

# Leptospirosis

## “a global disease, a local phenomenon”

**Jackie Benschop**

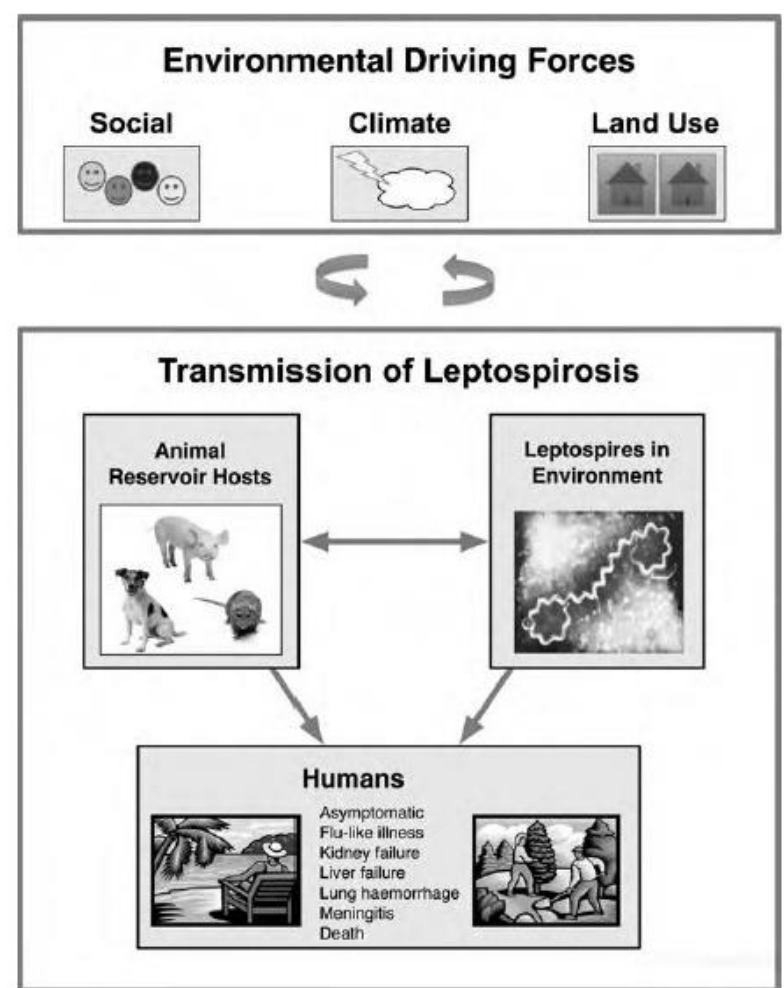
Molecular Epidemiology and Public Health Laboratory  
Global Leptospirosis Environmental Action Network

13 Dec 2017

**One Health Aotearoa Symposium**



OIE Collaborating Centre for  
Veterinary Epidemiology  
and Public Health



**Figure 1.** The ecology of leptospirosis. Leptospire are maintained in nature by a wide variety of mammalian reservoir hosts. Humans can acquire leptospirosis through direct contact with infected animals or by indirect contact with an environment that has been contaminated by animal urine. The cycle of transmission of leptospirosis is in turn driven by environmental forces, including sociodemographic factors, climate and land use.

Review

Climate change, flooding, urbanisation and leptospirosis: fuelling the fire?

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Sources: Albert Ko (Brazil), Milan Gautam (Nepal), Manawatū Standard, Eric Bertherat (India), Gauthier Dobigny (Niger)



