of Liberia; Sandra G. Samuels, Society for the Conservation of Nature of Liberia; Jallah Arku, Society for the Conservation of Nature of Liberia; Daniel Harris, Society for the Conservation of Nature of Liberia; Margret Bonason, Society for the Conservation of Nature of Liberia; Melkor Sackie, Society for the Conservation of Nature of Liberia; Emmanuel Larmouth, Society for the Conservation of Nature of Liberia; Albert Ross, Society for the Conservation of Nature of Liberia; Emmanuel Barclay, Society for the Conservation of Nature of Liberia; James Desmond, EcoHealth Alliance; Kalpy Julien Coulibaly, Institut Pasteur de Côte d'Ivoire; and Anne Laudisoit, EcoHealth Alliance

Implementing Organization:

EcoHealth Alliance

Other Organizations:

Society for the Conservation of Nature of Liberia; Institut Pasteur de Côte d'Ivoire; USAID; and University of California at Davis

Location:

Abidjan, Abidjan, Ivory Coast | Côte d'Ivoire





Participants training on use of personal protective equipment © Society for the Conservation of Nature of Liberia

Impacts: A total of 50 participants from government institutions in Côte d'Ivoire (including public health, wildlife, and veterinary services) were trained. In addition to specific sampling and handling practices, broader themes included personal protective equipment and animal welfare in the sampling process, all based on rigorous global guidelines developed by the PREDICT project. This applied training benefitted from trainers knowledgeable about the conditions on the ground, including infrastructure and environmental factors and species in the region. Language barriers were avoided through involvement of national and international technical staff fluent in both English and French. All team members pitched in to make the training a success, including the team driver from Liberia responsible for transport to Côte d'Ivoire. The training reinforced the value of train-the-trainer approaches. In Liberia, the team had been extensively trained on PREDICT protocols by international wildlife veterinarians, becoming the first Liberian workforce trained in pathogen surveillance in wildlife. Their work led to the first-ever detection of Zaire ebolavirus in a bat in West Africa. The training reinforced the pride of the Liberia team in their skills and showed the utility of country-country collaboration in regional disease detection.

SUMMARY:

Under the PREDICT-2 Liberia project, a field team was trained on pathogen surveillance in wildlife, including safe and humane capture, holding, sampling, and release of animals, as well as sample cold chain, transport, and biosafety. This team went on to sample over 5,000 bats and several hundred rodents to increase understanding of viral circulation patterns in West Africa, including Ebola virus. In 2019, government partners in neighbouring Côte d'Ivoire expressed their interest in strengthening wildlife surveillance capacity. To support development of this capacity, the PREDICT Liberia and Côte d'Ivoire teams co-led a training at the Abidjan Zoo in June 2019, with the trainers from Liberia team providing hands-on training in bat and rodent sampling.

Read more:

<https://panorama.solutions/en/solution/country-country-capacity-strengthening-wildlife-disease-surveillance>



Living Safely with Bats: A One Health Educational Resource

Solution Provider:	Ava Sullivan
Implementing Organization:	EcoHealth Alliance
Other Organizations:	Metabiota; and University of California at Davis
Location:	Guinea, Bangladesh, Cambodia, Cameroon, Cote d'Ivoire, DRC, Ghana, Guinea, Indonesia, Lao PDR, Malaysia, Nepal, ROC, Senegal, Sierra Leone, Tanzania, Thailand, Viet Nam

Impacts:

Living Safely with Bats is an educational and risk communication resource that was developed with the goal of mitigating infectious disease spillover from bats through accessible risk communication. This educational tool which aims at addressing behaviour, knowledge and attitudes around risky human-bat interfaces, is an example of essential primary prevention efforts towards pandemic prevention. Stopping spillover is the most cost effective and timely strategy for the pressing challenge of mitigating epidemic and pandemic risk to avoid crises like COVID-19, and offers under-utilized strategies compared to post-emergence strategies like vaccines and drug therapies. From school sessions to town halls, to government-facing conferences, the resource was used in countries throughout Asia and Africa as both the focal point of educational programs and as a supporting resource for larger One Health efforts. The book had increased impact as it is a low-barrier resource which is easily translated or used as a visual aid in instances where literacy is low.





Schoolchildren in Cote d'Ivoire use 'Living Safely with Bats' © Photo by Tara Hoda, Anne Laudisoit and PREDICT-CIV

SUMMARY:

As part of a public health communication strategy related to the identification of a novel filovirus in bats in West Africa, an initiative was launched to create a widely accessible One Health educational and risk communication resource for community outreach. A moderated picture book was developed, titled *Living Safely with Bats*, that now has been adapted, translated, and used in more than 20 countries in Africa and Asia. This product includes text and artwork developed by a consortium of public health, veterinary health, conservation, bat, and disease ecology experts from 29 countries. The book is a collection of evidence-based prevention measures which encourage community members to live safely with bats and avoid exposure to potential zoonotic threats.

SUCCESS FACTORS:

1. **Utilising local knowledge**
2. **Collaboration across knowledge domains and sectors**
3. **Risk communication**

Read more:

<https://panorama.solutions/en/solution/living-safely-bats-one-health-educational-resource>



Wildlife Rescues - Building a Safe Bridge to Recover Wild Populations in Viet Nam

CAPACITY
STRENGTHENING

AWARENESS RAISING

ONE HEALTH
ASSESSMENTSURVEILLANCE,
LABORATORY, AND
CONTROL MEASURESREDUCING HUMAN-
WILDLIFE CONTACT

Solution Provider: Thi Mai Trinh

Other Contributors: Tran Van Truong, Save Viet Nam's Wildlife

Implementing Organization: Save Viet Nam's Wildlife

Location: Cuc Phuong National Park, Cuc Phuong, Nho Quan, Ninh Binh, Viet Nam

Impacts: Our rescue work aims to reduce the number of dead confiscated wildlife and increase the survival and release rate. Our activity also prevents zoonotic diseases from emerging and impacting wild populations. We use our media coverage of rescues and releases, to help educate the public, and raise awareness of the impacts of the illegal wildlife trade. Most importantly, we use these rescues to encourage and motivate the government to continue combating the illegal wildlife trade.

- Collaborated with various governmental rescue centres to successfully rehabilitate and release more than 1000 animals with over 60% of animals rescued were released successfully
- Increase the Sunda pangolin population in Pu Mat National Park by releasing rehabilitated confiscated pangolins. This has been proved by photographic evidence of pangolin offspring sightings in the Park
- Advocate for and promote the establishment of the Wildlife Rescue Centres Association of Viet Nam
- Many other rescue centres are receiving support e.g., technical husbandry and veterinary care to improve the quality of their centre





An animal keeper was taking care of confiscated tiger © Save Vietnam's Wildlife

SUMMARY:

In Viet Nam, there are thousands of live wild animals confiscated from illegal wildlife trade incidents, however, the majority of them could not survive after confiscation due to lack of proper treatment. Wildlife rescues are not limited to saving and taking care of animals from confiscations but also rescue and rehabilitation, release and monitoring, conservation breeding programme, capacity building, and collaboration to safely release them back to the wild, and to recover and secure wild populations. After 7 years of working, we have released more than 1200 confiscated animals back into the wild with a success rate of more than 60%, many of which were tagged and tracked post-released. Moreover, a Viet Nam Wildlife Rescue Association is going to be established to support wildlife rescue centres through the network.

