

# ANIMAL HEALTH SURVEILLANCE

The following tables are summaries for 2012 of the numbers of submissions and diagnoses of specific diseases made by MPI-approved veterinary diagnostic laboratories.

**Table 1** is a summary of the numbers of laboratory submissions from sick farmed animals, of cases of surveillance interest to MPI, from the major livestock and avian populations.

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

**TABLE 1: NUMBER OF CASES AND DIAGNOSES RECEIVED FROM VETERINARY DIAGNOSTIC LABORATORIES DURING 2012**

CATTLE		SHEEP		HORSES	
Total sick animal cases	13 586	Total sick animal cases	1 220	Total sick animal cases	4 188
Abnormalities of reproductive system	203	Abnormalities of reproductive system	161	Abortion	65
<i>Neospora caninum</i>	17	<i>Brucella ovis</i>	11	<i>S. zooepidemicus</i>	0
<i>C. fetus ssp. venerealis</i>	0	Abortion	216	Circulatory disease	212
Pestivirus infection	2	<i>Campylobacter fetus ssp. fetus</i>	13	Ill thrift/diarrhoea	832
Abortion	746	Other <i>Campylobacter</i> spp.	7	Gastrointestinal parasitism	21
<i>Neospora caninum</i>	203	<i>Toxoplasma gondii</i>	38	Nervous signs	138
Mycotic abortion	6	<i>Salmonella</i> Brandenburg	12	Respiratory disease	517
Pestivirus infection	18	Congenital defects	0	Streptococcal infection	65
<i>Leptospira</i> spp.	14	Ill thrift/diarrhoea	391	Sudden death	26
Congenital defects	1	Johne's disease	32		
Ill thrift/diarrhoea	7 061	Trace element deficiency	28	LAMBOIDS	
Pestivirus infection	257	Gastrointestinal parasitism	62	Total sick animal cases	252
Gastrointestinal parasitism	351	Nervous signs	71	Abortion	3
Johne's disease – suspicious and confirmed	1 153	<i>Listeria monocytogenes</i>	4	Ill thrift/diarrhoea	119
Trace element deficiency	278	Polioencephalomalacia	7	Gastrointestinal parasitism	14
<i>Yersinia</i> spp.	307	<i>Clostridium</i> spp	2	Nervous signs	11
Rotavirus	494	Respiratory disease	26	Respiratory disease	7
Nervous signs	341	Sudden death	277	Sudden death	16
<i>Listeria monocytogenes</i>	3	Gastrointestinal parasitism	24		
Hepatic encephalopathy	1			AVIAN SPECIES	
Metabolic disease	35	FARMED DEER		Total number of submissions	290
Malignant catarrhal fever	6	Total sick animal cases	156		
Polioencephalomalacia	8	Abortion	1	GOATS	
<i>Histophilus somnus</i>	0	Congenital defects	0	Total sick animal cases	288
Sudden death	821	Ill thrift/diarrhoea	94	Abortion	6
<i>Clostridium</i> spp.	5	Johne's disease	9	Ill thrift/diarrhoea	126
Respiratory disease	481	Trace element deficiency	10	Gastrointestinal parasitism	29
		<i>Yersinia</i> spp.	11	Respiratory disease	7
PIGS		Nervous signs	6	Nervous signs	22
Total sick animal cases	55	Sudden death	42	<i>Listeria monocytogenes</i>	1
Abortion	6	Gastrointestinal parasitism	6	Caprine arthritis encephalitis	1
Ill thrift/diarrhoea	15	Malignant catarrhal fever	1	Sudden death	27
Nervous signs	1	<i>Yersinia</i> spp.	11	<i>Clostridium perfringens</i> D (enterotoxaemia)	0
Sudden death	16			Gastrointestinal parasitism	2

**TABLE 2: SALMONELLA SEROTYPES ISOLATED FROM ANIMALS DURING 2012**

SEROTYPES	BOVINE	EQUINE	OVINE	CAPRINE	PORCINE	AVIAN
Unspecified	31		1			
Brandenburg	7		13			
Bovismorbificans	1	1				
Enteritidis	2				1	
Hindmarsh	1	1	28			
Infantis	3		1			
Potsdam	1					
Saintpaul	1					1
Senftenberg	1					
Typhimurium	91	4	4	1		2
<b>Total</b>	<b>139</b>	<b>6</b>	<b>47</b>	<b>1</b>	<b>1</b>	<b>3</b>

**TABLE 3: SALMON SURVEILLANCE DURING 2012**

Number of salmon farms visited	16
Number of farms with significant mortalities	0
Number of farms where significant infectious disease was found	0

LABORATORY EXAMINATIONS	NO OF FARMS	NO OF SAMPLES	NO OF POSITIVES
Viral cultures	16	1 620	0
<i>Myxobolus cerebralis</i>	9	540	0
<i>Yersinia ruckeri</i>	16	1 620	1*
<i>Aeromonas salmonicida</i>	16	1 620	0
<i>Renibacterium salmoninarum</i>	6	360	0

\* O1b endemic strain detected for *Yersinia ruckeri*.

