I hereby give notice that an ordinary meeting of the Regional Pest Management Joint Committee will be held on:

Date: **Monday 27 May 2024**

Time: **9:30am - Hearings**

Meeting Room: **Tasman Council Chamber**

Venue: **189 Queen Street, Richmond**

Regional Pest Management Joint Committee

MINUTES ATTACHMENTS

ITEM **PAGE**

https://my.clevelandclinic.org/health/diseases/9756-toxoplasmosis

Executive summary – the effects of *Toxoplasma gondii* on New Zealand wildlife: implications for conservation and management

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Toxoplasma gondii (hereafter toxoplasma) is a globally widespread protozoan parasite that can cause the potentially fatal disease toxoplasmosis. This review summarises the research on:

- the effects of toxoplasma on New Zealand and global wildlife species
- the current understanding of pathways of toxoplasma infection
- potential risk factors for infection and morbidity of host species.

The review then identifies some relevant management options for reducing the transmission of toxoplasma, and for minimising risks to New Zealand wildlife.

Cat species, including the domestic cat, are the only known definitive hosts for toxoplasma, and cats typically shed millions of oocysts in their faeces after infection. The oocysts can remain infective for long periods (many months) in soil, freshwater and saltwater. Infection also occurs through other pathways; i.e. ingestion of toxoplasma cysts in tissue of prey species, or (for mammals only) toxoplasma can cross the placenta to infect the foetus. These characteristics have led to the widespread distribution of toxoplasma, and high infection rates across a multitude of terrestrial, freshwater and marine bird and mammal species worldwide.

A review of the international literature suggests that risk factors for infection with toxoplasma are related to exposure to toxoplasma, host and toxoplasma genotype and immunosuppression. Unsurprisingly, spatial overlap with felids is a significant risk factor for infection of wildlife populations; with carnivores, omnivores and apex predators being particularly susceptible to infection through eating prey containing tissue cysts. Ground-dwelling species are also prone to infection, through incidentally ingesting oocysts while foraging for food. Perhaps more surprising is the infection of aquatic species, and the high rates of infection for some coastal species, which is related to the transport of toxoplasma oocysts in freshwater runoff. Toxoplasmosis has been identified as a cause of death for multiple marine mammal species, including sea otters, phocid and otariid seals, dolphins, porpoises, and large cetaceans. Clinical toxoplasmosis is likely to be a population risk for multiple marine mammal populations of the Pacific Region, including sea otters along the west coast of North America, Hawai'ian monk seals, and Hector's and Māui dolphins around New Zealand.

Toxoplasma virulence in a host is strongly influenced by the interaction of host and parasite genetics, particularly in geographically incoherent host-parasite combinations. For example, toxoplasma strains common in Eastern Asia are virulent for laboratory mice, which are predominantly Western European in genetic composition, but are not virulent for the southeastern Asian house mouse. Previous studies have noted the increased susceptibility of certain mammals and birds to morbidity and mortality from toxoplasmosis, including some marsupials and New World monkeys. Pigeons and true finches may have increased susceptibility to clinical toxoplasmosis, and cases of fatal toxoplasmosis have been reported in the Hawai'ian crow/'alala, parrots, wild turkey, and various penguin species, including little blue penguin (in Australia).

Infected individuals require an effective immune response to contain the subsequent dissemination of the parasite. Immunosuppression can therefore increase the likelihood of active toxoplasmosis. Relevant mechanisms known to cause immunosuppression in vertebrates include adverse nutritional status, genetic abnormalities, viral diseases, and high levels of certain toxic agents within the body (immunotoxicity), as well as natural life history processes such as pregnancy and ageing. In marine mammals, infection with morbillivirus is known to impair immune function in a number of species, particularly in conjunction with elevated tissue concentrations of contaminants such as polychlorinated biphenyls (PCBs). In a number of mammal species, including humans and mice, females can be more susceptible to toxoplasmosis, which appears to relate to sex-differences in the immune response to infection. Predictable changes in the female immune system occur throughout gestation, including