SUCCESS FACTORS:

1. **Wildlife rescue and rehabilitation**
2. **Release and monitoring**
3. **Building capacity for rescue centres**

Read more:

<https://panorama.solutions/en/solution/wildlife-rescues-building-safe-bridge-recover-wild-populations-vietnam>



Integrating Biodiversity and Health Messaging and Tackling Superstition with Communities in Liberia

Solution Provider:

Catherine Machalaba and the PREDICT Liberia team

Other Contributors:

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Implementing Organization:

Society for the Conservation of Nature of Liberia

Other Organizations:

EcoHealth Alliance; Liberia Chimpanzee Rescue and Protection; USAID; University of California at Davis; Wildlife Conservation Society; Metabiota; and Smithsonian Institution

Location:

Liberia





PREDICT Liberia team members conduct community engagement using the 'Living Safely with Bats' book © EcoHealth Alliance

Impacts: Following the Ebola crisis in 2014 that took the lives of many including health workers, the USAID-supported PREDICT-2 project implemented in Liberia by EcoHealth Alliance and the Society for the Conservation of Nature of Liberia (SCNL) initiated the Ebola host project in 2016 along with neighbouring Sierra Leone and Guinea. The goal of the project was to identify the wildlife reservoir for the Ebola virus that started the epidemic and to detect other related Filoviruses. The project strengthened the capacity for wildlife surveillance and disease detection in Liberia by training a local workforce in wildlife and domestic animal sampling. This sampling effort resulted in the first-ever detection of Zaire ebolavirus in a bat (*Miniopterus inflatus*) in West Africa (Liberia), evidence that bats are an important reservoir host for this rare and deadly virus. The finding was shared with national authorities, informing risk messaging needs. To complement this, One Health risk communication outreach was conducted in 13 communities, with an interactive visual and verbal presentation and open discussion. This dialogue allowed for honest reflection about wildlife interactions in relation to household, occupational, and consumption practices. A key indicator of success was when several communities requested the information also be shared with adjacent communities given its recognized importance.

SUMMARY:

Liberia is a diverse nation with a wide variety of tribal, cultural, and religious practices, where the majority of the population depend on the forest and its resources for their livelihood. Such interactions with the forest environment put people at risk of contracting zoonotic diseases that may spillover from animals. However, widely spread beliefs that traditionalists, witches, wizards, and even spirits have the ability to cast diseases upon people continue to hamper the prevention, diagnosis, treatment, and control of many diseases. Under the PREDICT-2 project, Liberian One Health experts trained in health, conservation, and social sciences conducted biological and behavioural surveys, followed by community outreach that improved awareness and acceptance of zoonotic disease risk reduction practices. Using the 'Living Safely with Bats' book, this outreach also reinforced biodiversity protection and animal welfare. Its success was enabled by trust, awareness, and a strong evidence base.

SUCCESS FACTORS:

1. Trust building
2. Awareness raising
3. Evidence through research

Read more:

<https://panorama.solutions/en/solution/integrating-biodiversity-and-health-messaging-and-tackling-superstition-communities-liberia>



Bellinger River Virus Disease Response

CAPACITY
STRENGTHENING

AWARENESS RAISING

ONE HEALTH
ASSESSMENT

SURVEILLANCE,
LABORATORY, AND
CONTROL MEASURES

REDUCING HUMAN-
WILDLIFE CONTACT

Solution Provider:	Shane Ruming
Other Contributors:	Gerry McGilvray, NSW Department of Planning and Environment (formerly Office of Environment and Heritage); Melissa Giese, NSW Department of Planning and Environment (formerly Office of Environment and Heritage); Richard Jakob-Hoff, IUCN-SSC Conservation Planning Specialist Group; Caroline Lees, IUCN-SSC Conservation Planning Specialist Group; Michael McFadden, Taronga Conservation Society Australia; Adam Skidmore, Taronga Conservation Society Australia; Larry Vogelnest, Taronga Conservation Society Australia; Karrie Rose, Taronga Conservation Society Australia; Jane Hall, Taronga Conservation Society Australia; Ricky Spencer, Western Sydney University; Kristen Petrov, Western Sydney University; Arthur Georges, University of Canberra; Bruno Ferronato, University of Canberra; Sam Gilchrist, Wildlife Health Australia; Bruce Chessman, Consultant freshwater ecologist; and Gerald Kuchling, Western Australian Department of Parks and Wildlife
Implementing Organization:	New South Wales (NSW) Department of Planning and Environment (formerly Office of Environment and Heritage), New South Wales, Australia
Other Organizations:	Taronga Conservation Society Australia; Western Sydney University; IUCN SSC Conservation Planning Specialist Group; University of Canberra; and Auckland Zoo.
Location:	Bellingen, New South Wales, Australia





A captive bred juvenile Bellinger River Snapping Turtle caught during population reinforcement monitoring © Shane Ruming/DPE

Impacts: A multi-agency, comprehensive response to the mass mortality event prevented the small, endemic population of Bellinger River Snapping Turtle from going extinct. A captive breeding programme was established early in the response through Taronga Zoo, and over 80 juvenile turtles have since been successfully released back into the river through a coordinated recovery programme. Population reinforcement, together with multiple complementary lines of research and on-ground action, have been essential components of the conservation plan developed with facilitation by the IUCN-SSC Conservation Planning Specialist Group (CPSG). The collaborative, multi-stakeholder approach to conservation planning resulted in a consensus-based management plan that included disease mitigation measures, steps to address threats facing the river ecosystem, and ways to engage the local community in on-going monitoring. Although the disease event changed the status of the species to critically endangered, there is now hope that, with ongoing management, the Bellinger River Snapping Turtle will persist in the wild.

SUMMARY:

In 2015 a mass mortality event struck the highly range restricted Bellinger River Snapping Turtle (*Myuchelys georges*), wiping out 90% of the species in under six weeks. The initial emergency response included site examinations, removal of dead and sick animals, and a water quality investigation. Bellinger River Virus (previously unknown to science) was eventually identified as the causative agent. To better understand the circumstances behind this mass mortality event, a One Health approach was taken addressing how the animals, causative agent, and surrounding environment interacted with each another. A facilitated multi-stakeholder conservation planning workshop was held incorporating the IUCN SSC/OIE's Wildlife Disease Risk Analysis process (Jakob-Hoff et al, 2014). This ensured all potential contributing factors associated with the Bellinger River Virus outbreak were reflected in immediate and long-term priorities and on-ground recovery actions.

SUCCESS FACTORS:

1. One plan approach
2. Collaborative partnerships

Read more:

<https://panorama.solutions/en/solution/bellinger-river-virus-disease-response>



Bracken Cave Preserve Established Through One Health Assessment

Solution Provider:	Jonathan Epstein
Other Contributors:	Ron Nirenberg, City of San Antonio
Implementing Organization:	City of San Antonio
Other Organizations:	City of San Antonio; Bat Conservation International; The Nature Conservancy; EcoHealth Alliance; and Greater Edwards Aquifer Alliance.
Location:	San Antonio, Texas, United States

Impacts: The impact of this solution goes beyond just wildlife conservation and captures the diverse positive effects of a One Health approach in land development planning. The wildlife of the region, including the 20 million bats living in Bracken Cave and the federally endangered golden-cheeked warbler (*Setophaga chrysoparia*), now live under protection from encroaching human populations. Conservation non-profits are ecologically managing the region through efforts including controlled burns, ensuring the greater ecosystem's health. As 3,500 units were prevented from being built along the Galo tract, tens of thousands of potential human residents were protected from the unavoidable exposure to pathogens circulating within the bat population. As demonstrated by the effects of previous spillover events, including SARS, Zika, and COVID-19, the protection to human health provided by the Bracken Cave Preserve is not limited to the individuals who would have lived within the bats' flight path. Communities as close as next door to potentially as far as the other side of the world have avoided the consequences of a zoonotic disease jumping from the bat population to people.





