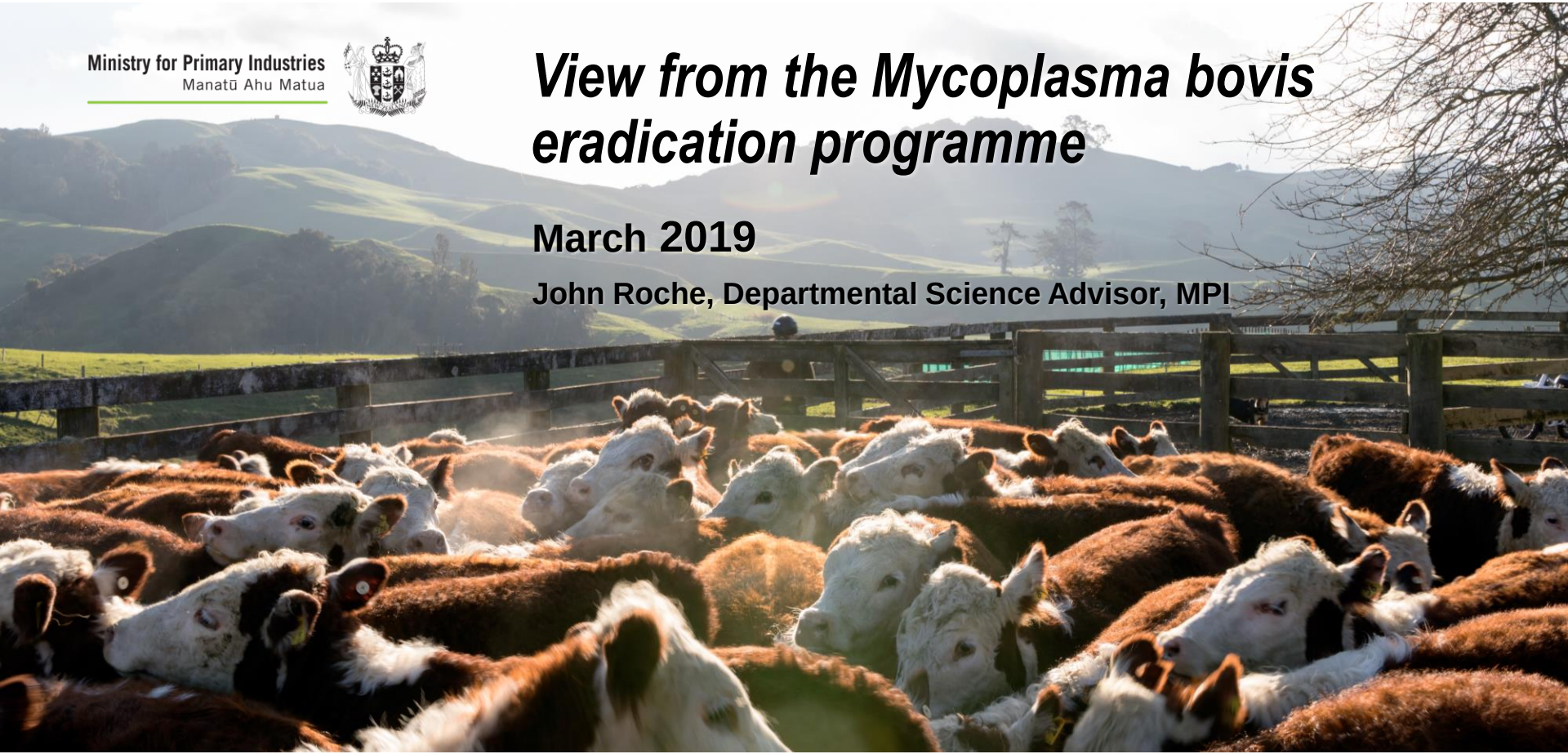
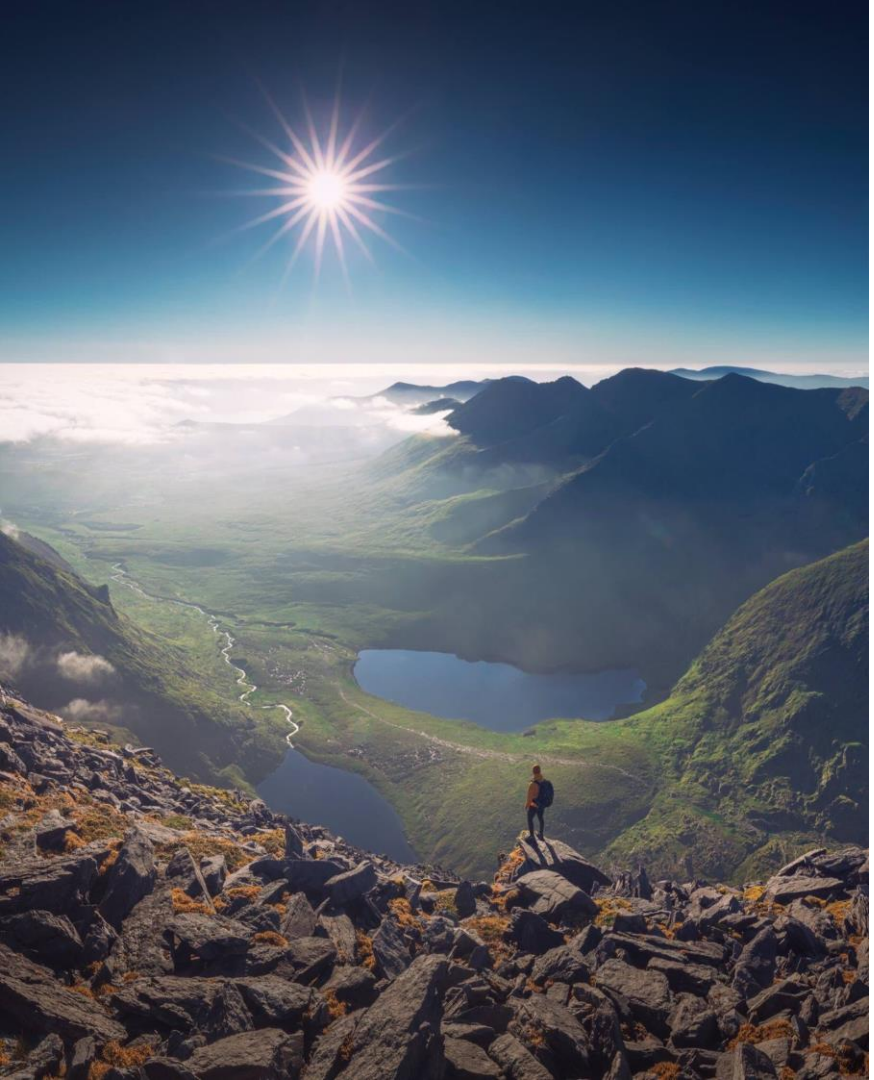
Ministry for Primary Industries
Manatū Ahu Matua

