

## **WILDLIFE PATHOLOGY SHORT COURSE FEBRUARY 2024 – PANEL DISCUSSION**

Applying One Health Principles to Wildlife Management Symposium

Saturday, February 17, 2024

Taronga Institute of Science and Learning Lecture Theatre, 4:00 – 6:00 pm

**Background:** The symposium topic stemmed from requests by New South Wales (NSW) state agriculture and environment agencies seeking insight and guidance on Wildlife Management in the event of a health emergency. As there are many stakeholders involved in wildlife management responses, a variety of state, national, and international representatives were solicited to provide background and insight regarding specific examples of One Health approaches to wildlife health challenges; although we recognise not all perspectives may have been covered.

Panel participants included Heather Fenton (Chair); Jo Coombe, Department of Primary Industries; Jennifer Case, NSW Health; Mike Walsh, The University of Sydney; John-Sebastian Eden, The University of Sydney; Raina Plowright, Cornell University; Cam Raw, University of Melbourne; Stacey Lynch, Australian Centre for Disease Preparedness and Karrie Rose, Australian Registry of Wildlife Health.

### **Gaps in current use of One Health principles in wildlife management**

There are challenges inherent with simultaneously upholding pillars of human health, wildlife health and livestock health in-line with sustainable development. Many factors and processes contribute to pathogen spillover, and the increased prevalence of these events highlights changes in our relationship with nature, development and agricultural practices. Achieving greater focus on positive environmental outcomes may strengthen nature's barriers to spillover and lower the risks of emergence and spread of zoonotic pathogens to prevent pandemics. Large intact landscapes provide adequate food and habitat, with compartmentalisation that reduces the contact between wild species to decrease the risk of spillover events associated with unusual wildlife movement and mixing. Programs to reduce landscape fragmentation would naturally reduce the risk of disease spillover. The environment is often an afterthought but plays an important role in One Health and needs to be included in the conversation. Application of "One Health" principles into wildlife management provides recreational, cultural and economic returns. This approach needs to be holistic, with systems-thinking and inclusion of multiple perspectives, including those of Indigenous people. Indigenous people have prioritised positive environmental outcomes and sustainably lived on and maintained the health of Country for thousands of years. Socially and culturally, there is a long way to go to achieve these positive environmental interactions, and listening to Indigenous perspectives has a role to play. There needs to be a way to value community relationships and opportunities for many voices to be heard.

Until landscape systems are stabilised, ongoing and secure funding for wildlife health programs is crucial for effective wildlife and landscape management. Current funding is often reactive rather than prioritised for effective outcomes. Securing this stable ongoing support for long-term wildlife health programs is highly challenging. Health economics can assist in the development of prioritisation matrices; however, a certain level of baseline investment is required to identify and assess the risks of emergent wildlife disease such that event management actions can be prioritized, and a lead agency identified. Wildlife Health

Australia, and others, have undertaken economic value analyses of wildlife in Australia. Current gaps preventing optimised outcomes include methods to assess the effectiveness of landscape preservation, and economic models that rank potential interventions. Leveraging existing relationships among wildlife health, agriculture, environment and those working in human health space could provide improved cost-sharing and funding opportunities.

The management of wildlife disease could be improved by the development of more streamlined and operationally focussed frameworks and processes. Effective disease management benefits from modelling of potential actions and ongoing surveillance to assess the impact of actions undertaken. There may be unique circumstances, where predictive modelling and surveillance fail, and reactive management is still required.

Operational logistics for wildlife disease investigation can be challenging, particularly in remote areas. Many locations in Australia do not have access to veterinarians or appropriate infrastructure to maintain a cold chain during courier transport.

There are many unexplained and neglected diseases of wildlife that hold unknown risks to wildlife, agriculture and human health. Questions remain regarding mechanisms of disease spread and effectiveness of disease control methods for wildlife. We often do not understand pathogen movement in the environment, the impact of removing carcasses while trying to control an outbreak, the best methods for mass disposal, and optimised pathways to identify diseases, pathogens and toxins that we do not have tests to detect. These questions are fundamental to our understanding of the ecology of disease, and answers are imperative to effectively combat the impacts of disease. And lastly, where do we find the students to answer all these questions?