Millions of Mexican free-tailed bats emerge from Bracken cave © EcoHealth Alliance

SUMMARY:

The Bracken Cave Preserve is home to the largest bat colony in the world, an estimated 20 million Mexican free-tailed bats (*Tadarida brasiliensis*). Plans to construct a residential complex along the 1,521-acre tract adjacent to the cave mouth posed a serious risk to wildlife and the potential human population. Motivated by concerns for a nearby aquifer, but limited by a lack of zoning laws in the area, the local government commissioned a report on the potential public health risks of the development. The report outlined concerns for human exposure to various pathogens, from both exploring the cave and the bats' presence around the new residences. To protect the bat and human populations, advocates from diverse sectors, including conservationists, health experts, city and county governments, and the public water utility, came together to purchase the tract of land. In 2014, the property was officially made into the Bracken Cave Preserve, protecting this area essential for environmental, animal, and human health in perpetuity.

SUCCESS FACTORS:

1. Partnership across sectors

2. One health assessment

Read more:

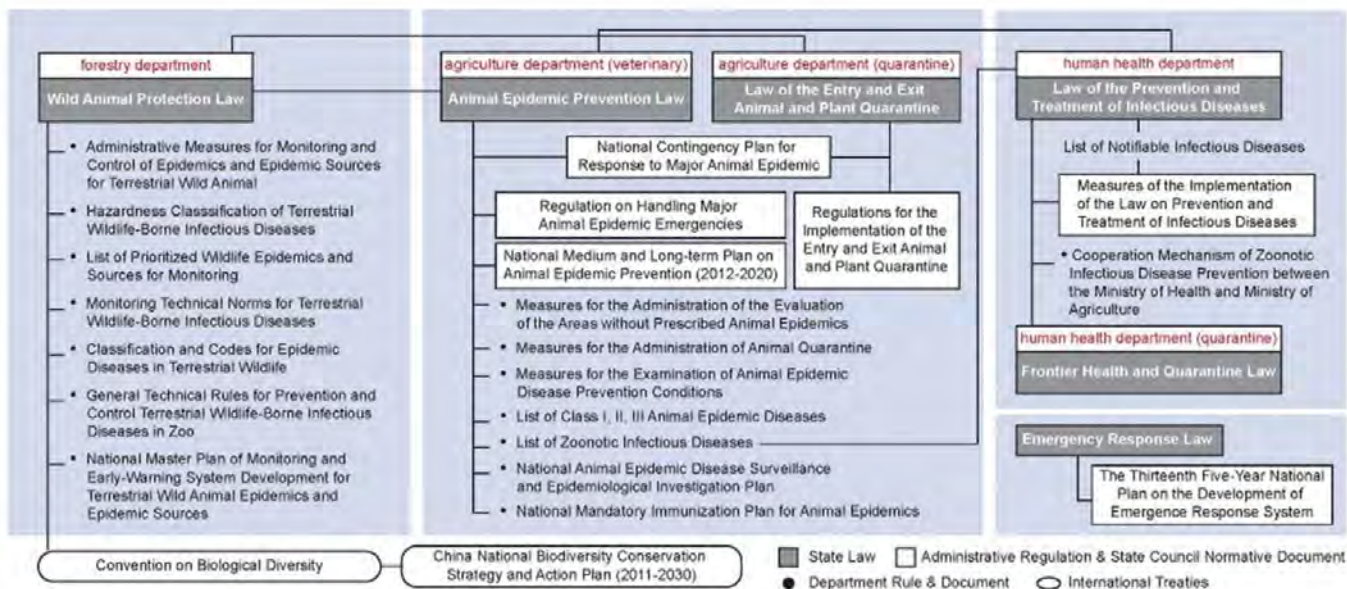
<https://panorama.solutions/en/solution/bracken-cave-preserve-established-through-one-health-assessment>



Examine Gaps and One Health Opportunities in Wildlife and Zoonotic Disease Risk Management in China

Solution Provider:	Hongying Li
Implementing Organization:	EcoHealth Alliance
Location:	People's Republic of China

Impacts: This review indicates that there are existing scopes and operations in China for wild animal management and zoonotic disease risk monitoring. However, the coverage of diseases or pathogens with zoonotic risk, as well as the management of potential wild animal hosts to prevent disease emergence, are limited in the current system. Proactive screening of zoonotic diseases or emerging pathogens with zoonotic potential in wild animal populations is often overlooked by the system; instead, it relies heavily on the research community which would require additional mechanisms for integration into government monitoring and policy. The gaps in the completeness of mandates and enforcement of wild animal management in the at-risk scenarios of wild animal utilization remain a concern for emerging zoonotic disease prevention and preparedness. The lack of a cohesive strategy has resulted in data gaps that make it challenging to precisely identify the practices and aspects of disease risks in the wildlife animal trade value chains. The identified gaps provide a basis for authorities to review their mandates and systems and contribute to an overall national strategy to advance One Health collaboration across government and non-government stakeholders to optimize monitoring and surveillance, risk management, and emergency responses to known and novel zoonotic threats, and support COVID-19 recovery efforts.



Zoonotic disease monitoring and management policies in China © EcoHealth Alliance

SUMMARY:

Addressing the public health, food production, and conservation aspects of wildlife epidemics and zoonotic disease threats requires actions from multiple sectors across the different interfaces where wildlife, domestic animal, and human contact may occur. To better understand the role of different agencies in wildlife and zoonotic disease management in China, a stakeholder mapping and policy review was undertaken. This work reviewed the current laws and regulations, government reports and policy documents, and existing literature on zoonotic disease preparedness and prevention across the forestry, agriculture, and public health authorities in China, to articulate the current landscape of potential risks, existing mandates, and gaps. A key finding was that responsibilities for zoonotic disease management are currently fragmented across agencies.

Read more:

<https://panorama.solutions/en/solution/examine-gaps-and-one-health-opportunities-wildlife-and-zoonotic-disease-risk-management>



A One Health Approach to Wildlife Trade and Policy in Viet Nam

Solution Provider:	Lucy Keatts
Other Contributors:	Thuy Hoang, Wildlife Conservation Society (WCS) Viet Nam; and Nga Nguyen, Wildlife Conservation Society (WCS) Viet Nam
Implementing Organization:	Wildlife Conservation Society (WCS)
Other Organizations:	Viet Nam Department of Animal Health (DAH); National Institute of Hygiene and Epidemiology (NIHE), Viet Nam; Regional Animal Health Office (RAHO) No. 6, Viet Nam; Cuc Phuong National Park; Dong Nai Province Forest Protection Department; Viet Nam National University of Agriculture; Save Viet Nam's Wildlife; United States Defense Threats Reduction Agency (DTRA); USAID; and WCS Viet Nam
Location:	Ha Noi, Viet Nam

Impacts: Viet Nam banned importation of wildlife in January 2020, in response to COVID-19, and called for heightened enforcement of existing laws on IWT in the Vietnamese Prime Minister's Directive No. 29 on "urgent solutions to manage wildlife". In 2020, government representatives, multi-laterals (FAO, WHO, UNEP), NGOs and multiple embassies collaborated through a Pandemic Prevention Task Force and met with the Prime Minister, aiming to reduce risks of pandemic emergence from wildlife trade in Viet Nam by phasing out the commercial trade of wild birds and mammals. Subsequently, a technical working group on "wildlife and pandemics" was established under a three-Ministry One Health partnership platform, the Ministries of Agriculture and Rural Development (MARD), Ministry of Health (MOH) and Ministry of Natural Resources and Environment (MONRE), and a Master Plan for the One Health Partnership Framework for Zoonoses, 2021-2025 was established and signed by WCS, and 30 national and international partners. The Government of Viet Nam has since revised a number of decrees addressing animal health, public health, food safety, and wildlife management with the aim of mitigating the risks and impacts of future pandemics, including Decree 14 (2021) regulating penalties for offenses involving animal husbandry, and Decree 07 (2022) increasing sanctions for violating wildlife trade laws and regulations.