# Leptospirosis in New Zealand

Community messages to prevent human disease

Animal Vaccination

Use of Personal Protective Equipment

Caution re rodents/wildlife/water

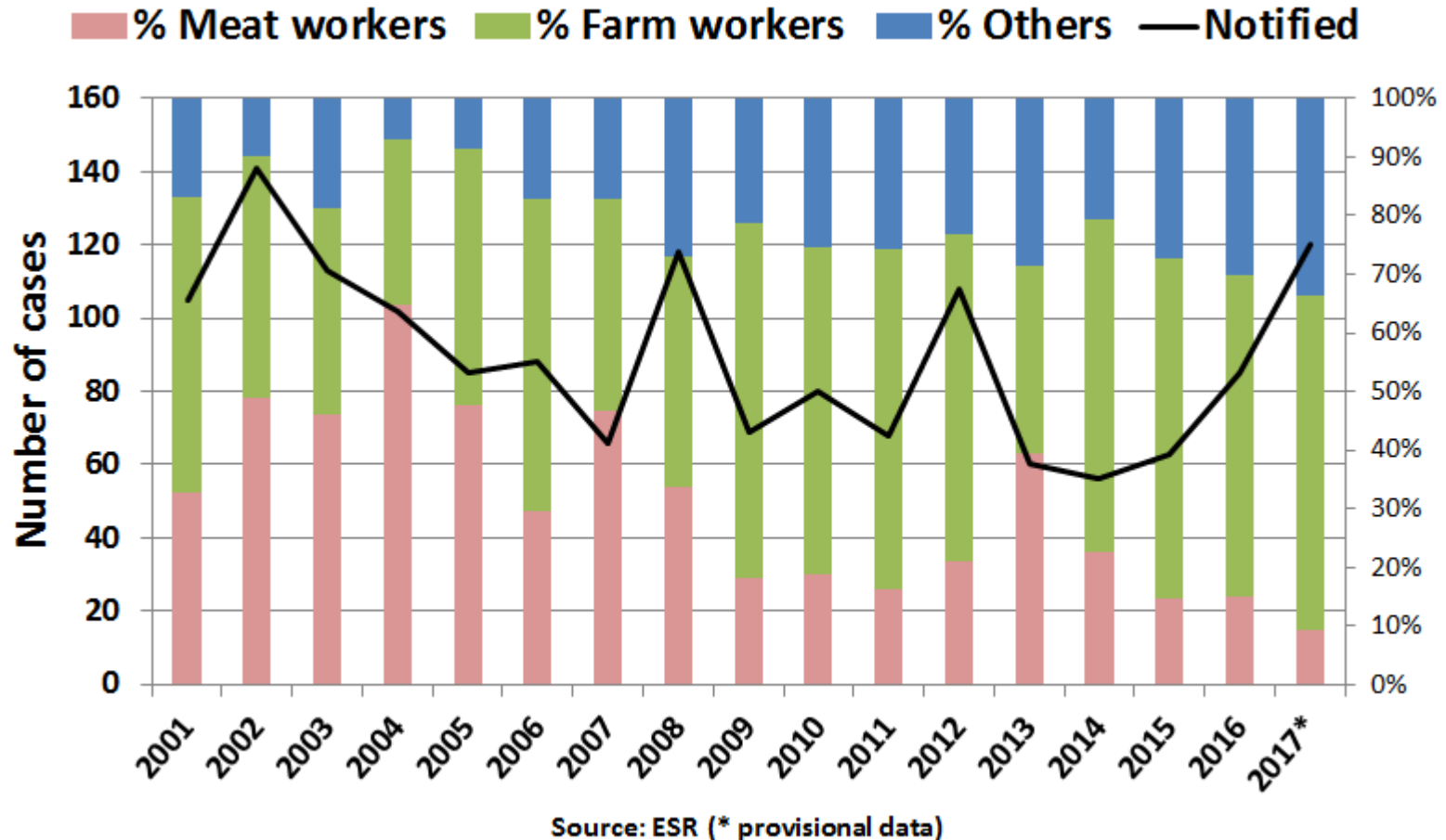
Awareness



*“I had been fencing. In my joints, I felt sore and hot. I’ve got man flu coming on or something. That was at 4 o’clock. By 6 o’clock I was just lying on the bed, shaking and out-of-control. It absolutely flattened me.”*