View from the Mycoplasma bovis eradication programme

March 2019

John Roche, Departmental Science Advisor, MPI






DONEGAL
DERRY
ANTRIM
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ROSCOMMON
LONGFORD
MEATH
WEST MEATH
GALWAY
DUBLIN
OFFALY
KILDARE
LAOIS
WICKLOW
CLARE
CARLOW
KILKENNY
TIPPERARY
LIMERICK
WEXFORD
WATERFORD
KERRY
CORK
© Mapflow
by LocationAgent

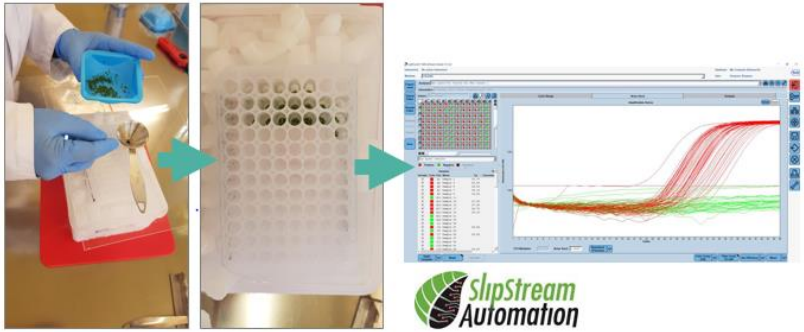
Forestry biosecurity – problems?

