Animal Health Surveillance annual report

The following tables present animal health data collected by MPI from various sources during 2019.

Table 1 is a summary of the numbers of laboratory submissions from the major livestock and avian populations. For illustrative purposes a selection of presenting syndromes are provided in some instances, with examples of corresponding diagnoses.

Table 2 lists the number of *Salmonella* serotypes by animal species diagnosed by veterinary pathology laboratories.

Table 3 presents a summary of results from the salmon surveillance programme run annually in approved establishments for the export of salmon for human consumption in Australia. In all, 20 salmon production sites were tested across 30 sampling events. One farm reported significant mortalities.

Table 1: Numbers of cases and diagnoses received from veterinary pathology laboratories during 2019

Cattle	
Total sick animal cases	19,607
Abnormalities of reproductive system	112
Neospora caninum	4
C. fetus ssp. *venerealis*	0
Pestivirus infection	3
Abortion	737
Neospora caninum	76
Mycotic abortion	3
Pestivirus infection	12
Leptospira spp.	5
Congenital defects	14
Ill thrift/diarrhoea	11,045
Pestivirus infection	155
Gastrointestinal parasitism	24
Johne's disease – suspicious and confirmed	2,984
Trace element deficiency	219
Yersinia spp.	475
Rotavirus	285
Nervous signs	361
Listeria monocytogenes	1
Hepatic encephalopathy	2
Metabolic disease	18
Malignant catarrhal fever	7
Polioencephalomalacia	14
Histophilus somnus	1
Sudden death	953
Clostridium spp.	3
Respiratory disease	544
Sheep	
Total sick animal cases	1,761
Abnormalities of reproductive system	28
Brucella ovis	0
Abortion	261
Campylobacter fetus ssp. *fetus*	27
Other *Campylobacter* spp.	8
Toxoplasma gondii	30
Salmonella Brandenburg	36
Congenital defects	2
Ill thrift/diarrhoea	609
Johne's disease	20
Trace element deficiency	13
Gastrointestinal parasitism	24
Nervous signs	55
Listeria monocytogenes	6
Polioencephalomalacia	3
Clostridium spp.	0
Respiratory disease	52
Sudden death	326
Gastrointestinal parasitism	3
Farmed deer	
Total sick animal cases	161
Abortion	3
S. zooepidemicus	0
Congenital defects	0
Ill thrift/diarrhoea	81
Johne's disease	9
Trace element deficiency	9
Yersinia spp.	6
Nervous signs	7
Malignant catarrhal fever	1
Sudden death	49
Gastrointestinal parasitism	0
Malignant catarrhal fever	6
Horses	
Total sick animal cases	6,222
Abortion	54
S. zooepidemicus	1
Circulatory disease	43
Ill thrift/diarrhoea	1,270
Gastrointestinal parasitism	30
Nervous signs	194
Respiratory disease	675
Streptococcal infection	88
Sudden death	27
Pigs	
Total sick animal cases	51
Abortion	1
Ill thrift/diarrhoea	13
Nervous signs	3
Sudden death	17
Goats	
Total sick animal cases	707
Abortion	10
Ill thrift/diarrhoea	395
Gastrointestinal parasitism	4
Respiratory disease	37
Nervous signs	26
Listeria monocytogenes	3
Caprine arthritis encephalitis	0
Sudden death	42
Clostridium perfringens D (enterotoxaemia)	0
Gastrointestinal parasitism	0
Lamoids	
Total sick animal cases	255
Abortion	1
Ill thrift/diarrhoea	119
Gastrointestinal parasitism	0
Nervous signs	12
Respiratory disease	6
Sudden death	16
Avian species	
Total number of submissions	1,407

Table 2: *Salmonella* serotypes isolated from animals during 2019

Serotype	Avian	Bovine	Canine	Equine	Feline	Other	Ovine	Reptile
Salmonella Agona	0	3	1	0	1	0	0	0
Salmonella Anatum	0	1	0	0	0	0	0	0
Salmonella Barranquilla	0	1	0	0	0	0	0	0
Salmonella Bovismorbificans	1	244	5	0	1	0	3	0
Salmonella Brandenburg	0	68	5	1	0	0	36	0
Salmonella Derby	0	0	1	0	0	0	0	0
Salmonella Emek	0	3	0	0	0	0	0	0
Salmonella Enterica	0	10	3	0	1	0	0	1
Salmonella Enteritidis	0	1	2	0	0	0	1	0
Salmonella Give	0	11	0	0	0	0	0	0
Salmonella Hindmarsh	0	1	1	0	0	0	23	0
Salmonella Mbandaka	0	1	1	0	0	0	0	0
Salmonella Mississippi	0	0	0	0	0	0	1	0
Salmonella Ruiru	0	2	0	0	0	0	0	0
Salmonella Saintpaul	1	2	2	1	0	0	0	1
Salmonella Senftenberg	0	2	1	0	0	0	0	0
Salmonella Stanley	0	1	0	0	0	0	0	0
Salmonella Thompson	0	1	2	0	0	0	0	0
Salmonella Typhimurium	5	214	4	8	10	1	6	0
Unspecified	0	23	1	2	1	0	1	0
Total	**7**	**589**	**29**	**12**	**14**	**1**	**71**	**2**

Table 3: Salmonid surveillance during 2019

Pathogen tested for	No of farms*	No of samples †	No of positive pools
Viral cultures	20	1,200	0
Myxobolus cerebralis	6	360	0
Yersinia ruckeri	20	1,200	3‡
Aeromonas salmonicida	20	1,200	0
Renibacterium salmoninarum	6	360	0

* 30 sampling events in total
† Tested in pools of 5
‡ Endemic strain of *Yersinia ruckeri* (serotype O1b)

Number of salmon farms tested	20
Number of farms reporting significant mortalities	1
Number of farms where significant infectious disease was detected through this scheme	0

The next two tables present results from investigations by MPI's Biosecurity Surveillance and Incursion Investigation Animal Health and Aquatic and Environment Health teams. **Table 4A** shows results for the period 2014–2019 that have resulted in exclusion of OIE-notifiable diseases or other significant exotic diseases. **Table 4B** is a list of significant investigations conducted during 2019 into suspected exotic or emerging diseases that have been confirmed as positive. These include:

- exotic disease or vector incursions or newly emerged diseases;
- occurrences of diseases in new host species;
- first detections of disease agents established in New Zealand; and
- interceptions with no resulting transmission or establishment of organisms.

Asterisks in these tables (*A, *B, etc.) refer to the Notes that follow.

Table 4a: Cumulative list of significant (*A) negative investigations of suspected exotic diseases, 2013–2019

Disease agents investigated and confirmed as negative	2014	2015	2016	2017	2018	2019	Total
Aeromonas salmonicida (fish) *B	2		3	1	1	2	9
African horse sickness virus						1	1
Africanised honeybee (*Apis mellifera scutella*) and Cape bee (*Apis mellifera capensis*) *B		3		1	3	1	8
Akabane virus	1	1		1		1	4
Anaplasmosis (causes of)	2	2	1	10			15
Aphanomyces invadans (epizootic ulcerative syndrome of fish)						1	1
Avian influenza virus: highly pathogenic notifiable avian influenza & Newcastle disease virus *B	3	5	3	3	6	10	30
Avian influenza virus: low-pathogenicity notifiable avian influenza *B	2	1		1	1		5
Babesia canis, B. gibsoni and *B. felis*	1	1	2	4			8
Bacillus anthracis (anthrax)	4	2	4		7	3	20
Bluetongue virus	2	4	1	1		1	9
Bovine herpesvirus type 5	2						2
Bovine theileriosis and babesiosis (exotic strains)	1			1	2		4
Bovine viral diarrhoea virus type 2a	6	1	6			1	14
Brucella abortus	2	1	1	1	1	3	9
Brucella canis	5	9	12	6	6	4	42
Brucella melitensis	1	1	1		1	3	7
Brucella suis						2	2
Burkholderia mallei (glanders) and *B. pseudomallei* (melioidosis)	1	2	1				4
Canine distemper virus	2	3	1	1	3	3	13
Canine influenza virus		2			2		4
Chlamydophila abortus (enzootic abortion)	1		2	1	1	1	6
Coxiella burnetti (Q fever)	2		2		1	4	9
Dirofilaria immitis (heartworm disease)		3	1	2	2	1	9
Echinococcus spp. (hydatid disease)		1	4	2	2		9
Ehrlichia canis	1		3	5	1		10
Enteric redmouth (*Yersinia ruckeri* – exotic strains) (fish)		1	1	2	2	3	9
Equine piroplasmosis (all causes of)	2	3	1	5	4		15
Equine herpesvirus type 1 (abortifacient strains, neuropathogenic strains)	6	1	9	4	1	2	23
Equine infectious anaemia virus and equine viral arteritis virus	4	7	11	10	6	2	40
Equine influenza virus	3	2	2	2	1	1	11
Exotic ticks	3	15	11	11	5	8	53

Table 4a (continued)

Disease agents investigated and confirmed as negative	2014	2015	2016	2017	2018	2019	Total
Fish, shellfish and crustacean mortality (wild or managed, marine) – for exclusion of exotic and novel infectious disease agents not otherwise listed	4	11	2	10	16	20	63
Francisella tularensis (tularemia)		2		1		2	5
Infectious bovine rhinotracheitis virus (exotic strains)		2	1	1		1	5
Infectious bursal disease virus	1	3	1		2	4 *D	11
Israeli acute paralysis virus (bees) *B	3	7	1			3	14
Jaagsiekte sheep retrovirus (pulmonary adenomatosis virus)				2	1		3
Leishmania spp.			5	6	3		14
Leptospira (exotic strains)	3	1		3	2		9
Melissococcus plutonius (European foulbrood) (bees) *B	7	8	6	4	6	5	36
Mycoplasma mycoides ssp. *mycoides* (contagious bovine pleuropneumonia)			1				1
Mycoplasma bovis	4		6	2 *D	Under response		
Myxoma virus (myxomatosis)		1			1	1	3
Pasteurella multocida – toxogenic strains (cause of haemorrhagic septicaemia)		1	1	1	1	2	6
Perkinsus marinus (molluscs)	2		3	6	6	5	22
Porcine reproductive and respiratory syndrome virus	1	2		1	2	2	8
Poxviruses (ruminants and camelids)	1	2	1		1		5
Psittacine herpesvirus (incl. Pacheco's disease)			3	1			4
Rabies virus						5	5
Rinderpest virus							0
Ross River virus			1	2		3	6
Salmonella (exotic strains)	2	1	1	1	2	2	9
Small hive beetle (*Aethina tumida*) (bees) *B	2	1	1	2	3	2	11
Swine fever viruses (African and classical swine fever viruses)			1		2	3	6
Tracheal mite (*Acarapis woodi*) (bees) *B	3	9	3	2	5	5	27
Transmissible spongiform encephalopathy agents (scrapie, BSE; chronic wasting disease, FSE) *B	3	5	1		2		11
Trichinella spiralis (trichinosis)				1	1		2
Tropilaelaps clareae and *T. koenigerum* (bees) *B		4	1	1	1	2	9
Viral haemorrhagic septicaemia (fish)	1		1			1	3
Viral vesicular disease	4	9	16	7	7	3	46
West Nile virus	4	1	3	2	1	3	14
Total	**104**	**141**	**145**	**131**	**124**	**132**	**777**

Table 4b: Significant positive investigations of suspected exotic diseases, 2019

Disease agents/vectors investigated and confirmed as positive, and host species	Number of positive investigations in 2019
Porcine teschovirus (domestic pigs) (Rawdon 2019)	1
Infectious bursal disease virus serotype 2 (IBDV-2) (poultry) (Rawdon et al. 2019b; Rawdon 2019)	1
Infectious bursal disease virus serotype 1 (IBDV-1) (poultry) (Mulqueen 2019) *D	2
Canine parvovirus 2c variant in dogs (CPV-2c) (Rawdon et al. 2019a)	1
Pigeon rotavirus (Rawdon 2020b)	1
Campylobacter hepaticus in chickens (Rawdon 2020a)	1
Dermatobia hominis (human botfly, DIPTERA: Oestridae) in a human traveller (Rawdon et al. 2019a) *E	1
Amblyomma americanum (lone star tick) on a human traveller (Rawdon et al. 2019a) *E	1
Ixodes scapularis (black-legged tick) on a human traveller (Rawdon et al. 2019a) *E	1
Amblyomma spp. (unable to be classified further) on a human traveller (Rawdon 2019) *E	1

Notes to Tables 4a and 4b

*A The investigations listed in **Table 4A** are those that have resulted in exclusion of an OIE-listed disease or other significant diseases investigated more than once in the time period. This is not a definitive list of all investigations conducted. Some investigations resulted in multiple exclusions using specific laboratory methods, and these are recorded against each disease. The data were retrieved and analysed from the Notification and Investigation Manager Application database. Regular quarterly investigation reports are published in *Surveillance*: see Rawdon 2019a,b, 2020; Rawdon et al. 2019a; Taylor 2019a,b; Williams 2019 and Ward 2020.

*B Investigations reported here are in addition to testing in the MPI active surveillance programmes for these disease agents. See Phiri & Rich 2019 (honey bee exotic pest and disease surveillance), Stanislawek et al. 2019 (avian influenza surveillance); Marquetoux 2019 (TSE surveillance) and **Table 3** above (salmon surveillance).

*C These previously exotic disease agents have become established in New Zealand, either during the 2019 year (if indicated in a time column), or previously (if indicated next to the disease agent name). They may remain the subject of exotic disease investigation for the purpose of describing an emerging disease, potential new animal host species, or as suspected new incursions.

*D An MPI biosecurity response was established for this unwanted organism.

*E This confirmed exotic organism was intercepted soon after entry to NZ. Transmission or establishment of organisms did not occur.

References

Marquetoux N (2019). Transmissible spongiform encephalopathies (TSE) surveillance programme. *Surveillance* 46(3), 33–35.

Mulqueen K (2019). Infectious bursal disease eradication programme, *Surveillance* 46(3), 42–44.

Phiri B, Rich C (2019). Honey bee exotic pest and disease surveillance report. *Surveillance* 46(3), 38–39.

Rawdon T (2019a). Quarterly report of investigations of suspected exotic diseases: January to March 2019. *Surveillance* 46(2), 15–20.

Rawdon T (2019b). Quarterly report of investigations of suspected exotic diseases: July to September 2019. *Surveillance* 46(4), 17–21.

Rawdon T (2020a). Quarterly report of investigations of suspected exotic diseases: October to December 2019. *Surveillance* 47(1), 19–26.

Rawdon T (2020b). Quarterly report of investigations of suspected exotic diseases: January to March 2020. *Surveillance* 47(2), 19–22.

Rawdon T, O'Connell J, Egan J, Boyd B, Leelawardana H (2019a). Quarterly report of investigations of suspected exotic diseases: April to June 2019. *Surveillance* 46 (3), 56–59.

Rawdon T, Stanislawek W, Soubies S, Eterradossi N, Buckle K, Jones B (2019b). Detection of infectious bursal disease virus serotype 2 (IBDV-2) in New Zealand poultry and waterfowl. *Surveillance* 46(1), 4–7.

Stanislawek W, Rawdon T, Tana T (2019). Avian influenza surveillance programme. *Surveillance* 46(3), 24–27.

Taylor M (2019a). Quarterly report of investigations of suspected exotic marine and freshwater diseases: January to March 2019. *Surveillance* 46(2), 21–23.

Taylor M (2019b). Quarterly report of investigations of suspected exotic marine and freshwater diseases: July to September 2019. *Surveillance* 46(4), 22–24.

Ward N (2020). Quarterly report of investigations of suspected exotic marine and freshwater diseases: October to December 2019. *Surveillance* 47(1), 27–29.

Williams R (2019). Quarterly report of investigations of suspected exotic marine and freshwater diseases: April to June 2019. *Surveillance* 46(3), 67–70.

Kelly Buckle
Incursion Investigator
Biosecurity Surveillance & Incursion Investigation (Animal Health)
Diagnostic & Surveillance Directorate
Biosecurity New Zealand
Ministry for Primary Industries
kelly.buckle@mpi.govt.nz

Jonathan Watts
Senior Adviser
Biosecurity Surveillance & Incursion Investigation (Animal Health)
Diagnostic and Surveillance Directorate
Biosecurity New Zealand
Ministry for Primary Industries
jonathan.watts@mpi.govt.nz

Giulia Raponi
Incursion Investigator
Biosecurity Surveillance & Incursion Investigation (Aquatic & Environment Health)
Diagnostic & Surveillance Directorate
Biosecurity New Zealand
Ministry for Primary Industries
Giulia.Raponi@mpi.govt.nz

Nicholas Ward
Incursion Investigator
Biosecurity Surveillance & Incursion Investigation (Aquatic & Environment Health)
Diagnostic & Surveillance Directorate
Biosecurity New Zealand
Ministry for Primary Industries
Nicholas.Ward@mpi.govt.nz

Diana Jaramillo Martinez
Senior Scientist
Bacteriology and Aquatic Animal Diseases
Animal Health Laboratory
Diagnostics & Surveillance Directorate
Biosecurity New Zealand
Ministry for Primary Industries
Diana.jaramillo@mpi.govt.nz