Civet in Wildlife Trade in Viet Nam © WCS Viet Nam

SUMMARY

The COVID-19 pandemic, which is widely recognized as originating in a market selling live wildlife in China, has caused the deaths of millions of people and major impacts on livelihoods, society, and economies across the world. Conditions increasing risk for emergence of zoonoses from wildlife are not unique to China. They are prevalent in wild animal value chains across the globe, including in Viet Nam, where wildlife is commonly traded for meat, pets, skins, traditional medicine, and for display in private collections. Disease surveillance along wildlife trade chains in Viet Nam has increased awareness of potential public health risks, but much trade continues and the risk of zoonoses' emergence and transmission remains. An increasing body of scientific data supports multi-sectoral coordination and an evidence-based approach to strengthening policy on illegal wildlife trade (IWT) in Viet Nam to address the risk of zoonotic spillover, with resulting co-benefits for biodiversity and human health.

SUCCESS FACTORS:

1. **Building long-term, multi-sectoral, trans-disciplinary partnerships and capacities**
2. **Wildlife surveillance for One Health intelligence**

Read more:

<https://panorama.solutions/en/solution/one-health-approach-wildlife-trade-and-policy-viet-nam>



Hunter and Community-Based Early Warning System Expands Ebola Mortality Monitoring in Great Apes

Solution Provider:

William B. Karesh

Implementing Organization:

WCS – Wildlife Conservation Society

Other Organizations:

Congolese National Public Health Laboratory (NPHL); International Conservation and Education Fund (INCEF); Ministry of Forest Economy Republic of Congo; U.S. Fish and Wildlife Service; Centre International de Recherches Médicales de Franceville (CIRMF); Institut de Recherche pour le Développement (IRD); and ECOFAC.

Location:

Sangha, Republic of Congo

Impacts: In the early 2000s, Ebola virus was recognized as a major threat to health and survival of Central African great apes, with thousands of gorilla deaths associated with the virus. Ebola outbreaks were also being recorded in human populations, with reports of mortality in great apes preceding human cases. The opportunistic collection of carcasses by hunters, particularly during epidemic or epizootic periods, put their communities at heightened risk of infection. With government authorities responsible for health and wildlife, an Animal Mortality Monitoring Network was leveraged to enhance detection of Ebola virus via disease investigation of carcasses reported by hunters and community members. Engaging hunters helped reduce the practice of carcass collection for food or income and facilitated new information coming into the surveillance system for early warning for possible disease threats. Over the course of several years, dozens of carcasses were sampled. The relatively high participation of hunters – who generated the majority of reports – was a sign of trust built with this stakeholder group. In concert with ecological surveys and faecal sample screening, the programme generated information to monitor and help reduce potential for spread among endangered great ape and human populations.





Lowland Gorilla in Forest © Courtesy of Elyssa Kellerman

SUMMARY:

In northern Republic of Congo, hunters and community members were recruited to report morbidity and mortality events in wild animals. In the region, great ape die-off events were found to precede human cases of Ebola virus disease. Through the community engagement programme, reporting channels were developed, relaying information from small villages to connector communities via radio, messages carried by commercial drivers or other contact routes with national authorities. This facilitated information flow to veterinarians so that diagnostic sampling could occur within the short timeframe needed before carcasses degrade. Reporting of events expanded the surveillance system to empower local people and allowed for early warning through sentinel surveillance for possible disease threats to humans and wild animals. Accompanying community outreach also helped to raise awareness about the dangers of hunting certain species or eating animals found sick or dead, particularly in epidemic periods, thereby promoting safer practices.

SUCCESS FACTORS:

- 1. Early warning system**
- 2. Stakeholder engagement and participation**

Read more:

<https://panorama.solutions/en/solution/hunter-and-community-based-early-warning-system-expands-ebola-mortality-monitoring-great>



Integrated Livestock and Wildlife Disease Surveillance and Response Supports Saiga Conservation and Livelihoods in Mongolia

Solution Provider: Lucy Keatts

Implementing Organization: WCS – Wildlife Conservation Society

Other Organizations: Ministry of Environment and Tourism, Mongolia; Ministry of Food, Agriculture and Light Industry, Mongolia; State Central Veterinary Laboratory (SCVL) of Mongolia; Food and Agriculture Organization of the United Nations (FAO); World Organization for Animal Health (WOAH); Saiga Conservation Alliance; United States Geological Society (USGS); United States Fish and Wildlife Service (USFWS); World Wild Fund (WWF); The Nature Conservancy; International Foundation for the Conservation of Wildlife (IGF Foundation); French Agricultural Research Centre for International Development (CIRAD); Princeton University; Denver Zoo at City Park; Tufts University; and Morris Animal Foundation.

Location: Mongolia

Impacts: In the past, the role of wildlife in livestock disease outbreaks was misunderstood. During Foot and Mouth Disease (FMD) outbreaks in 2000, Mongolian gazelle were viewed as reservoirs of the disease and subjected to mass culling. Temporal and spatial analyses supported by international wildlife health experts showed that gazelles were in fact the victims of spillover of the virus from livestock improving veterinary officials' understanding of the epidemiology of FMD. Mass destruction of wildlife was recognized as an ineffective control measure, and conservation-friendly management actions adopted. In 2016, PPR was diagnosed in domestic livestock, spread to wild ungulates, and killed over 80% of Mongolian Saiga. Wildlife surveillance identified that wildlife were victims and not the original source of infection. Instead of culling wildlife, expert advisors, environmental and veterinary sectors coordinated to vaccinate livestock and minimize spread of PPR, saving the critically endangered Mongolian Saiga population, which subsequently rebounded to 8,500 individuals. The realization of the importance of wildlife and their ecological role in preserving the steppes is a great change in the veterinary sector. Partners are now working to design effective control strategies for both livestock and wildlife to eradicate PPR in Mongolia, and to incorporate wildlife into global PPR eradication strategies.





Saiga twin calves © WCS Mongolia

SUMMARY:

Integrated livestock and wildlife monitoring, surveillance, and response are essential to guide the implementation of disease control measures to protect biodiversity and livelihoods. Improved wildlife surveillance and analyses of disease outbreaks in Mongolia showed that wildlife were victims of livestock disease spillover, not the source of the outbreaks as had been previously thought. This avoided mass culling of wildlife and moved towards wildlife-friendly disease control efforts. Strategies for both livestock and wildlife are now being designed to control and eradicate Peste des Petits Ruminants (PPR) virus in Mongolia. The incorporation of wildlife is now recognized as essential in global PPR eradication strategies. With saiga sensitivity to disease epidemics more fully appreciated, increased trade protections through the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) were implemented, which will further help safeguard the Mongolian saiga's survival.