- Forestry is long term – doesn't have luxury of low cost rapid replacement as with annual crops;
- Unknown and unexpected pests are a big risk, where do we intervene to plug those pathways, border biosecurity investment –forestry spend cf. other sectors?
- Main species radiata pine is widespread and common in rural and urban landscape – aids pest establishment and complicates surveillance
- Complexity - diversified forests reduce overall biosecurity risk but increase specific risk through poor species selection or siting

Thanks to Lindsay Bulman, Scion

Forestry biosecurity

- Pathogen identification and diagnosis challenging, <10% of forest fungi are described;
- Licence to operate – i.e. chemical use for pest eradication, management and market access; regulations for biocontrol, genetic manipulation;
- Eradicating forest pests and pathogens in urban areas is difficult.



Thanks to Lindsay Bulman, Scion

Forestry biosecurity

- Difficult (near impossible) to import new radiata pine germplasm if a devastating pathogen arrived;

- Free movement of plant material, vehicles/machinery within NZ, lack of protocols (cf NAIT);

- Proximity to Australia – pathogens and insects carried over on storm fronts (rusts, aphids, butterflies and moths), and NZ's largest trading partner which makes NZ vulnerable to anything Australia gets first;

- Low value bulk nature of logs reduces cost effectiveness of interventions (i.e. non chemical market access solutions, log tracking (a key feature of risk-based approaches to treatment).

Thanks to Lindsay Bulman, Scion

Animal Biosecurity

Animal Biosecurity

FMD incursion – UK 2001

- >2,000 cases;
- In 6 months, between 4 and 10 million animals were slaughtered

And, that's not even a risk to humans

Mycoplasma bovis!

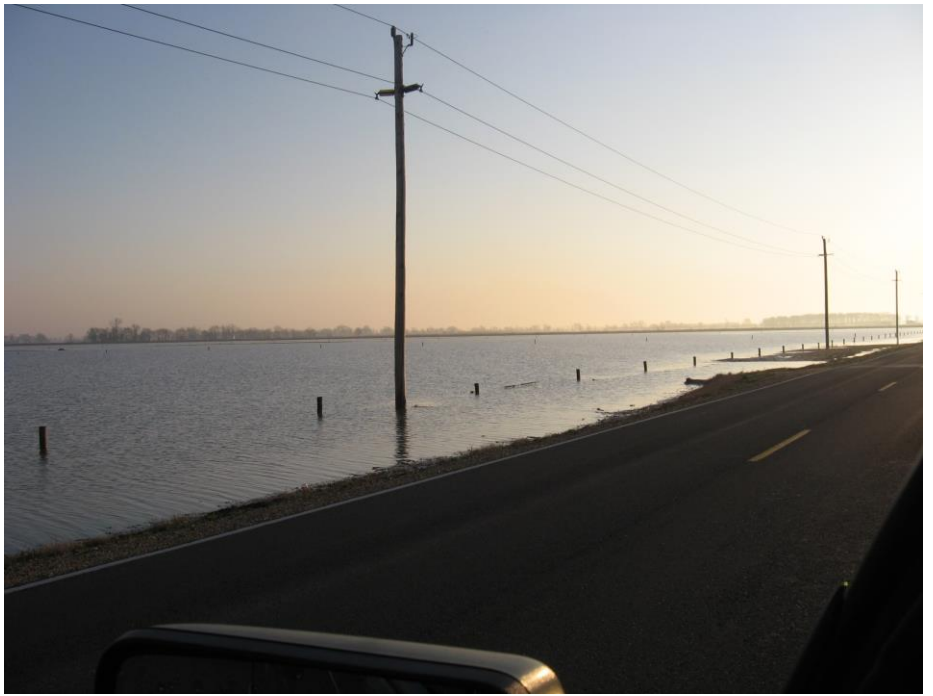
Farming in the USA

Farming in the USA

Farming in the USA

Farming in the USA

My introduction to *M. bovis*



What is *Mycoplasma bovis*?

- Bacterial disease;
- Endemic in almost all countries with cattle;
- Does not infect humans and is not a food safety risk;
- Treatment with antibiotics and vaccination is not effective;
- Carries no trade impacts;
- Difficult disease to test for and detect – latency and intermittent shedding;
- Cows can be subclinical silent spreaders.