Source: Shaan Mocke; photo: RWNZ

# Notified cases



Source: Marie Moinet, data ESR

# Maintenance hosts for *Leptospira* in New Zealand

*L.borgpetersenii* sv. **Hardjo** (subtype Hardjobovis)\*: ruminants

*L.interrogans* sv. **Pomona**\*: pigs, ruminants

*L.borgpetersenii* sv. **Ballum**: rodents and hedgehogs

*L.interrogans* sv. Copenhageni\*: rodents

*L.borgpetersenii* sv. Balcanica: brush tailed possums

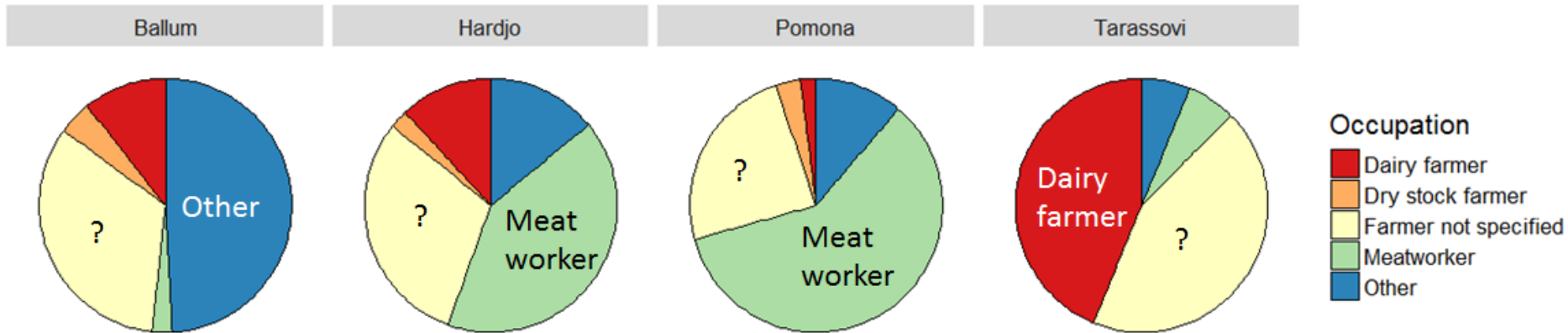
*L.borgpetersenii* sv. Tarrasovi: rodents and pigs

\*animal vaccines available



# Notified cases: 1999 to 2016

82% directly exposed to animals

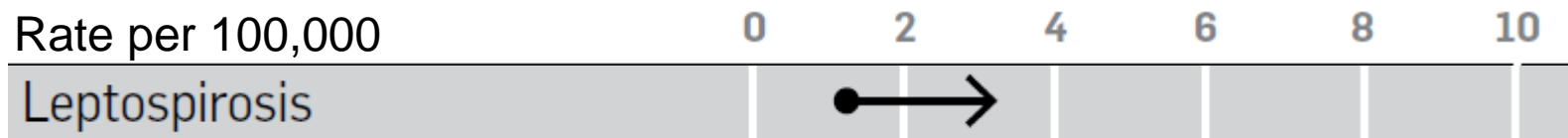


Source: Sha Nisa et al, data ESR

# Provisional NZ Data (30 Sept 2017)

1. significant increase in notifications - 120 (2016-12 average: 47 cases)
2. % females increased - 13.8% (2016-12 average: 7.4%)
3. % in high risk occupations decreasing

Source: ESR



Rates for the 12-month period July 2016-June 2017, compared to previous 12-month rates.