SUCCESS FACTORS:

1. **Multi-sectoral coordination for monitoring diseases at the wildlife-livestock interface**
2. **Collection of baseline wildlife health data**
3. **Local capacity building for management of disease at the wildlife-livestock interface**
4. **Implementation of effective control strategies for disease spillover from livestock to wildlife**

Read more:

<https://panorama.solutions/en/solution/integrated-livestock-and-wildlife-disease-surveillance-and-response-supports-saiga>



Integrating Bat Ecology and Pathogen Surveillance: The Western Asia Bat Research Network

Solution Provider: Kelly Rose Nunziata and Kendra Phelps

Implementing Organization: EcoHealth Alliance

Location: Armenia, Azerbaijan, Georgia, Jordan, Oman, Pakistan, Turkey

Impacts: Western Asia has been historically overlooked as ecologically important for bat species. The work of WAB-Net is filling in knowledge and awareness gaps for this crossroads location. The standardization of protocols at the two regional laboratories where all diagnostic samples are tested improves efficiency and increases scientists' ability to repeat processes and compare results. The trainings provided are uniquely in-depth and hands-on, with scientists often spending weeks in-country with field teams demonstrating proper biosafety and nonlethal sampling procedures. This fosters long term relationships and allows for additional ecological data to be collected, advancing overall conservation and scientific goals. The collaborative nature of WAB-Net's work also plays an essential role in building and maintaining relationships across diverse cultures, religions, and country lines.



Pakistan field team and Dr. Kendra Phelps (EcoHealth Alliance) untangle a mist net (used for bat capture) © EcoHealth Alliance

SUMMARY:

The Western Asia Bat Research Network (WAB-Net) aims to enhance bat conservation and zoonotic disease detection through collaborative research and capacity building-focused trainings with bat biologists, virologists, government authorities, and academics from the region. WAB-Net coordinates research focused on bats, zoonotic diseases, and host-virus dynamics in 7 countries. This proactive approach to pandemic prevention aims to identify both zoonotic viruses before they spillover from bat hosts to humans and the risk factors associated with spillover. Field trainings, including proper PPE usage, bat capture and handling, and cold chain management, promote positive health outcomes for both the humans and bats. All samples are sent to two regional labs where trainings and standardized protocols are implemented, furthering biosafety and scientific advancement in the region. WAB-Net's "bats for peace" mission promotes strengthened outcomes in both scientific discoveries and constructive political conversations.

SUCCESS FACTORS:

1. **One Health proactive approach**
2. **Collaborative and comprehensive training**

Read more:

<https://panorama.solutions/fr/solution/integrating-bat-ecology-and-pathogen-surveillance-western-asia-bat-research-network>



Monitoring for Zoonotic Viruses in Wild Animals to Prevent Disease Outbreaks in Bolivia

Solution Provider: Erika Alandia Robles

Other Contributors: Marcela Uhart, One Health Institute, School of Veterinary Medicine - UC Davis; and Kelly Rose Nunziata, EcoHealth Alliance

Implementing Organization: Wildlife Conservation Society Bolivia

Other Organizations: EcoHealth Alliance; and USAID

Location: Bolivia

Impacts: The working strategies adopted by the USAID Emerging Pandemic Threats Program's PREDICT project in Bolivia were based on generating local capacities in wildlife surveillance methods for a wide range of participants, facilitating intersectoral cooperation, and increasing local diagnostic laboratory capacities. As a result, detection of the first epizootic of yellow fever in non-human primates from Bolivia was identified by its prompt investigation (only eight days elapsed from the outbreak notification to laboratory confirmation of the virus). Effective intersectoral communication channels established allowed an early notification and implementation of an effective response by local health workers consisting on vaccination campaigns, public health education and mosquito control in the surrounding areas, resulting in no human cases reported. Coordinated efforts to identify and respond to the detected YFV demonstrated the importance of monitoring for zoonotic viruses in wild animals as a valuable early detection tool for preventing disease outbreaks, particularly in landscapes undergoing substantial alteration, such as deforestation, where breakdown of natural barriers leads to increased contact between wildlife and people.

3 GOOD HEALTH
AND WELL-BEING





Post-mortem examination of non human primates during a Yellow Fever outbreak investigation © Erika Alandia

SUMMARY:

From 2010 to 2013, wildlife disease monitoring capacities were enhanced by the USAID Emerging Pandemic Threats Program's PREDICT project in Bolivia within a One Health approach. Collaborative work with government agencies for field investigations, risk detection and prompt response were promoted; key stakeholders were trained on wildlife disease surveillance; and diagnostic capacities were enhanced in local laboratories. As a result, in 2012 trained staff reported a mortality event affecting red howler monkeys (*Alouatta sara*). The outbreak investigation confirmed Yellow Fever Virus, a flavivirus transmitted by mosquitoes that aggressively affects neotropical non-human primates and may cause acute and often fatal disease in humans. Effective communications between the PREDICT team and the national health authorities allowed a prompt alert and the rapid implementation of actions to prevent human cases, including vaccination of at-risk human population, public education and outreach, and mosquito-control.

SUCCESS FACTORS:

1. **Facilitate intersectoral cooperation**
2. **Training on wildlife disease surveillance tools**
3. **Enhance local laboratory diagnostic capacities**
4. **Wildlife disease surveillance at key interfaces**

Read more:

<https://panorama.solutions/en/solution/monitoring-zoonotic-viruses-wild-animals-prevent-disease-outbreaks-bolivia-0>



Sabah Wildlife Department's Wildlife Health, Genetic and Forensic Laboratory – Design and Development

Solution Provider:	Tom Hughes
Other Contributors:	PREDICT, USAID; and IDENTIFY, USAID
Implementing Organization:	Conservation Medicine
Other Organizations:	Sabah Wildlife Department; Danau Girang Field Centre; Mahidol Oxford Tropical Medicine Research Unit (MORU); and EcoHealth Alliance
Location:	Sabah, Malaysia

Impacts: As the first certified BSL-2 biocontainment laboratory in Southeast Asia certified to international standards specifically for wildlife work, the WHGFL is a great example of how, with limited expense on construction and a sustainable annual maintenance budget, a state-of-the-art biosafe and bio-secure facility can be established and maintained for wildlife work. The WHGFL allows SWD to rapidly assess wildlife health prior to relocation, to engage in comprehensive disease screening efforts with partners like CM and EHA and conduct important genetic and forensic screenings and research. CM have been coordinating health checks and disease screenings with SWD, Sepilok Orangutan Rehabilitation Centre (SORC) and Bornean Sun Bear Conservation Centre (BSBCC) for endangered orangutans, gibbons, sun bears, and Bornean elephants held in captivity and in the wild. To date six novel and six known viruses from three local endangered species have been identified. These results are essential for SWD to make decisions on the further actions required to manage and conserve these important animals. CM is working closely with SWD and Danau Girang Field Centre (DGFC) to obtain ISO 17025 accreditation for the laboratory. Achieving this accreditation will allow SWD to start using the laboratory to process forensic samples for prosecutions to help in its efforts to battle the illegal wildlife trade and poaching.