How it presents in cattle

Adult cows

Lame cows with swollen legs/joints

- Painful and hot

Abortions

- Slips, early calves, small calves

Mastitis

- Swollen (rubbery quarters), involves multiple quarters
- Not painful or hot
- Non responsive to treatment
- Affected quarters will rapidly dry off
- Cow is not sick

Calves / young stock

Ear infections

- Droopy ear
- Ear discharge
- Head tilt

Pneumonia

- Hacking cough

Lame calves with swollen legs/joints

- Painful and hot

Fading calves

- Inflammation of the joints, and sometimes the brain

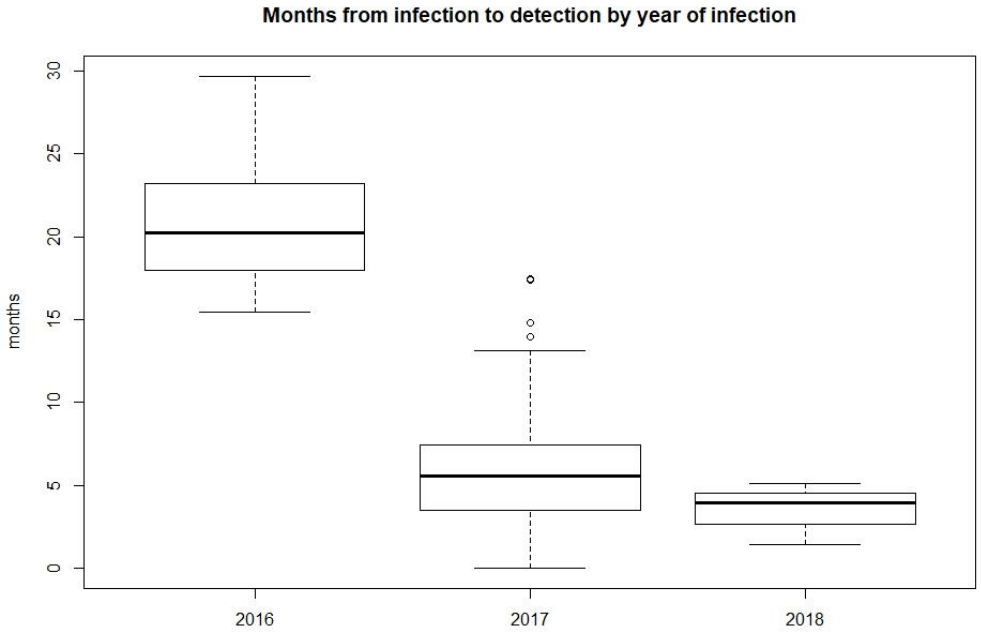
Conjunctivitis

- Sticky eyes, white eyes

When did it get here?

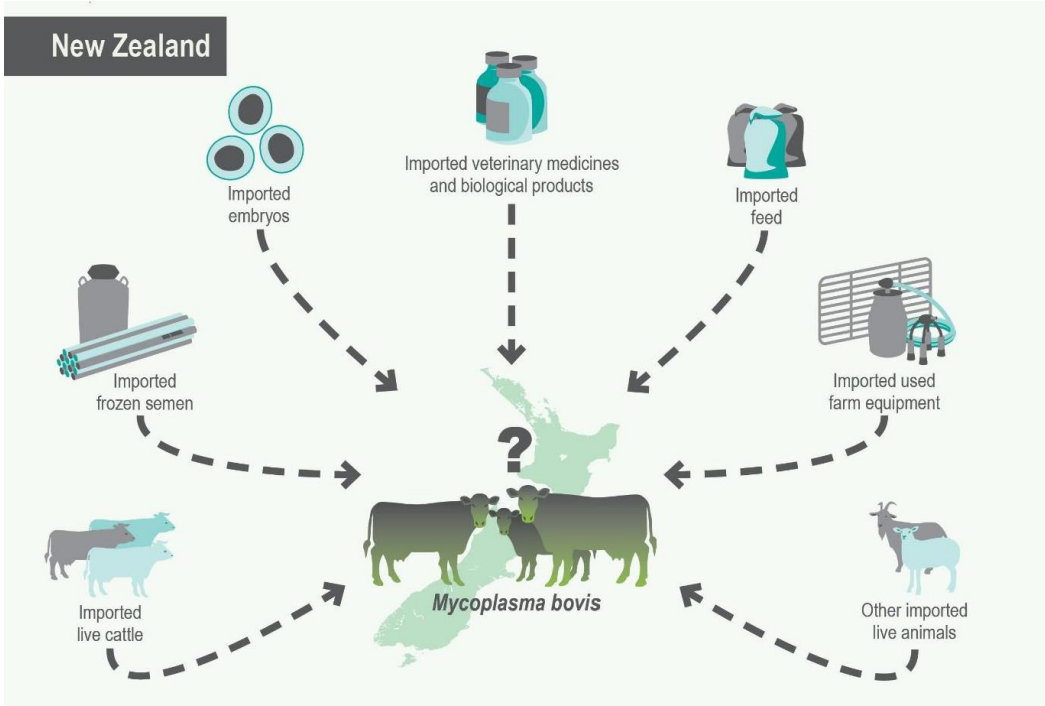
- Evidence shows it came into NZ in late 2015-early 2016;
- The schedule of DNA mutation has enabled us to model it's time of arrival;
- Our tracing of animal movements on and off farms backs this up;
- Disease was circulating in NZ approx. 18 months before we became aware of it!