IN THE MATTER OF
TASMAN-NELSON REGIONAL PEST MANAGEMENT PLAN 2019 -2029 REVIEW PROPOSAL

EVIDENCE OF CRAIG AARON BROWN
ON BEHALF OF ONEFORTYONE NEW ZEALAND LIMITED (OFO)

QUALIFICATIONS AND EXPERIENCE

1. I have a Bachelor of Forestry Science from Canterbury University. I have worked for the Department of Conservation and in the forest industry for 14 years. My current position is Forestry Manager for OFO and involves responsibilities for how we grow our forest, that is land preparation, establishment, silviculture, tending and protection which includes fire management and pest control. Establishment work involves the use of the Wilding Calculator for replanting under the National Environmental Standard for Commercial Forestry (NES-CF) and pest control includes control of wilding pines.

2. OFO is a shareholder of the Radiata Pine Breeding Company (RPBC) and I am OFO's technical representative on the RPBC. The RPBC has mapped the *Pinus radiata* (P.rad) genome. As a representative I have maintained my knowledge of P.rad genetics and genotyping.

EVIDENCE TO COVER

3. My evidence will cover the following matters:
   a OFO establishment programme
   b Use of the Wilding Calculator
   c Science to identify wilding conifer lineage
   d Know issues of spread of *Pinus radiata*
   e Contribution of OFO to wilding conifer control
   f Replacement of rule b

OFO ESTABLISHMENT PROGRAMME

4. OFO is replanting approximately 2,000 hectares each year of its plantation forest. Any *Pseudotsuga menziesii* (Douglas fir) stands are being replaced with *Pinus radiata*. Other than a block with Redwood, I know of no planting of Douglas fir in this region. To be a permitted activity any afforestation and replanting with Douglas fir would have to comply with the criteria of the wilding calculator. If the requirements are not met, then a resource consent would have to be applied for.

USE OF THE WILDING CALCUATOR

5. Under regulation 79 of the NES-CF any replanting, as a permitted activity, with a conifer species must be calculated in accordance with the wilding tree risk guideline by a suitably competent person, no more than 8months before replanting is carried out. I am as such a competent person and am involved in the wilding calculation process for OFO.

6. The regulation information requirements must be forwarded to the relevant regional council. Regulation79 has other requirements to remove any wildings from wetlands

IN THE MATTER OF

TASMAN-NELSON REGIONAL PEST MANAGEMENT PLAN 2019 -2029 REVIEW PROPOSAL

EVIDENCE OF DANIEL MONTGOMERY

ON BEHALF OF TASMAN PINE FORESTS LIMITED (Tasman Pine)

QUALIFICATIONS AND EXPERIENCE

1. I have a Bachelor of Forestry Science from the University of Canterbury and have been involved in the forest industry for 9 years. My current position is Technical/Environmental Forester for Tasman Pine Forests which involves responsibilities for maintaining and enhancing our environmental and resourcing performance. That is, ensuring the protection and enhancement of non-production terrestrial and aquatic environments, ensuring compliance with local and central government rules, maintaining Forest Stewardship Council certification, managing Tasman Pine's tree measurement program, and trialling new technologies where appropriate. I represent Tasman Pine on the Environment Committee of the New Zealand Forest Owners Association, I am active member of the New Zealand Institute of Forestry and a forestry representative on the working group of the Mt Richmond Wilding Conifer Management Unit.

EVIDENCE TO COVER

2. My evidence will cover the following matters:
   a Tasman Pine estate and replanting programme
   b NES-CF and the use of the Wilding Calculator
   c Rule b
   d Rules d and e inaccurate mapping

TPFL ESTATE AND REPLANTING PROGRAMME

3. Tasman Pine owns 35,549 hectares of forest in the Tasman, Nelson and Marlborough regions. 25,735 hectares are production forest with only 277 hectares of Douglas fir (0.8%). Some of our estate backs on to the Mt Richmond Forest Park and some of the estate surrounds or is surrounded by other plantation forests. Tasman Pine has well over one thousand neighbours and kilometres of roads where our neighbours are the Tasman District, Nelson City or NZTA.