**TABLE 4: CUMULATIVE LIST OF SIGNIFICANT<sup>(A)</sup> INVESTIGATIONS OF SUSPECTED EXOTIC DISEASES 2007–2012**

DISEASE AGENTS INVESTIGATED AND CONFIRMED AS NEGATIVE	2007	2008	2009	2010	2011	2012	Total
Abalone virus ganglioneuritis		1		1			2
African horse sickness	1						1
Africanised honeybee ( <i>Apis mellifera scutella</i> )/ Cape bee ( <i>Apis mellifera capensis</i> )	1		2	1	1		5
Akabane virus		1	1		2	1	5
Anaplasmosis						5	5
Anthrax	1	1	3	4	1	1	11
Aujeszky's disease	1		3	1			5
Avian infectious bronchitis virus (exotic strains)	1						1
Avian influenza: highly pathogenic notifiable avian influenza and Newcastle disease <sup>(1)</sup>		9	3	10	7	8	51
Avian influenza: low-pathogenicity notifiable avian influenza <sup>(2)</sup>		1				6	7
Avian malaria *B	1	1	1	1			4
Avian pneumovirus	2						2
Avian polyomavirus *B			2			1	3
<i>Avibacterium paragallinarum</i> (infectious coryza)					*B 1		1
<i>Babesia canis</i> , <i>B. gibsoni</i> , <i>B. felis</i>		1	3	5		5	14
Bluetongue					4	6	10
<i>Brucella abortus</i>		1		2	2	3	8
<i>Brucella canis</i>	4	11	9	4	6	8	42
<i>Brucella melitensis</i>						2	2
Bovine herpes virus type 5					1	1	2
Bovine theileriosis/babesiosis (exotic strains) <sup>(3)</sup>	1	1	1		2	3	8
Bovine viral diarrhoea type II	2		1	1	3	2	9
Canine distemper virus			1	1		1	3
Canine influenza <sup>(4)</sup>	1	1		1	1		4
Canine transmissible venereal tumour					2		2
Classical swine fever <sup>(5)</sup>	1		3	1	1		6
<i>Chlamydomyxa abortus</i> (enzootic abortion)			4		1	1	6
Colony collapse disorder		1		4	2		7
Contagious agalactia	1		1		2		4
Contagious bovine pleuropneumonia			1	1		2	4
<i>Ehrlichia canis</i>	3	6	3	7	3	1	23
<i>Equine babesiosis/theileriosis/ehrlichiosis</i>	8		6	8	5	2	29
Equine herpesvirus type 1 (abortion strains, neuropathogenic strains)	1			2		3	6
Equine infectious anaemia/Equine viral arteritis	8				7		15
Equine influenza <sup>(6)</sup>	1	2			2	1	6
European foulbrood (bees)	3	3	3	4	4	4	21
Exotic ticks		2	3		6		11
Fish mortality (wild or managed, marine) – exclusion of exotic and novel infectious disease agents			3	6	4	6	19
Glanders ( <i>Burkholderia pseudomallei</i> )				1			1
Haemogregarine parasite (reptiles)		4	1				5
Haemorrhagic septicaemia ( <i>Pasteurella multocida</i> – toxogenic strains) <sup>(7)</sup>			7	4	9	7	27
Heartworm ( <i>Dirofilaria immitis</i> )	1	2	2		3	2	10
Hydatids ( <i>Echinococcus</i> spp.) <sup>(8)</sup>	1	1	1	3	1	1	8
Infectious bovine rhinotracheitis (exotic strains)	1	1			1	4	7
Infectious bursal disease <sup>(9)</sup>	3	1	1	4	3	2	14
Infectious haematopoietic necrosis (fish)		1				1	2
Iridovirus (fish)						3	3
Israeli acute paralysis virus (bees)			2	2	2	3	9
Leishmaniasis	1	2		1	1	2	7
<i>Leptospira</i> spp. (exotic strains)		4	2	1	1	2	10
Murray valley encephalitis					1		1
<i>Mycoplasma bovis</i>	2		1	3	4	3	13
<i>Mycoplasma mycoides mycoides</i> (Large Colony)	2	2			1	2	7

