

Current status of bovine TB/zoonotic TB & Brucellosis New Zealand

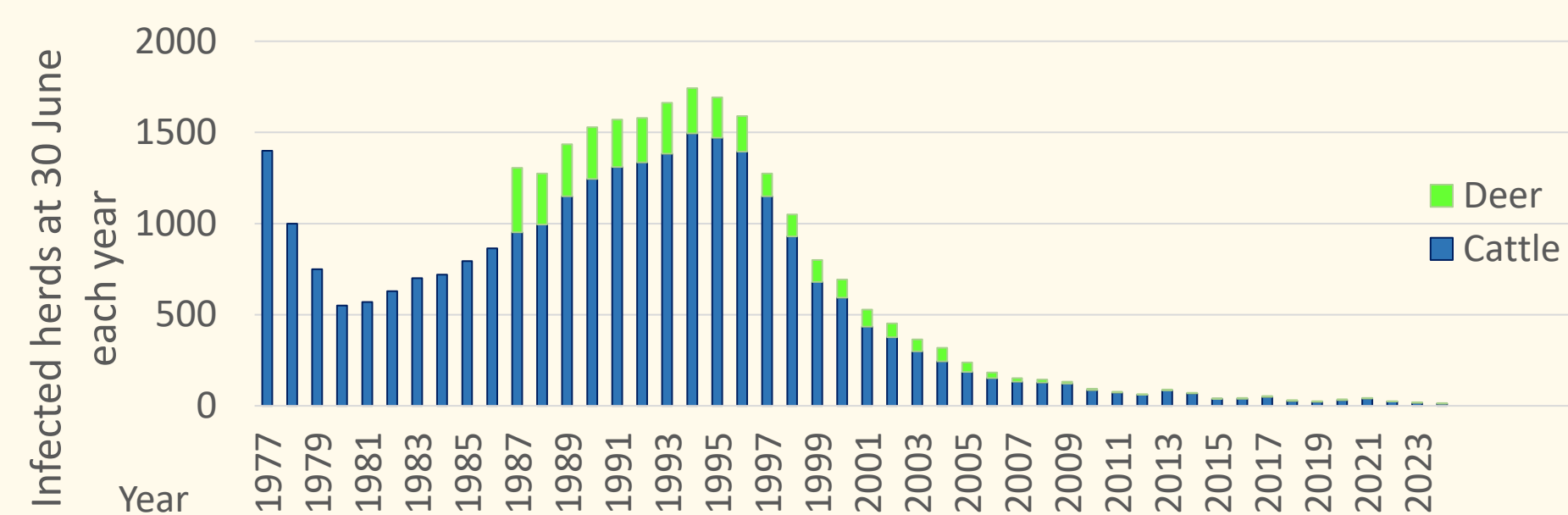
Regional Workshop on Zoonotic TB and Brucellosis in the Asia Pacific Region Qingdao, 24-26 September 2024

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Bovine TB/Zoonotic TB

CURRENT SITUATION

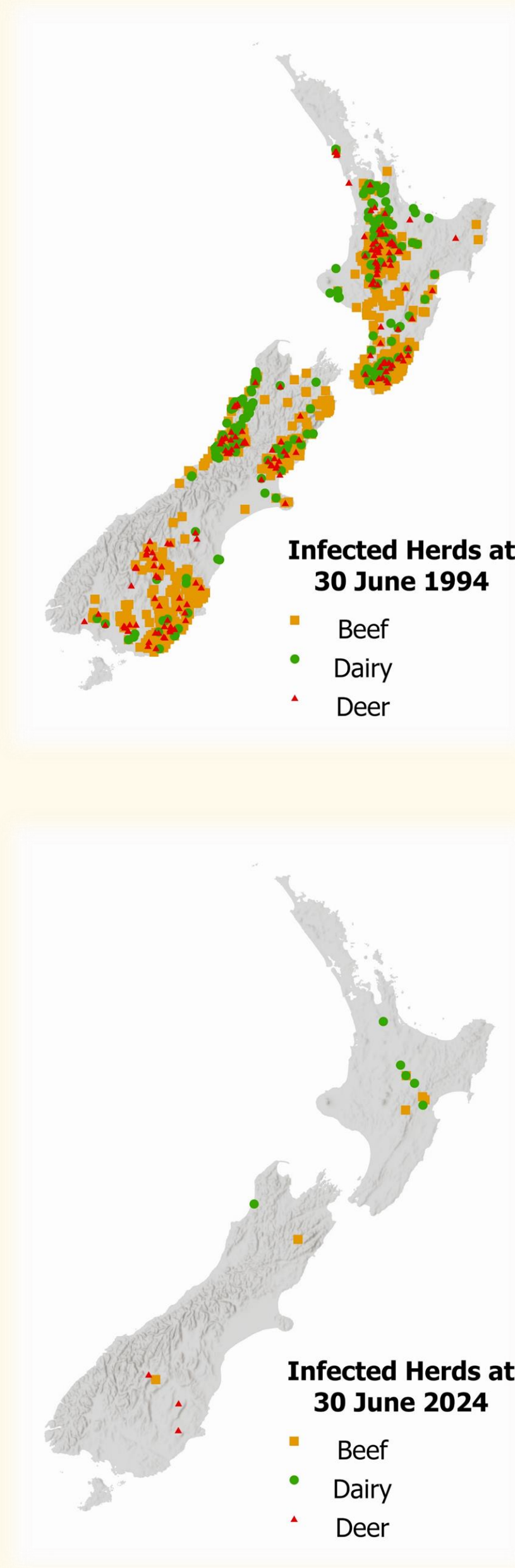
New Zealand's National Pest Management Plan aims to eradicate bovine tuberculosis by eliminating the disease from domestic livestock and the primary wildlife reservoir, the common brushtail possum. Significant progress has been made, reducing infected livestock herds from around 1,700 in the mid-1990s to less than 20 today. The current herd-level period prevalence is 0.05%.



Two clusters of TB-infected herds, due to delayed possum control, were detected in 2020/21. A Programme "Health Check" in 2020 led to changes in work prioritisation and funding allocation. Both clusters have since been cleared, though they did impact the overall programme.

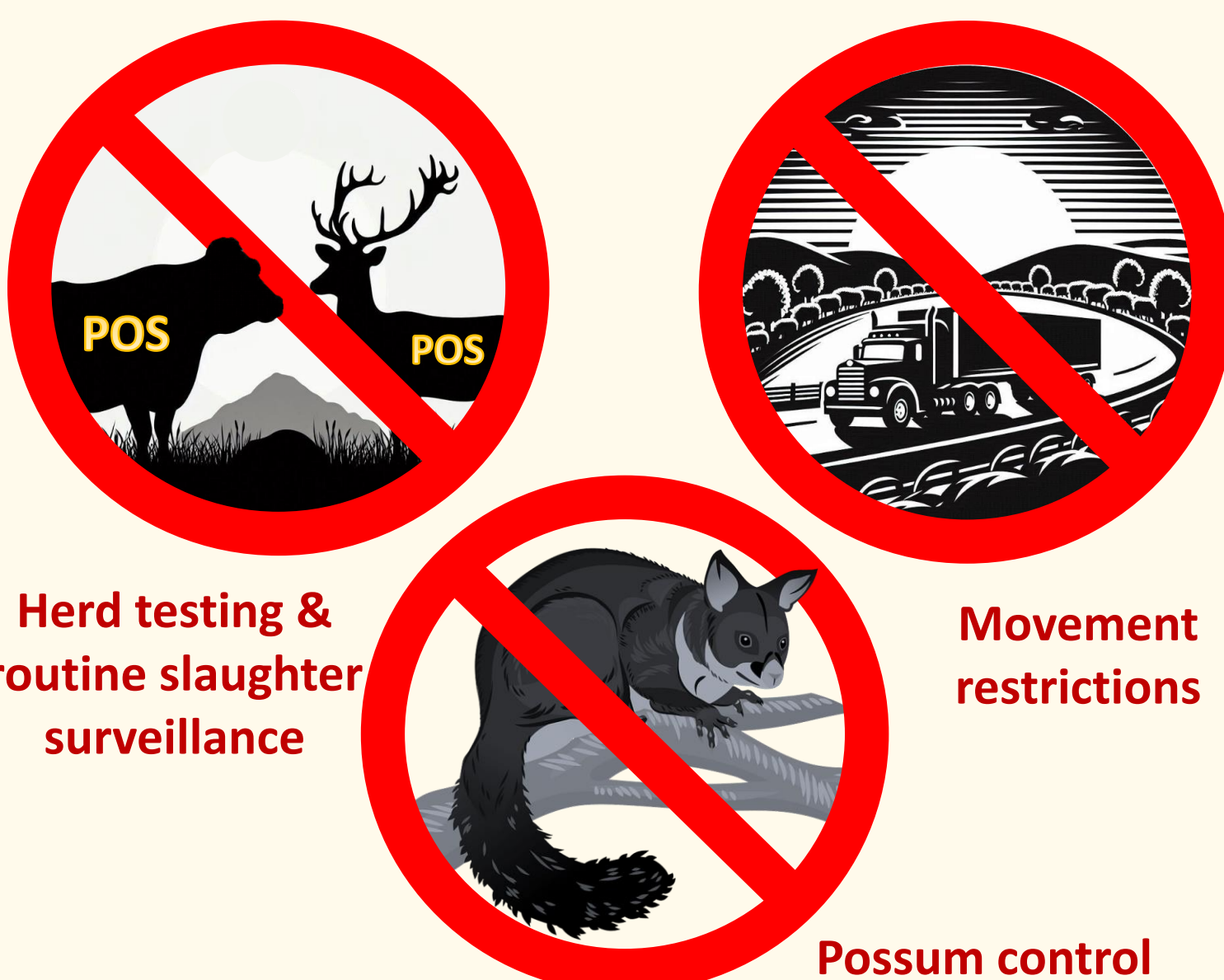
Incidence of *Mycobacterium tuberculosis complex* related disease in humans is low, at around 6 per 100,000 people at risk. Around 85% of these cases originate from other countries (immigration).

Cases specifically attributed to *Mycobacterium bovis* are less than 1% of these, with fewer than 5 cases per year (none since 2022).



DIAGNOSIS, SURVEILLANCE, CONTROL

There are three main components of TB control in New Zealand:



The Caudal Fold Tuberculin test (Bovine Tuberculin PPD) is applied to cattle at a frequency based on the local area risk. Mid cervical site is used for testing farmed deer. Ancillary blood testing (Bovigam®) is used both as a serial test, to reduce wastage in low-risk situations, and as a parallel test to increase sensitivity where the risk of residual infection is high. PCR and culture are used for confirmation of infection. Whole genome sequencing is helpful to understand the relationship between wildlife and livestock infection from different areas of the country.

TB National Operational Plan: <https://www.ospri.co.nz/assets/Documents/TBfree-NOP-2021.pdf>

Disease Control Area Map for testing frequencies: <https://www.ospri.co.nz/farmers-and-livestock-owners/managing-tb-in-animals/disease-control-area-map/>

Wildlife surveys are carried out for evidence of absence of infection as we prepare to cease possum control activities and reallocate resources.

ONE HEALTH APPROACH

OSPRI notifies Health New Zealand, where a new infected herd is considered to be a risk to human health (i.e. high prevalence of infection in herd and/or raw milk is consumed on farm). OSPRI has begun working with Health New Zealand to improve understanding of temporal and spatial relationships between wildlife, livestock and human cases as appropriate. Whole Genome Sequencing is also a useful tool in understanding potential links between human and animal cases of *Mycobacterium bovis* infection.

Immigration pre-entry screening requirements reduce the risk of *Mycobacterium tuberculosis complex* organisms entering New Zealand.

CHALLENGES AND WAY FORWARD

Key challenges: (In addition to immigration for sources of human tuberculosis)

- The ability to control possum populations in all areas where they are known to be infected
- Maintaining stakeholder 'buy-in' to complete the objective as the visibility of the disease continues to decline
- A method to determine when biological eradication has been achieved as long-lived 'spill-over' hosts (feral deer & pigs) can survive for over 10 years with a risk of 'spill back'

The TB Plan is currently being reviewed to determine the timing, objectives and to confirm future funding for the Programme.

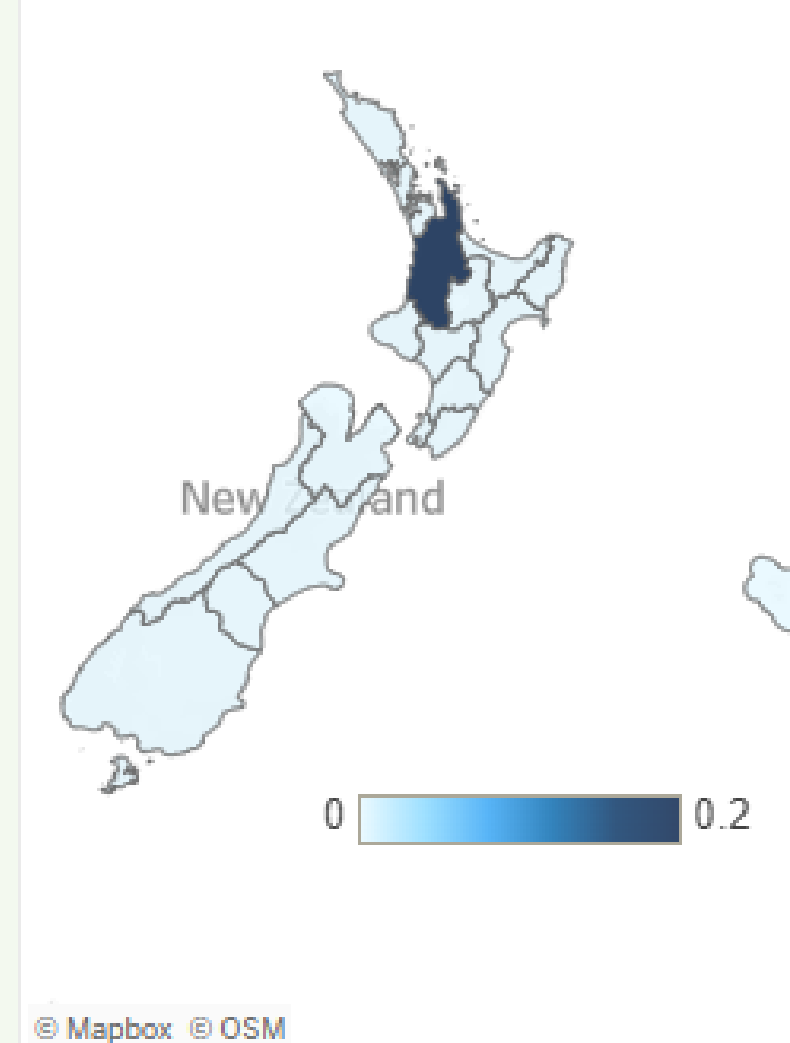
Brucellosis

CURRENT SITUATION

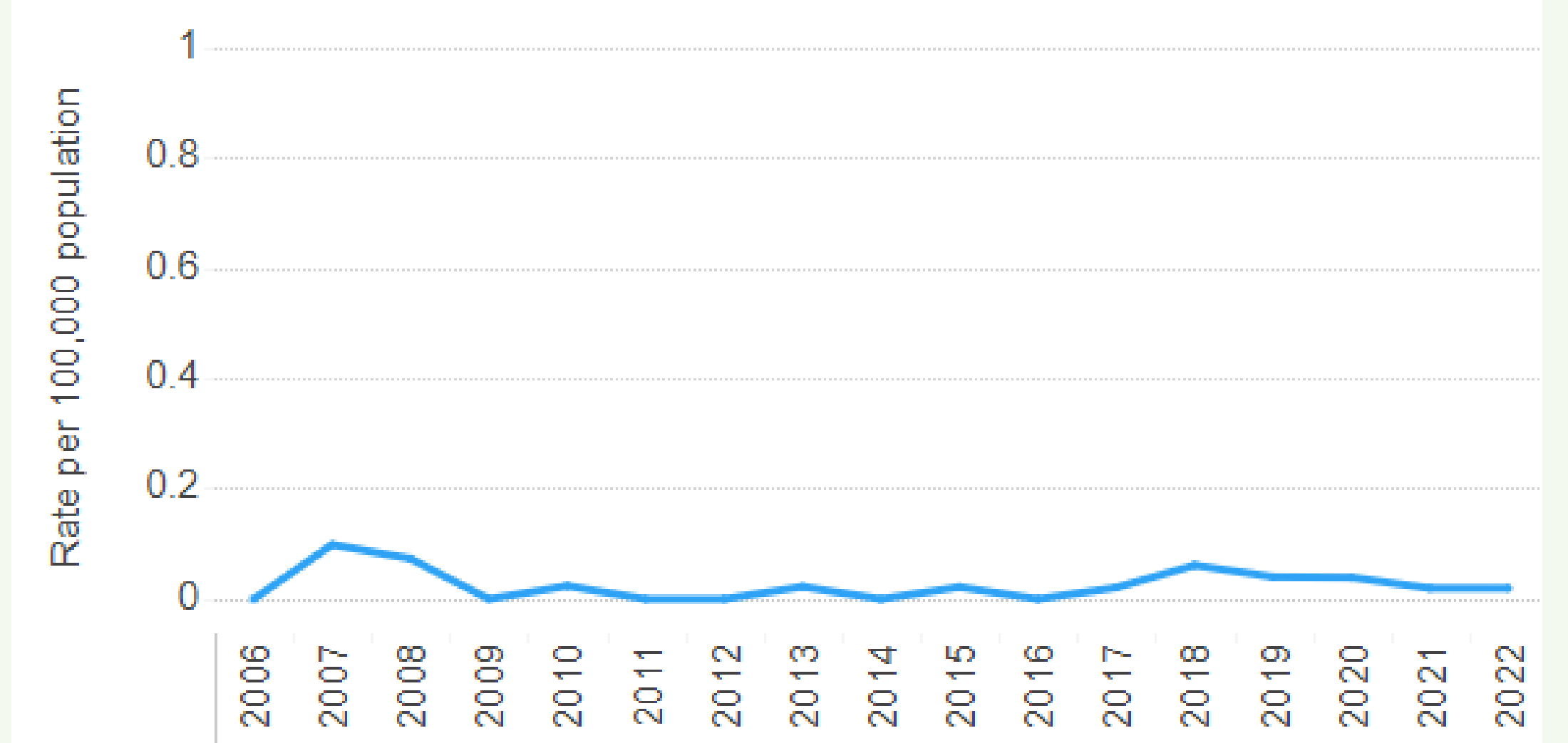
Brucella abortus was last isolated from New Zealand cattle in 1988¹. New Zealand made a declaration of freedom from *Brucella abortus* in 1991² and presented a case for biological freedom to OIE in 1996³. No livestock cases have been identified since.

Human cases of Brucellosis are rare, and most have been attributed to either immigrants or New Zealand citizens travelling to countries with endemic disease. *Brucella suis* is the predominant cause of detected disease in immigrants or travellers from the Pacific Islands. Rare cases of *B. abortus* or *B. melitensis* have been identified from humans originating from South-East Asia or the Middle East.

Brucellosis cases 2022



Brucellosis by year



<https://www.esr.cri.nz/digital-library/notifiable-disease-dashboard/>

DIAGNOSIS, SURVEILLANCE, CONTROL

Passive livestock surveillance operates through the MPI (Ministry of Primary Industries) Animal General Surveillance Programme⁴. National Toll-free calls are logged via the "MPI pest and disease hotline" that operates 24/7.