# Extreme Weather Events 2017



Multiple events of flash and persistent flooding

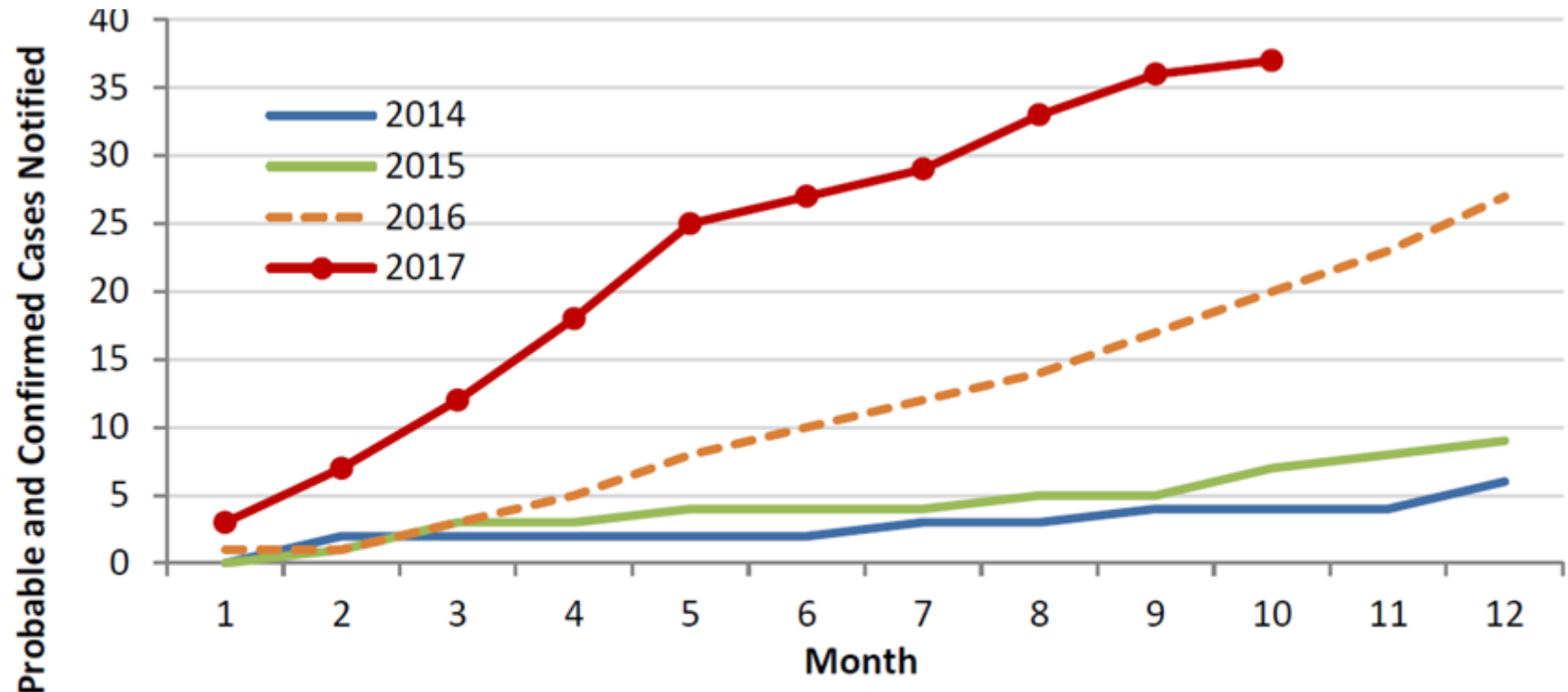
March/April 2017

Ex-cyclones Debbie and Cook



Source: National Institute of Water and Atmospheric Research, NZ Historic Weather Events Catalog; Stuff.co.nz.

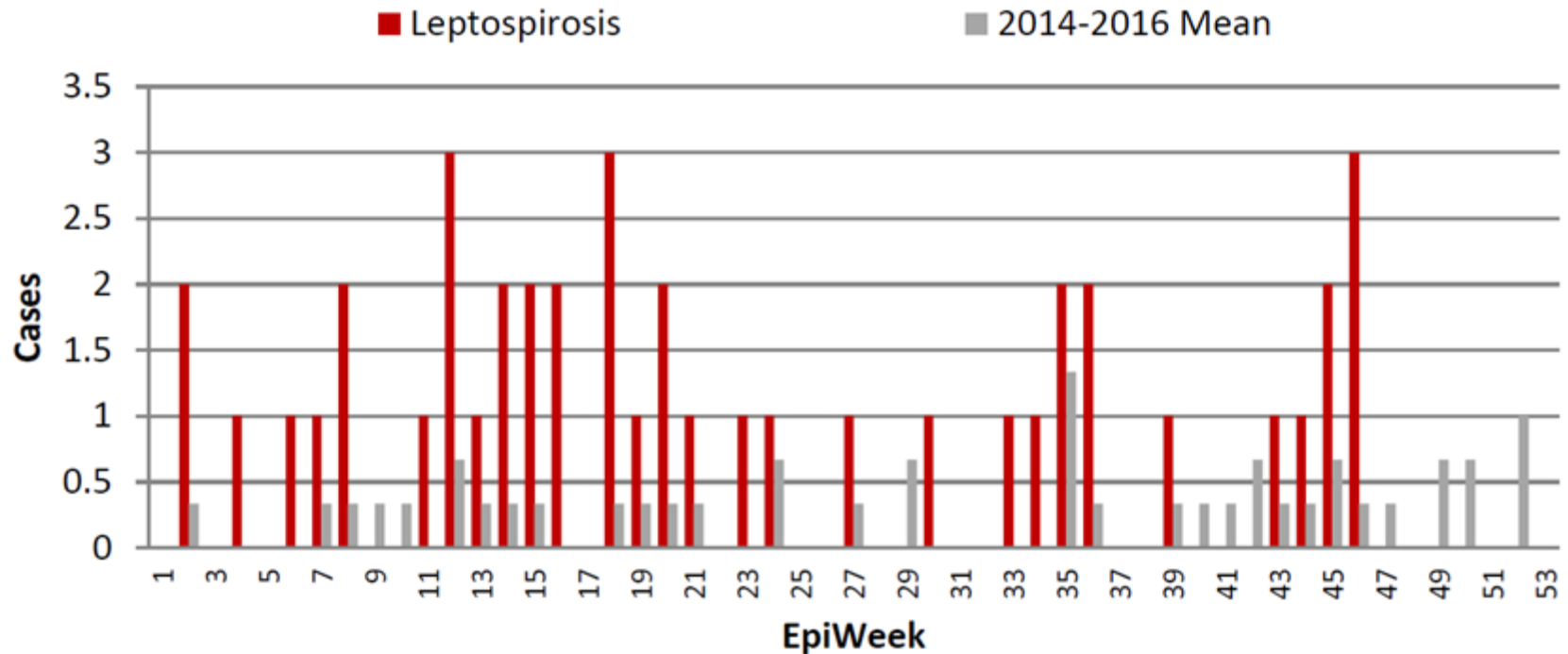
# Waikato DHB



Note: Due to a case entry back log in EpiSurv, the number of Leptospirosis cases week 26 2017 were over estimated, for these cases onset date has been used rather than report date.

Source: Dr Richard Wall, Waikato DHB and ESR (provisional data)