But, we are getting better:



How did *Mycoplasma bovis* enter NZ?

- Seven possible entry pathways;
- High risk pathway (live cattle) unlikely;
- Definitive pathway not yet identified;
- Initial report on MPI website;
- Investigations ongoing.

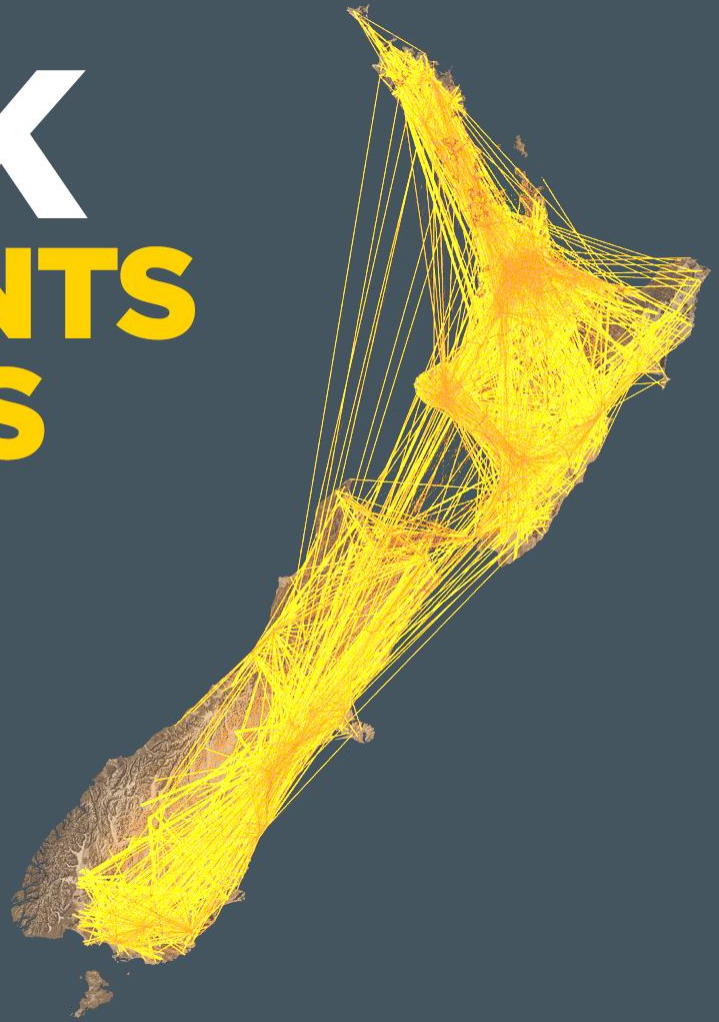


How is it spread?

- **High risk pathways:**
  - prolonged and repeated; cow-to-cow physical contact;
  - drinking infected milk.

ONE WEEK

13,201 MOVEMENTS
141,965 ANIMALS



DATA COLLECTED 1 AUGUST 2017 - 7 AUGUST 2017

How is it spread?

- **High risk pathways:**
  - prolonged and repeated; cow-to-cow physical contact;
  - drinking infected milk.