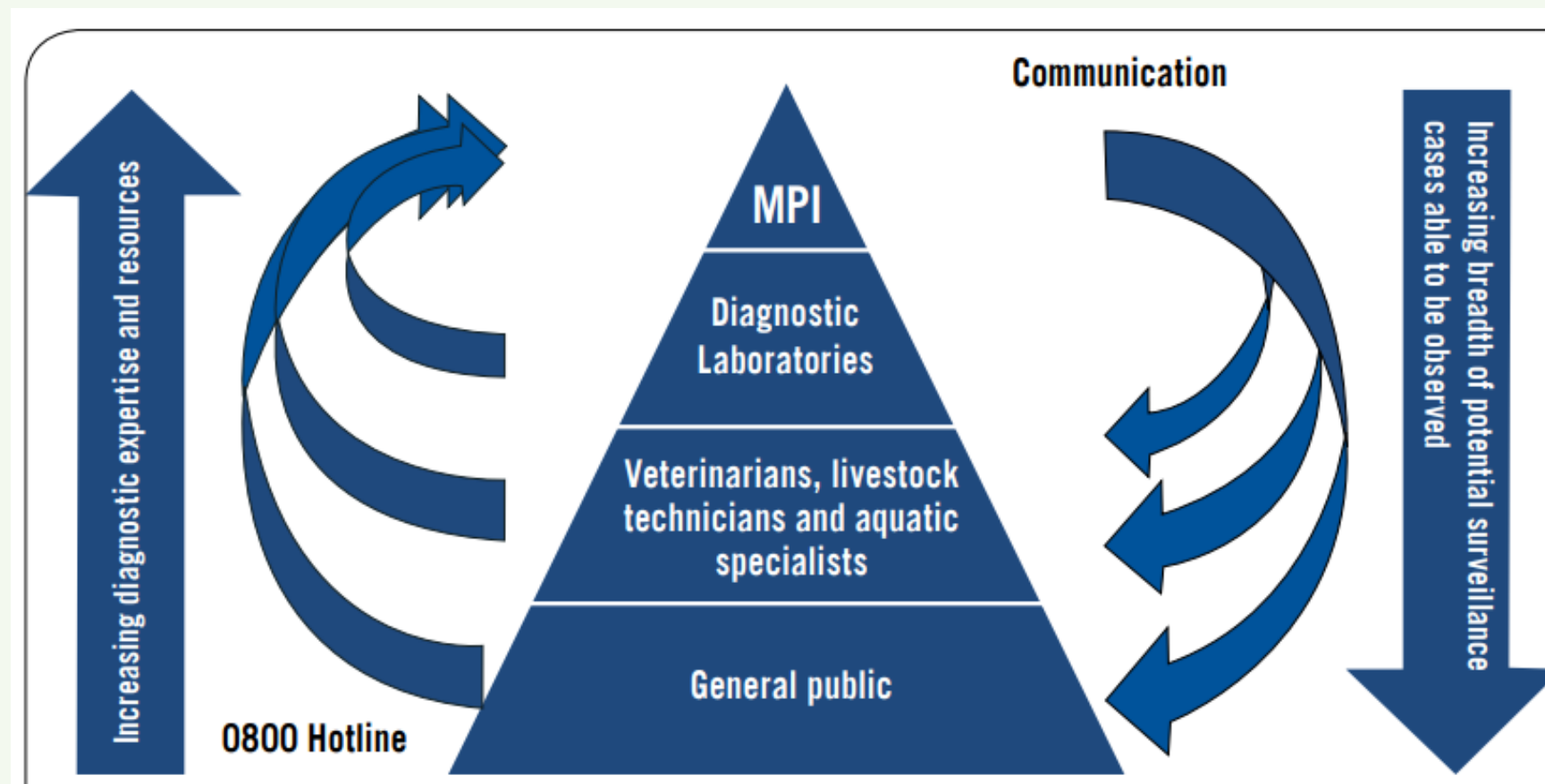


Figure 1: The general surveillance pyramid of scrutiny.



Figure 2: Components of the animal pest and disease notification system

Veterinarians or others who might suspect *Brucella*, or other exotic or notifiable organisms, report cases and these are investigated by a specialist team of Government epidemiologists with assistance from the Government Animal Health Laboratory.

ONE HEALTH APPROACH

Human cases are so rare there is no screening of immigrants. Diagnosis is made following suspicion of the disease based on clinical presentation and especially where there is history of travel. Health New Zealand notifies MPI of all confirmed cases to determine any additional investigation that is required.

CHALLENGES AND WAY FORWARD

- Immigration/importation is the greatest source of infection, but this is still a rare event
- Delayed detection can lead to human-to human spread before discovery
- With such a low incidence of cases it is a challenge to ensure that Brucellosis is considered as a differential diagnosis.

- Carman M. *Brucella abortus* biovars isolated in New Zealand. *Surveillance* 19(4), 14, 1992.
- Hellstrom J. New Zealand is free from bovine brucellosis. *Surveillance* 18(1), 14, 1991.
- O'Neil B. New Zealand declares itself free from bovine brucellosis. *Bulletin, Office International des Epizooties* 108, 4, 264-5, 1996.
- Tana T. The MPI animal general surveillance programme. *Surveillance* 41(2), 2014, pp 5-8.

Dashboard for human cases of diseases including Tuberculosis Disease and Brucellosis:

<https://www.esr.cri.nz/digital-library/notifiable-disease-dashboard/>

(Human) Tuberculosis in New Zealand Annual Report 2020:

<https://www.esr.cri.nz/digital-library/tuberculosis-in-new-zealand-annual-report-2020/>

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