

Wildlife disease surveillance in Victoria at a veterinary school.

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Introduction

- Wildlife health surveillance is an essential component of One Health, improving understanding of wildlife and ecosystem health, and reservoirs of zoonotic and livestock diseases.
- When multiple host species are infected or exposed to environmental contaminants One Health is a sound and efficient strategic framework.
- Veterinary faculties provide a productive base for wildlife health surveillance, e.g. the Canadian Wildlife Health Cooperative since 1990.
- Wildlife Health Victoria: Surveillance** based at The University of Melbourne, was created in 2008.

Why? Wildlife health affects:

- Population distribution & abundance
- Fitness, immune function & disease resistance
- Reproduction,
- Morbidity and mortality

Why? Wildlife diseases can impact:

- Biodiversity, environmental biosecurity, environmental health
- Biosecurity, interaction with domestic animals
- Zoonotic disease, interactions with human health

Wildlife Health Management includes:

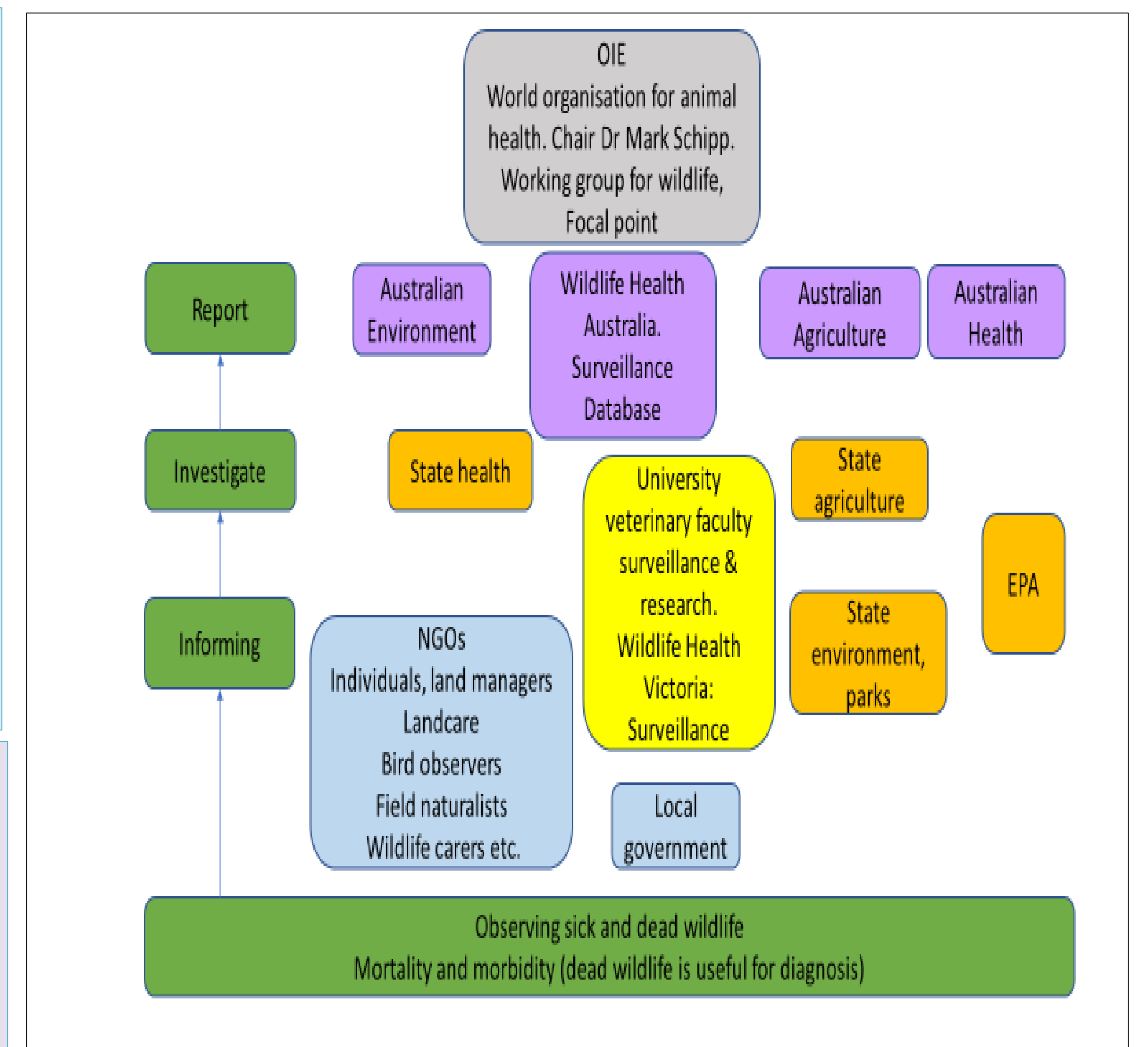
- Prevention
- Surveillance and early detection
- Response and recovery