Conservation Medicine and SWD Wildlife Health Unit scientists conducting health checks on SORC orangutans © Conservation Medicine

SUMMARY:

The PREDICT project, a global pathogen surveillance programme, started in the state of Sabah in 2012 as a collaboration between Sabah Wildlife Department (SWD), Conservation Medicine (CM) and EcoHealth Alliance (EHA). Sabah Wildlife Department's Wildlife Health, Genetic and Forensic Laboratory (WHGFL) is a Biosafety Level 2 laboratory that was built in Sabah to avoid sending thousands of samples collected through PREDICT and ongoing projects out of the state for pathogen screenings. CM designed and oversaw the building of this laboratory certified since 2013 to international standards and are part of the management committee. The lab is used to screen samples for zoonotic disease, as well as genetic and forensic research. 65 novel and 18 known viruses were detected in Sabah through the PREDICT project, providing the Malaysian government with actionable data to inform risk mitigation policies at the national and state level.

SUCCESS FACTORS:

1. Utilising Existing Infrastructure

2. Partnerships & Collaboration

Read more:

<https://panorama.solutions/en/solution/sabah-wildlife-departments-wildlife-health-genetic-and-forensic-laboratory-design-and>



WildHealthNet Southeast Asia: Operationalizing Wildlife Health Surveillance for One Health

Solution Provider:

Lucy Keatts

Implementing Organization:

WCS – Wildlife Conservation Society

Other Organizations:

National Animal Health and Production Institute, Cambodia; United States Defense Threat Reduction Agency; National Animal Health Laboratory, Lao PDR; Canadian Wildlife Health Cooperative; Angkor Center for Conservation of Biodiversity (ACCB); PDR Department of Livestock and Fisheries (DLF); Lao PDR Department of Forestry (DOF); Department of Wildlife and Biodiversity, Cambodia (DWB); Lao PDR Department of Forest Inspection (DOFI); Viet Nam Department of Animal Health (DAH); Viet Nam Department of Communicable Disease Control (DCDC); Forestry Administration, Cambodia (FA); General Directorate of Animal Health and Production, Cambodia (GDAHP); General Department of Administration for Nature Conservation & Protection, Cambodia (GDANCP); GIZ; Ha Noi Medical University, Viet Nam (HNU); Institute for Ecological and Biological Resources, Viet Nam (IEBR); Institut Pasteur du Cambodge (IPC); Lao Conservation Trust for Wildlife (LCTW); Lao-Oxford-Mahosot Hospital-Wellcome Trust Research Unit (LOMWRU); Ministry of Agriculture and Forestry, Lao PDR; Ministry of Agriculture and Rural Development, Viet Nam (MARD); Ministry of Health, Viet Nam; Ministry of Natural Resources and Environment, Viet Nam (MONRE); Ministry of Health, Cambodia; Ministry of Health, Lao PDR; National Committee for Communicable Disease Control, Lao PDR (NCCDC); National Institute of Hygiene and Epidemiology, Viet Nam (NIHE); World Organization for Animal Health (WOAH); Phnom Tamao Wildlife Rescue Center, Cambodia (PTWRC); Regional Animal Health Office 6, Viet Nam (RAHO 6); Royal University of Agriculture, Cambodia (RUA); Southeast Asia One Health University Network (SEAOHUN); Viet Nam University of Agriculture (VNUA); and World Wildlife Fund (WWF)

Location:

Cambodia, Laos PDR, Viet Nam





Wild bird surveillance through WildHealthNet © WCS

Impacts: WildHealthNet enabled the first detection of African Swine Fever, a devastating domestic pig disease, in free-ranging wildlife in all three project countries (Cambodia, Laos and Viet Nam) and identified biosecurity breaches that contributed to its spread. The network discovered a transnational outbreak of Highly Pathogenic Avian Influenza in important wetlands and rapidly informed public and livestock health partners to limit onward transmission. In Cambodia, the identification of Lumpy Skin Disease in a dead endangered banteng led to vaccination of livestock in communities bordering protected areas. The government of Laos recently adopted and codified the network's reporting structure. We aim to build on this progress to create regional and then global networks of countries implementing WildHealthNet.

SUMMARY:

The Wildlife Health Surveillance Network, known as WildHealthNet, is a regional initiative supporting national governments in Cambodia, Lao PDR, and Viet Nam to build and implement national wildlife health surveillance strategies. The project has enhanced the ability of these nations to safely detect, monitor, trace, and report emerging pathogens in wildlife, to facilitate more rapid response and mitigation. The system has already detected trans-national disease outbreaks of zoonotic diseases and pathogens of economic, wildlife, and human health significance. More rapid identification of wildlife pathogens benefits public health, livestock health, rural livelihoods and food security, and conservation.

SUCCESS FACTORS:

1. **Multi-sectoral network building for monitoring wildlife diseases for One Health**
2. **Supporting skills development for surveillance and monitoring of wildlife disease**
3. **Technology for wildlife surveillance data collection, sharing and management**
4. **Effective One Health response and interventions to Wildlife Events**

Read more:

<https://panorama.solutions/en/solution/wildhealthnet-southeast-asia-operationalizing-wildlife-health-surveillance-one-health>



Wildlife Mortality Monitoring Network for Human and Wildlife Health

Solution Provider:

Lucy Keatts

Implementing Organization:

WCS – Wildlife Conservation Society

Other Organizations:

Laboratoire National de Santé Publique, Brazzaville, Republic of the Congo; Fondation Congolaise pour la Recherche Médicale (FCRM); United States National Institutes of Health (NIH); Bernhard Nocht Institute for Tropical Medicine; German Center for Infection Research (DZIF); University of Veterinary Medicine, Vienna; Rocky Mountain Laboratories, NIAID/NIH; and Robert Koch-Institut

Location:

Republic of the Congo

Impacts: In the last 10 years, hunters from more than 260 villages have engaged in the programme. Over 6,660 hunters and thousands more women and children are now aware of potential risks associated with coming into contact with dead animals where cause of death is unknown. Almost 100 carcasses have been reported, analysed, and tested negative for the Ebola virus at the national laboratory in Brazzaville, and over 40 people in Northern Congo have been trained on the sampling protocol. Central Africa remains a high-risk region, but the Republic of the Congo, home to the largest population of gorillas, has not experienced an Ebola epidemic since 2005. Moreover, return visits and conversations with village leaders reveal risky contacts with wildlife carcasses are being avoided and reduced. Efficient sample analysis is an essential step to effective zoonoses monitoring and response. Analysis once took several weeks and needed to be done in a different country. This was reduced to two days with in-country Ebola testing capacity thanks to efforts of multiple partners. WCS is currently working on the implementation of a portable diagnostic tool that would allow real-time testing directly at the site where a carcass is found, reducing testing time from two days to one hour, allowing safety measures to be immediately implemented in the event of a positive result.





Community outreach on ebola virus disease © WCS Republic of Congo

SUMMARY:

In the Republic of the Congo, a 2005 Ebola Virus Disease (EVD) outbreak had a human mortality rate of more than 80%, and an estimated 5,000 great apes also died. In partnership with the government, WCS set up an early warning system for EVD, working with hunters, forest communities, and rangers to monitor wildlife health through a carcass monitoring and sampling network, whilst promoting best practices in disease risk reduction for these communities that rely on bushmeat as a source of protein. The community-based wildlife mortality monitoring network raises awareness among communities and covers more than 30,000 km² in northern Congo, an area home to 60% of the world's gorillas. When a hunter reports a carcass, a response team travels to the site to safely collect samples from the carcass for testing. Once the sample is collected, it is sent to the national laboratory for analysis and the team returns to the reporting village with results and to reinforce health messages.

SUCCESS FACTORS:

1. **Building trust with local communities**
2. **Creating sustainable networks for reporting and response to wildlife mortality**
3. **Local capacity building for same sampling and testing of wildlife carcasses**

Read more:

<https://panorama.solutions/en/solution/wildlife-mortality-monitoring-network-human-and-wildlife-health>



Managing Disease in Ethiopian Wolves

CAPACITY
STRENGTHENING

AWARENESS RAISING

ONE HEALTH
ASSESSMENTSURVEILLANCE,
LABORATORY, AND
CONTROL MEASURESREDUCING HUMAN-
WILDLIFE CONTACT

Solution Provider:	Claudio Sillero
Implementing Organization:	Ethiopian Wolf Conservation Programme
Other Organizations:	WildCru – University of Oxford; IUCN SSC Canid Specialist Group; Ethiopian Wildlife Conservation Authority (EWCA); Ethiopian Public Health Institute; and UK Animal and Plant Health Agency
Location:	Bale Mountain National Park, Oromia, Ethiopia

Impacts: As part of the Ethiopian wolf conservation strategy, an integrated disease management strategy for rabies and canine distemper has involved numerous key partners, including the Ethiopian Wildlife Conservation Authority and protected area managers, local governments, and communities. The plan includes five components: controlling diseases in reservoir dogs, reducing dog-wolf contact, increasing capacity to detect outbreaks, vaccinating wolves as a preventative measure and, (as a last resort) emergency vaccination of wolves in response to a confirmed epizootic. Specific indicators are tracked to continually evaluate the programme, including the number of packs orally vaccinated against rabies, frequency of free-roaming dogs within wolf habitat, number of district and zonal staff trained & equipped to conduct wildlife post-mortems, and the number of villages reached by awareness campaigns. The programme routinely vaccinates over 3,000 dogs a year against canine distemper and rabies in the settlements around wolf habitat in the Bale Mountains, to reduce the risk of them transmitting the virus to Ethiopian wolves, livestock and people. An overall indicator of the success of this work has been the down-listing from critically endangered to endangered on the IUCN Red List, based on an increase in wolf population numbers.



Bale Mountains with an Ethiopian wolf in the foreground © Will Burrard-Lucas

SUMMARY

Ethiopian wolves (*Canis simensis*) are Africa's most endangered carnivore, with approximately 500 individuals remaining along the country's afroalpine habitat. While habitat loss is a major threat to species survival, infectious disease epidemics have had serious impacts on wolf packs. Since 1992, the wolves have faced eight major outbreaks from rabies and canine distemper viruses. Outbreaks are prompted by introduction of the viruses from domestic dogs. The density and social nature of the wolves allow for rapid virus transmission amongst and between packs; concerning, outbreaks have resulted in extinctions of entire packs. To effectively manage this threat, the Ethiopian Wolf Conservation Programme and its partners have developed and applied a comprehensive conservation strategy, including preventive and reactive vaccination and disease monitoring in line with a One Health approach.

SUCCESS FACTORS:

1. Evidence and awareness
2. Vaccination of wolves and domesticated dogs
3. Detection of disease

Read more:

<https://panorama.solutions/en/solution/managing-disease-ethiopian-wolves>



One Health Programme in the Congo Basin

Solution Provider:	Congo Basin Team – WWF Germany
Implementing Organization:	WWF Germany
Other Organizations:	Robert Koch-Institut; Helmholtz Institute for One Health; WWF Central African Republic; WWF Cameroon; and Dzanga-Sangha Protected Areas
Location:	Bayanga, Sangha-Mbaéré Economic, Central African Republic Cameroon, Campo, South, Cameroon

Impacts: Long before One Health was publicly known, WWF was doing pioneering work in the Congo Basin. Thanks to the field laboratory built in 2012 in Dzanga-Sangha, it is possible to test for highly infectious diseases such as Ebola or anthrax. The field laboratory in Dzanga-Sangha has been expanded since 2017 and a second field laboratory has been established in Campo Ma'an. Impacts of the WWF One Health Programme includes:

Animal health - The laboratory analyses allow regular monitoring of pathogen prevalence in wild animal carcasses and habituated great apes. Health status of habituated great apes is continuously monitored.

Research - Regular and systematic sampling since 2012 provides WWF and RKI/HIOH with 10 years of data, which is of immense value for long-term studies.

Human Health - The programme includes regular health care for employees and their families. Access to health care for the local and indigenous population in the regions is also facilitated.

Public health - Cooperation between local actors has been improved to react quickly in suspected cases of zoonotic diseases. During the COVID-19 pandemic, the laboratory in Dzanga-Sangha was one of two laboratories in the entire CAR that could test for COVID-19.

Capacity building - Two local veterinarians and numerous laboratory assistants have received in-depth training.





Gorilla Tracker monitoring health of western lowland gorilla © David Santiago

SUMMARY

In one of the world's hotspots for zoonotic epidemics, the Congo Basin, WWF Germany has contributed significantly to the establishment of an early warning system for zoonotic pathogen outbreaks.

In two ecotourism sites, Dzanga-Sangha Protected Areas (Central African Republic) and Campo Ma'an National Park (Cameroon), WWF has been following a One Health approach since 2012, which takes into account wildlife and human health as well as intact natural habitats. From the beginning, WWF has been working closely with the Robert Koch-Institute (since 2021: Helmholtz Institute for One Health, HIOH).

The goal of the One Health Programme is to establish a health monitoring system for people, wildlife and their habitat that benefits the local population in terms of their health and natural livelihoods. The aim is to rapidly detect the spread of zoonotic pathogens in order to establish an early warning system for disease outbreaks (including Ebola, monkeypox and anthrax).

SUCCESS FACTORS:

1. **Early Warning System**
2. **Sensitisation and training**
3. **Reducing human-wildlife contact**

Read more:

<https://panorama.solutions/en/solution/onehealth-program-congo-basin>



Great Apes - COVID-19 Guidance

Solution Provider: Dirck Byler and Kelly Rose Nunziata

Implementing Organization: IUCN SSC Primate Specialist Group

Location: Rwanda

Impacts: The COVID-19 pandemic brought questions of how to safely move forward in all lines of work, including conservation and research. Much of the work in this sector cannot be done remotely, so guidance on how to proceed safely, for both humans and great apes, was necessary in order for projects and duties to continue. These guidelines provided recommendations, including minimum requirements and additional best practices, on how to minimize transmission between people and apes. Essential conservation work, such as monitoring and observation, was able to continue despite the challenges brought on during this time. As other industries began adapting to the realities of the pandemic, further guidelines created by the working group enabled other businesses to put in place appropriate measures to reduce the spread of the virus causing COVID-19. This includes the ecotourism industry that many places rely on for income and as an incentive for conservation.



Protect Great Apes from Disease © IUCN SSC Primate Specialist Group

As the COVID-19 pandemic emerged, scientists and conservation managers began questioning how it would impact their research, conservation efforts, and the wellbeing of global wildlife. Primates are susceptible to the same diseases as humans, and the IUCN SSC Primate Specialist Group had previously created guidance on best practices for great apes' protection from other respiratory diseases due to the presence of human tourists and field workers. The group began collecting questions about how COVID-19 would impact great apes from protected area managers, zookeepers, field researchers, and other individuals whose work is directly linked with the animals. A working group was put together and guidelines for how to approach great ape conservation in the face of this new and deadly pandemic were drafted and shared. These guidelines were aimed at researchers and conservationists, but have since grown and been reworked for other audiences including extractive industries, governments, and site-specific teams.