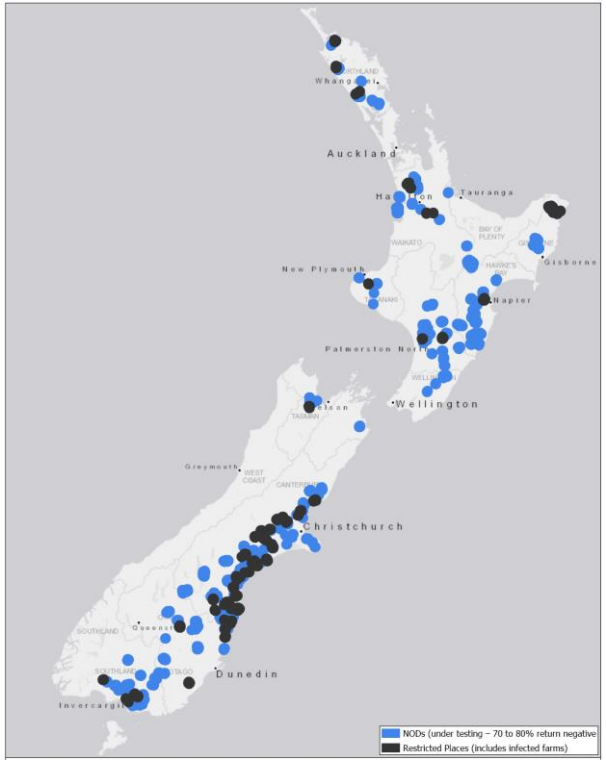
- **Lower risk pathways:**
  - Casual over the fence contact;
  - On dirty vehicles, machinery and clothing!

There have been no cases of over the fence spread in New Zealand

How we're stopping spread of disease

- All infected farms and those with suspect test results are under legal controls;
- All visitors on farms under controls must abide by biosecurity protocols;
- Depopulation;
- Cleaning and disinfection.

Numbers to date:



Mycoplasma bovis Update

Biosecurity New Zealand
Tiakitanga Pūtaiao Aotearoa

Currently, there are...

Nth. Island	Sth. Island	
6	24	Infected Properties (IPs) — 15 Dairy farms, 15 Beef farms, 0 Other farms
14	53	Properties under **Restricted Place Notice** (note: includes **Infected Properties**)
69	97	Properties under **Notice of Direction**
171	279	Properties under **active surveillance**

What has changed over time?

83,011	**Animals** have been culled
66	**Properties** with IP status removed
489	**Properties** released from **movement restrictions**
291,814	Tests **completed**

Compensation

761	Claims **received by MPI**
482	Claims **completed** or with **part payments**
$57.9 million	Value of claims **assessed**
$48.4 million	Value of claims **paid**
1	Claims **pending payment**

Farming then and now!

Then

- She'll be right;
- They will stop it at the border;
- Our cows are outside in a healthy environment;
- I don't see a reason for NAIT!
- I've a closed herd!

Now

- Foot baths for people and 'clean contractors';
- Ensure farm's physical barrier!
- Designated 'no go' zones;
- More cost effective to be NAIT compliant;

Lessons for forestry from *M bovis*

- National and On-farm biosecurity plans and protocols;
- Social license and communication;
- Capability and resourcing;
- Data;
- Cost!

Wider challenges for New Ze

Mā tāu rourou, mā taku rourou, ka ora te iwi kia tiakina pai ō tātou tongarewa – tēnā anō koutou katoa

- Most New Zealanders believe biosecurity

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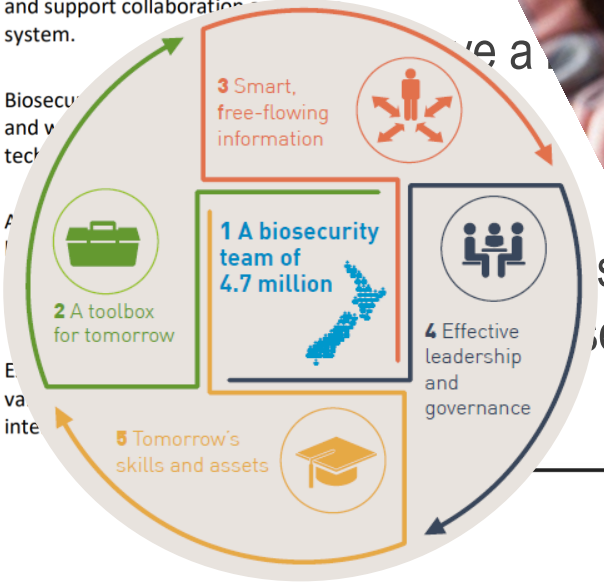
Exercise kaitiakitanga	Maintain a strategic view of the system, monitor and report on system health, and drive delivery of Biosecurity 2025.
Create a movement	Encourage proactive biosecurity behaviours and support collaboration system.
Collaborate in knowledge	Biosecu and v tech
Build resilience	
Enable smart data	E va inte