Methods

- The project engages directly with a wide range of stakeholders, including the public, regional and rural communities, governmental organisations.
- Stakeholders report wildlife mortality and morbidity events to Wildlife Health Victoria: Surveillance (Discovery, What's happening?) .
- Dead wildlife are transported to the university for diagnostic investigations which involves input from faculty staff in pathology, microbiology, virology, parasitology, molecular epidemiology, and epidemiology.
- This project undertakes field inspections and engages in important collaborations with other institutions.
- Approximately 100 cases are investigated annually with key cases entered into **Wildlife Health Australia's** database, feeding into a national surveillance program and the OIE. Feedback is provided to stakeholders.

How? During long term monitoring of an ecosystem and wildlife include wildlife health:

- Understand normal, baseline health patterns
- Detect changed patterns and investigate factors involved (animal host, environmental, disease agents – infectious and non-infectious)
- Test for zoonotic infections in wildlife reservoirs,



Results

Grasslands: Macropod endemic parasites, introduced phalaris pasture toxicity



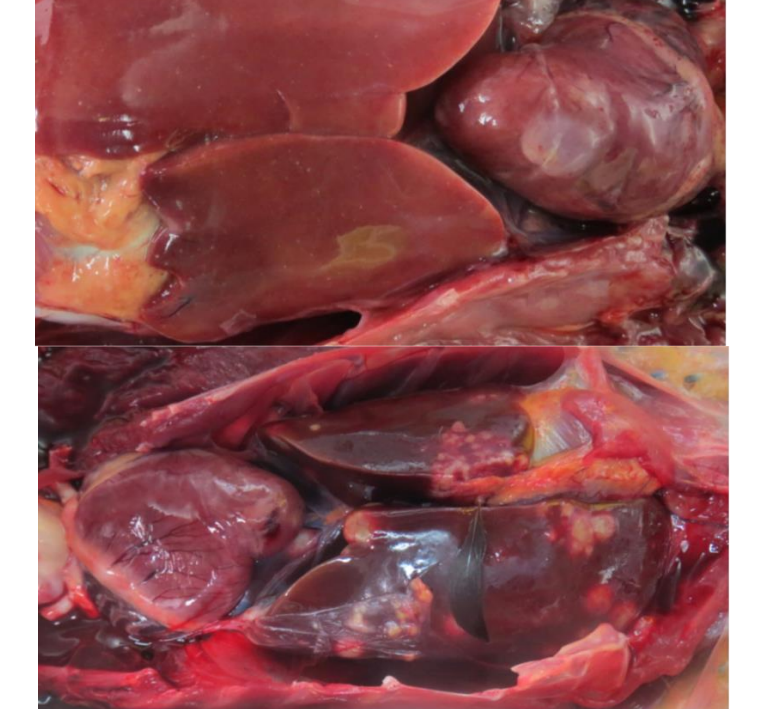
Forests: *Chlamydia pecorum* from sheep/cattle? in koalas



Forests: Endemic Circovirus & *Chlamydia psittaci*



Wetlands: Botulism, *Pasteurella multocida*, *Mycobacterium avium*



Zoonoses with wildlife reservoirs

E.g. Flavi and alpha arboviruses, Avian influenza, Lyssavirus, Henipaviruses, Rickettsia, *Chlamydia psittaci*, Echinococcosis.



Ringtail possum *Mycobacterium ulcerans*

Biosecurity, transmission between domestic and feral animals and endemic wildlife.

E.g. Avian Influenza, *Mycobacterium spp.*, *Chlamydia pecorum*.



Sarcoptes scabiei in Koalas

Biodiversity and Conservation

E.g. Chytrid fungus in amphibians
Circovirus in parrots & cockatoos
Toxoplasmosis from feral cats in marsupials?



Circovirus in Sulphur-crested cockatoo

Ecotoxicology

E.g. Environmental contaminants from agriculture, industry, mining and urban sources.



Acute frog mortalities associated with rain events.

General wildlife pathogen surveillance is the most important component of a national wildlife health programme and the only available form of national vigilance for emerging diseases associated with wild animal pathogens. OIE Training Manual on Wildlife Diseases & Surveillance 2010 p35