SUCCESS FACTORS:

1. **Knowledge synthesis**
2. **Crisis prioritization**

Read more:

<https://panorama.solutions/en/solution/great-apes-covid-19-guidance>



Mitigating Zoonotic Disease Transmission with a One Health Approach to Gorilla Conservation and Gorilla Tourism

Solution Provider:

Mary Leakey

Implementing Organization:

Conservation Through Public Health

Location:

Buhoma, Kanungu, Uganda | Democratic Republic of Congo

Impacts: The impacts of implementing a One Health approach are the following:

- Significant improvement in the general health of local communities living in and around Bwindi Impenetrable National Park;
- Significant improvement of the general health of the mountain gorilla population living in Bwindi, and no death from COVID -19;
- Significant increase in voluntary family planning uptake amongst local communities living in and around Bwindi Impenetrable National Park, reducing pressure on both natural and household resources
- The CTPH model of One Health was evaluated by international research institutions, as having truly contributed to conservation and sustainable development outcomes in Bwindi
- A policy brief, including clear recommendations for safe great ape viewing, based on research proven outcomes, was compiled by CTPH and the International Gorilla Conservation Programme. It was endorsed by the Government of Uganda, partner NGOs in conservation and public health, and shared with the 13 other countries in Africa which have great ape tourism;
- Improved awareness of, and adherence to, safer great ape tourism guidelines.





Dr Gladys Kalema-Zikusoka with women VHCTs living around Bwindi Impenetrable National Park © CTPH

Uganda's Gorilla tourism started in 1993. Concerns about disease transmission from humans to the great apes were quickly raised. In Bwindi Impenetrable National Park, the first scabies outbreak in 1996 resulted in the death of an infant gorilla. The disease was traced back to people, in this case to the local communities living around the National Park. Mountain gorillas are endangered, with only 1,063 individuals remaining in the wild. Conservation Through Public Health (CTPH) was founded by Dr Gladys Kalema-Zikusoka, with the mission to promote biodiversity conservation by enabling people, gorillas and other wildlife to coexist through improving their health and livelihoods in and around Africa's protected areas. CTPH has extensive experience implementing One Health approach in protected area management, and we are committed to sharing our lessons learned and recommendations with other countries facing similar issues.

SUCCESS FACTORS:

1. **Research conducted in a timely manner**
2. **Village Health and Conservation Teams (VHCTs)**
3. **Alternative livelihoods**
4. **Long-term partnerships with the government and NGOs**

Read more:

<https://panorama.solutions/en/solution/mitigating-zoonotic-disease-transmission-one-health-approach-gorilla-conservation-and>



Integrating One Health Approach into Human-wildlife Conflict Mitigation Measures in India

Solution provider: Dr Neeraj Khera

Implementing organization: Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Other Organizations: Ministry of Environment, Forest and Climate Change, Government of India; Federal Ministry for Economic Cooperation and Development, Germany (BMZ); The National Academy of Agricultural Research Management (NAARM)-ICAR; Uttarakhand Forest Department; Karnataka Forest Department; and West Bengal Forest Department.

Location: Kodagu, Karnataka, India,
Haridwar, Uttarakhand, India,
Jalpaiguri, West Bengal, India

Impacts: By facilitating integration of One Health in the National Human-Wildlife Conflict Mitigation Strategy and Action Plan (HWC-NAP) (2021–2026) of India and 14 Guidelines (yet to be released), project has provided the required anchoring structure for cross-sector cooperation for One Health.

One Health trainings and trainer development programme, developed under collaborative partnership between forest, agriculture, animal husbandry, public health and media sector training institutions, benefit more than 25 training institutions, in integrating One Health into their core curriculum.

More than 140 personnel in 27 Rapid Response Teams (RRTs) have been equipped and trained on occupational health and safety measures, and humane and safe methods of rescue, capture and translocation of animals-in-conflict. More than 300 members from 73 community-based primary response teams (PRTs) have been trained on human-wildlife interaction, and health and safety measures for humans. 23 elephants and 10 leopards, active in human-dominated landscapes, have been radio-collared and being tracked and monitored for their health and well-being. This is also helping in averting situations of HWC, which benefits about 64 villages with a population more than 100,000 in reducing their vulnerability to zoonotic diseases.





Wildlife managers interacting with field teams and veterinary experts on issues of animal health monitoring and occupational health and safety, during a training expedition, Kodagu Karnataka © GIZ

SUMMARY

In India, despite an ever-increasing interface between animals and humans resulting in human-wildlife conflict (HWC) and risks of zoonotic diseases, measures to address the health of animals and humans are implemented by wildlife, veterinary and public health sector institutions through separate channels, which is inhibiting operationalization of One Health approach. The much-needed mechanism for such coordination has been developed and operationalised, embedded in an overarching capacity development plan, by the Indo-German Cooperation Project on HWC Mitigation in India. The project has successfully integrated One Health into the national HWC mitigation plan and guidelines, established a system of collaborative training courses, with forest, veterinary, agriculture and public health sector institutions and experts, which has resulted in a joint training curriculum and has strengthened specialised rapid response teams at field-level.

Read more:

<https://panorama.solutions/en/solution/integrating-one-health-approach-human-wildlife-conflict-mitigation-measures-india>

A Call to Share Your Solution on Wildlife Health and Zoonotic Disease Risk Reduction

As demonstrated by the global COVID-19 pandemic and other recent epidemics, the health of animals and the environment is closely tied to the health of humans. Zoonotic diseases - such as rabies, Ebola Virus, and Nipah Virus - can spill over into human and animal populations with devastating consequences. As humans continue to encroach into nature, particularly in areas home to high biodiversity, the risk of spillover events rises.

One Health is an approach that balances human, animal, and ecosystem needs, recognizing that the health and wellbeing of each are intrinsically linked with one another. The appreciation for this interdependence reinforces conservation and other biodiversity-sensitive measures as a means of both protecting animals and the environment and promoting resilience.

The addition of the “One Health Interventions” theme to the [PANORAMA - Solutions for a Healthy Planet Species Conservation Community](#) has created a space for highlighting wildlife health and broader One Health success stories and best practices. The theme promotes solutions that address the wide scope of conservation and sustainable development challenges, breaking them down into building blocks that can be adapted and replicated across topics and geographies. The interdisciplinary scope inherent to a One Health approach makes it a natural inclusion in the cross-sectoral PANORAMA platform and the

holistic approach necessary for tackling threats that directly and indirectly affect species conservation.

To support knowledge sharing and best practices, we are collecting solutions for the PANORAMA platform that address the prevention, detection, response, and/or recovery from wildlife health and zoonotic disease threats and impacts. These solutions offer insight into the ways in which diverse stakeholders are utilizing interventions to optimize outcomes. We are looking for further case studies to highlight successful interventions involving strategies such as:

- Wildlife health and pathogen surveillance
- Risk assessment and risk reduction strategies
- Monitoring and early warning systems
- Risk communication, community engagement, and behaviour change
- Outbreak investigation and response
- Vaccination programs
- One Health coordination mechanisms

We would greatly appreciate you sharing any implementations you have worked on, or heard about, that fit under the large One Health, wildlife health, or zoonotic disease umbrella. Please reach out to species@iucn.org to propose your success story and we will coordinate putting it into the PANORAMA solutions format. Thank you for helping to share and advance solutions for wildlife and human health.





Joint wild bird surveillance with Regional Animal Health Office No.7, Dong Thap
Sub-Department of Animal Health and Tram Chim National Park © WCS Viet Nam

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