Thank you

Contact me:

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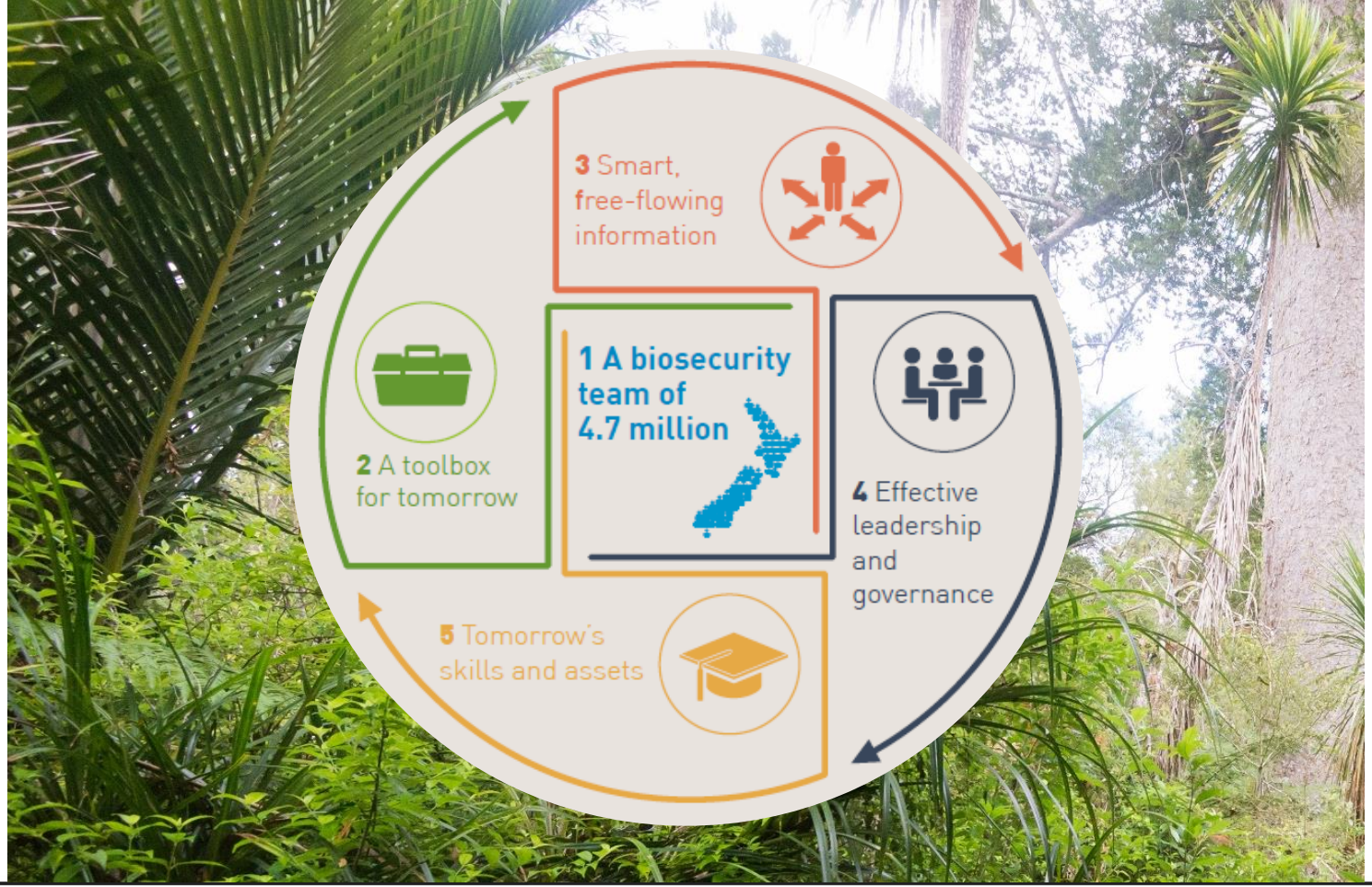
Follow me:

Down to Earth Advice Ltd

@down2earth_john

"***Rest satisfied with doing well, and leave others to talk of you as they please***" — Pythagoras


3 Smart, free-flowing information
1 A biosecurity team of 4.7 million
2 A toolbox for tomorrow
4 Effective leadership and governance
5 Tomorrow's skills and assets

Questions?