### **Tangible solutions**

It is recognised that the actions of landowners, including farmers, are integral for societal health. Government agencies need to reference the United Nations sustainable development goals (SDGs) into policies such as rehabilitation of land and implementation of Indigenous practices, such as cool burning. In recognition of threats related to climatic change, farmers and consumers are beginning to evolve their focus from price and profitability to sustainability, but the change is slow and takes time. Society needs to encourage reference to the SDGs and drive sustainable messaging so that land managers, farmers and consumers can keep improving. Government also has a role to play, through policy and programs that drive collaboration and positive outcomes. For example, government incentives exist to revegetate degraded landscapes using non-saline sensitive trees, resulting in initial positive outcomes.

We need to build relationships with politicians to push for change. Without tangible outcomes, it is difficult to keep funding in place and drive additional investment. We need cost-benefit metrics to assess the value of mitigation strategies in the presence and in the absence of disease spillover from wildlife reservoirs. These matrices also need to account for the impacts of disease on biodiversity, in addition to domestic animal and human health.

Preparedness, which often includes communication and proactive educational messaging, is key to ensure that there is a clear structure in place for government, industry and community to know how to respond in emergencies. Being proactive can ensure continuation of awareness. One example of proactive thinking includes current efforts within NSW Health for the development of public health guidelines centred on biosecurity messaging related to disease risks from wildlife. Numerous lessons can be learned through research, which can assess the impact of investments. Long-term monitoring is important to identify successful disease management strategies and techniques, along with mistakes and failures. Effective

communication of research methods and outcomes is essential to adoption of science-based management strategies.

Ways to engage policy makers, industry and community include building relationships with media, articles in *The Conversation*, lots of perseverance, and attending conferences and community forums. Learning to stories about wildlife health and disease in an engaging way is very powerful. Although academics can speak freely about wildlife health and disease, teams of policy and communication experts can be brought together to address communication needs and promote positive investments and actions.

### **Optimism for the future**

Forums such as this symposium, and networks driven by people in this room, demonstrate that we can come together to openly discuss wildlife health challenges and listen to different perspectives.

Existing strong stakeholder relationships streamline responses to outbreaks. There are a lot of passionate people working in the wildlife health space, and there is momentum building in the veterinary, environmental protection and the agricultural spaces.

As awareness of One Health principles expands, there are opportunities to leverage knowledge and funding and form partnerships across various stakeholders. There is a general awareness in society of recognising that we are in times of climate and environmental crisis. People are re-evaluating perceptions about environmental priorities, limitations to landscape resilience, and the importance of environment within the global economic structure.

The One Health approach has the potential to bring optimism by solving problems in sustainable, inclusive, and large-scale ways. Recent disease outbreaks have provided good learnings and outcomes to improve outcomes in the investigation and management of future disease events.

Success is reliant on collaboration to decrease gaps and learn from each other. There is tremendous value in working together on systems surrounding diagnostic testing and disease surveillance.

Focusing on the role of the wildlife and ecosystem processes they provide can be helpful for communicating with the community, while focusing on the loss of ecosystem services without tangible action can cause an apathy amongst the community. As people are the problem but also the solution, effective community engagement is integral to successful wildlife disease management.

Suggested additional reading:

Plowright, R.K., Ahmed, A.N., Coulson, T. *et al.* Ecological countermeasures to prevent pathogen spillover and subsequent pandemics. *Nat Commun* **15**, 2577 (2024).  
<https://doi.org/10.1038/s41467-024-46151-9>

UN Sustainable Development Goals:

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

United Nations Declaration on the Rights of Indigenous Peoples:

[https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP\\_E\\_web.pdf](https://www.un.org/development/desa/indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf)