

SPOTLIGHT ON Massey Veterinary Medicine

Advancing animal health and welfare through research

Wildlife Conservation at Tāwharau Ora, the Vet School of New Zealand

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Due to its geographic isolation within a far corner of the Pacific Ocean, Aotearoa New Zealand has many evolutionary distinct species. Unfortunately, many of these unique species are endangered due to pressure from a range of anthropogenic causes including direct and indirect impacts of introduced invasive mammal species, habitat degradation and destruction, and the chaotic impacts of climate change.

As New Zealand's only veterinary school, Tāwharau Ora, the Massey University School of Veterinary Science (SoVS) plays an active role in the conservation of the unique taonga (treasure) species and in monitoring and protecting ecosystem health more broadly, especially in relation to the One Health imperatives of human, livestock, and wildlife health.

This role includes the presence within the SoVS of a wildlife hospital for the treatment and rehabilitation of native species. A recent case highlight was the surgical resolution of a meningoencephalocele in a critically endangered kākākā (a large flightless parrot).

Conservation research within SoVS includes epidemiological, pathological, and evolutionary investigations of bacteria, parasites, and viruses important to wildlife and One Health and the health and welfare of wildlife populations, including welfare considerations in invasive species control. SoVS strives to engage with Mātauranga Māori (the body of knowledge originating from Māori ancestors) to understand a broader view of public engagement with wildlife across Aotearoa New Zealand. Additionally, SoVS hosts a wildlife pathology service that examines the cause of death of both terrestrial and marine species.

Research completed within SoVS has had a strong influence on conservation management by informing government policy and species management plans. A recent example of this was a survey of the causes of mortality of endangered rāpoka (New Zealand sea lion) pups (Figure 1). This survey was completed in a large breeding colony where the population has declined significantly in the past few decades. Mortality due to a hypervirulent strain of *Klebsiella pneumoniae* was identified as one of the main causes of pup mortality. SoVS researchers then discovered that treatment of pups with



An endangered rāpoka pup.

ivermectin markedly reduced *Klebsiella* deaths, presumably by reducing intestinal damage caused by hookworm infestation and thereby removing a portal for bacterial infection. Modeling work shows that ivermectin treatment could improve population growth at this breeding site, and a plan for implementation is currently underway. SoVS researchers have also been involved in the management of endangered Māui dolphins (the world's smallest and one of the rarest dolphins with an estimated population of just 50) and hoiho (also known as yellow-eyed penguins, these are one of the oldest and rarest species of penguin in the world with a population of just 4,000 individuals). Other current examples of SoVS research include investigations of the epidemiology of *Toxoplasma* spp through coastal ecosystems and its effects on marine mammals; sources of lead poisoning in wild bird populations; the interactions between immunity and genetic bottlenecking in tuturuatu (New Zealand shore plovers); and a wide swathe of investigations into specific wildlife diseases and parasites, such as avian chlamydiosis, reptile salmonellosis, and marine mammal mycobacteriosis.