# Waikato DHB

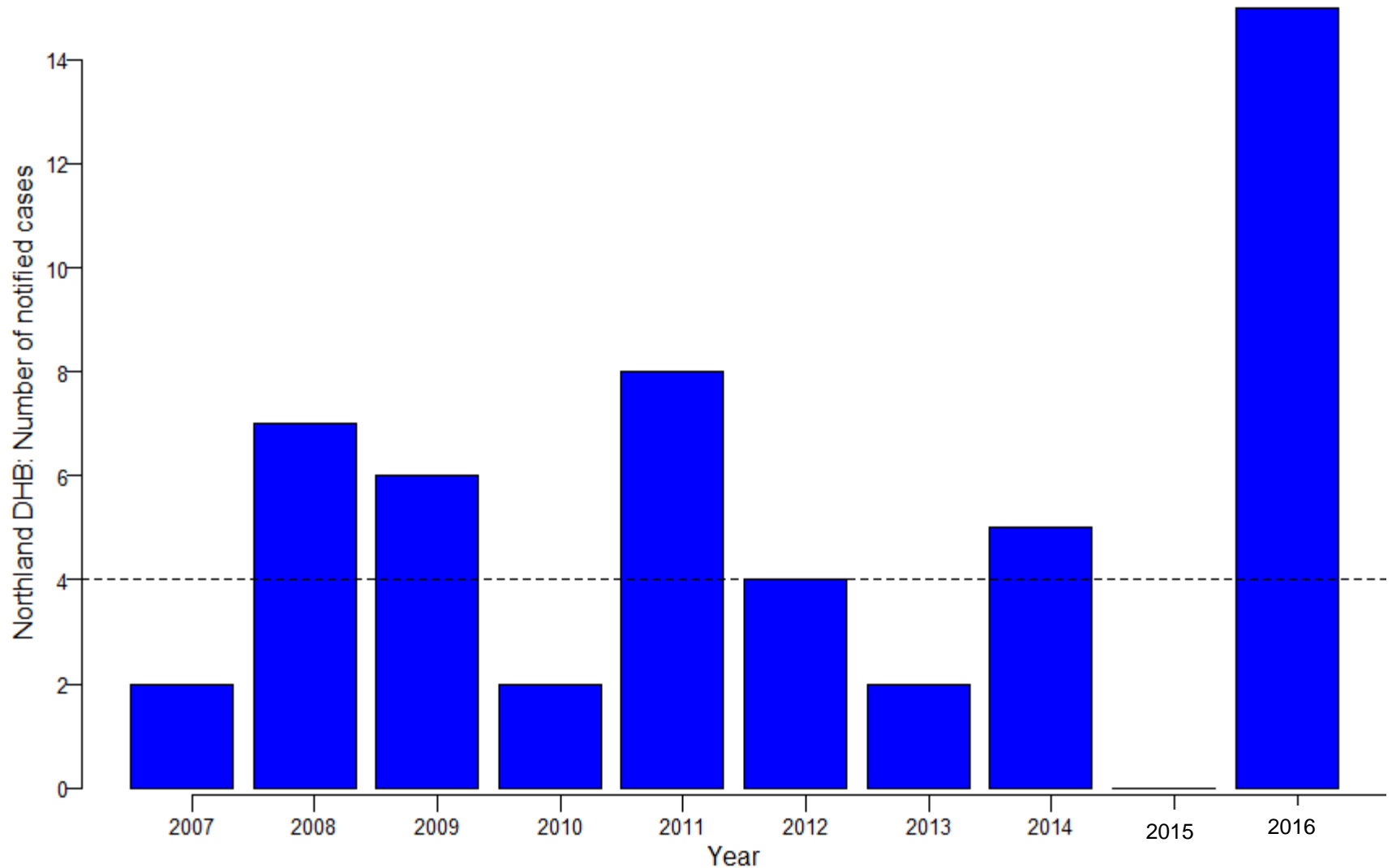


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Source: Dr Richard Wall, Waikato DHB and ESR (provisional data)



# Northland DHB 2016



Source: Dr Virginia McLaughlin, Northland DHB; data ESR.

# Northland Notifications 2016

Test	No.	Serovar	Animal exposure
MAT only	14	Pomona	Dairy – herd was unimmunised but also history of pigs previously on farm
		Tarassovi	Dairy - ?some new herd cattle unimmunised
		Tarassovi	Dairy cattle - also wild pigs, ducks, dogs
		Tarassovi	Beef cattle, horses, pigs, possums
		Tarassovi	Cattle (also rats in sheds)
		Ballum	non-farmer, lives rural – goats, cats, dogs on property
		Ballum	Retired - ? mice
		Ballum	Possum – also pigs
		Ballum/Hardjo	Possum – also deer
		Ballum/Hardjo	Mice - ?rats
		Ballum	non- farmer lives rural
		Ballum	Rats
		Ballum	?Rats/mice
		Ballum	Forest – ? possum/rats
PCR only	1	Unknown	Rats

Source: Dr Virginia McLaughlin, NDHB and ESR (Ministry of Health)

Warning for rural sector

# Spike in disease

Leptospirosis — increase in potentially fatal disease caught from animals

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## RURAL NEWS

NATIONAL WORLD OPINION AGRIBUSINESS MANAGEMENT FARM HEALTH MACHINERY & PRODUCTS MOTOR

Friday, 08 July 2016 13:55

### Spike in leptospirosis in Northland

Written by Rural News Group

font size



Print

Email

After a spike in cases of leptospirosis in Northland, farmers are being urged to take care around animals and to vaccinate their livestock



NORTHLAND DISTRICT HEALTH BOARD

Te Poari Hauora A Rohe O Te Tai Tokerau



## SAFETY ALERT

### Leptospirosis



## WORKSAFE

NEW ZEALAND | MAHI HAUMARU AOTEAROA

Home The new law Information & guidance

Home Information & guidance Work-related h

#### WORK-RELATED HEALTH UPDATE

Risk of the month

Spike in Northland leptospirosis notifications prompts warning to farmers

Risk of the month – August 2016

Spike prompts

WorkSafe in leptospirosis so far this infection.

Leptospirosis symptoms it can cause can catch



# Northland DHB

To 6 November 2017: 10 cases notified in 2017

Occupation	Serovar
Forestry Worker	TBC
?	TBC
Orchard Worker	TBC
Farmer	TBC
Currently Unemployed	TBC
Farmer	TBC
Dairy Farmer	Tarassovi
Dairy Farmer	Tarassovi
Farmer	Ballum

Source: Dr Virginia McLaughlin, NDHB and ESR (provisional data)

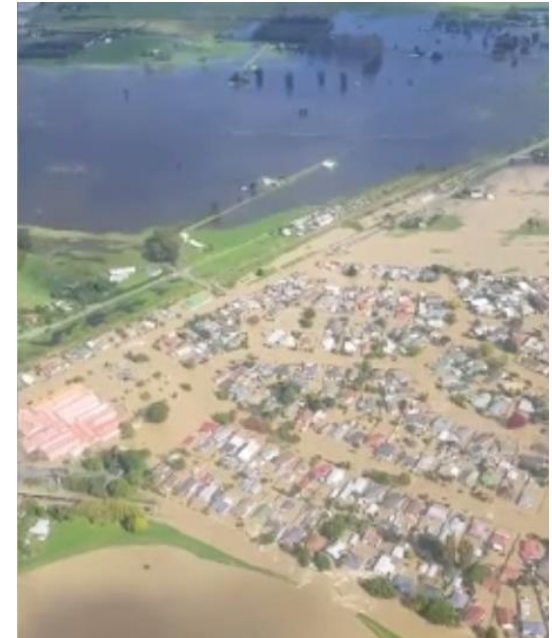
# Community information 2017

Auckland/Waikato/Northland – “clusters associated with flooding and rodent contact”

Vets and laboratories in North Island

Bay of Plenty April 2017

- “many more cases in dogs in fact an outbreak in May 2017”
- more outbreaks in sheep
- disease in horses
- outbreak in alpacas



Sources: Dr Penny Neave, Auckland Regional PHS; MPI Surveillance; Hayley Squance Animal Welfare Emergency Management and Animal Products Directorate MPI; Stuff

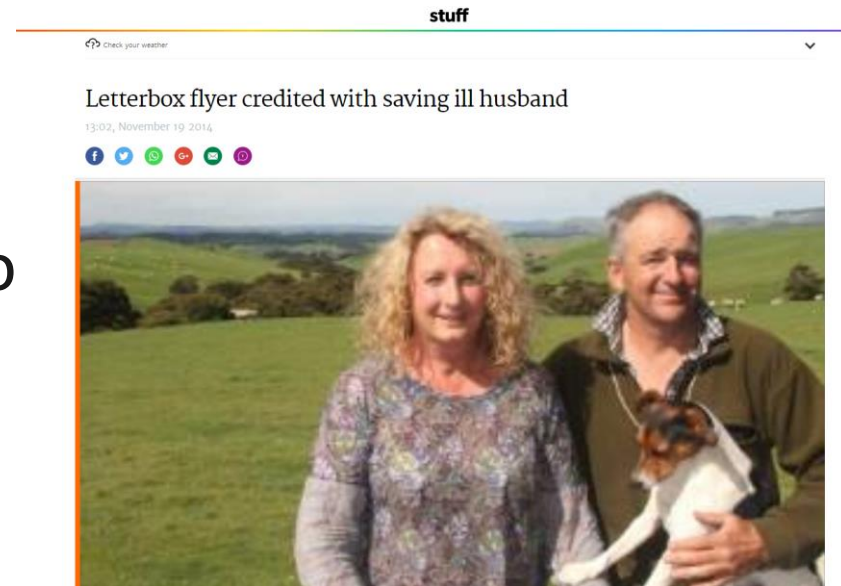
# A global disease, yet a local phenomenon

Complex disease: species, hosts and environments differ and change rapidly

Relook at paradigms for temperate vs tropical sources and transmission routes

Community underpins all we do

Thank you







# Manawatū outbreak in alpacas

~26,000 registered alpacas in NZ

Humans : shearing, grooming, haltering, slaughter

Multi-species small holdings



<http://www.alpaca.org.nz/alpaca-info/intro/>

# Manawatū outbreak in alpacas

Acute disease, death – young stock

Abortions in breeding flock of 25

started in August – October 2017 12/16 pregnancies

MPI involved due to clinical presentation

BVD and exotics negative, adult females otherwise well

Lepto suspected October

24/25 females Pomona  $\geq 3200$

4 placentae tested: all PCR +ve



Source: Drs Cristin Dwyer and Fernanda Castillo Alcala, Massey University



# Manawatū outbreak in alpacas

Adult females antibiotics and vaccinated (7 in 1)

Young stock vaccinated

Cautioning humans: farm, vets,  
PM room



Sampling of in contact dogs, horses and people and  
further serovars to be tested for in alpaca serum