Table 4 (continued on next page)

**Table 4 (continued)**

DISEASE AGENTS INVESTIGATED AND CONFIRMED AS NEGATIVE	2007	2008	2009	2010	2011	2012	Total
Myxomatosis			1		1	1	3
<i>Nematodirus battus</i>			1	1			2
<i>Nosema ceranae</i> (bees)			3	*B 0	1	1	5
<i>Ornithobacterium rhinotracheale</i>			1	2		2	5
<i>Perkinsus marinus/olseni</i> (molluscs)			3		2	1	6
Pilchard herpesvirus		1	1	1			3
Porcine reproductive and respiratory syndrome	1	1	3	2	1		8
Poxviruses (Sheep, goats, deer, camelids)						3	3
Psittacine herpesvirus (incl. Pacheco's disease)	1	1					2
Pulmonary adenomatosis virus						2	2
Q fever ( <i>Coxiella burnetii</i> ) <sup>(10)</sup>			4			3	7
Rabies			4	1		1	6
Red sea bream iridoviral disease	2						2
Rinderpest	1	1			1	2	5
Ross river virus					1	1	2
<i>Salmonella</i> spp. (exotic strains)		5	5	2	2	4	18
Small hive beetle ( <i>Aethina tumida</i> ) (bees)	1	3	1	2	5	1	13
Slow paralysis virus, Acute bee paralysis virus (bees)			2	2			4
Swine influenza		1	1				2
Tracheal mite ( <i>Acarapis woodi</i> ) (bees)		1	6	2	3	2	14
Transmissible spongiform encephalopathy agents (scrapie; BSE; chronic wasting disease; FSE) *C						3	3
<i>Trichinella spiralis</i>	2			1			3
<i>Tropilaelaps clareae</i> (bees)	5	5	5	2	3	3	23
<i>Trypanosoma vivax</i>		1					1
<i>Varroa destructor</i> (bees, South Island)		*B 1					1
Viral encephalopathy and retinopathy (fish)		1				1	2
Viral haemorrhagic septicaemia (fish)	2	1				1	4
Viral vesicular disease <sup>(11, 12)</sup>	8	5	2	6	12	7	40
West Nile virus		1	1	1	2	1	6
<b>Total</b>	<b>90</b>	<b>100</b>	<b>129</b>	<b>123</b>	<b>131</b>	<b>159</b>	<b>732</b>

DISEASE AGENTS INVESTIGATED AND CONFIRMED AS POSITIVE	2007	2008	2009	2010	2011	2012	Total
<i>Avibacterium gallinarum</i> <sup>(13)</sup>					1		1
<i>Avibacterium paragallinarum</i> (infectious coryza) <sup>(13)</sup>					2		2
Avipox virus <sup>(14, 15)</sup>	1						1
<i>Babesia gibsoni</i> <sup>*D</sup>						1	1
Bovine papillomatous digital dermatitis						1	1
Canine transmissible venereal tumour <sup>(16) *D</sup>			1				1
Deformed wing virus <sup>(17)</sup>	3						3
Equine papillomavirus (type 2) <sup>(18)</sup>		1					1
Exotic ticks <sup>(19) *D</sup>	4	1	5	3	4	4	21
<i>Lamanema chavezii</i> (alpaca) <sup>(20)</sup>		1					1
<i>Moraxella Branhamella catarrhalis</i> <sup>(21)</sup>	1						1
<i>Leptospira grippityphosa</i> serovar <i>Valbuzzi</i> <sup>(22)</sup>			1				1
<i>Mycobacterium</i> sp. strain CLGS (canine leproid granuloma) <sup>(23)</sup>				1			1
<i>Mycoplasma bovigenitalium</i> <sup>(24)</sup>	1						1
<i>Mycoplasma spumans</i> <sup>(25)</sup>			1				1
<i>Myxobolus aldrichetti</i> (yellow-eyed mullet) <sup>(26)</sup>		1					1
<i>Nosema ceranae</i> (bees)				1			1
<i>Ostreid herpes virus type 1</i> <sup>(27)</sup>				1			1
<i>Paragonimus</i> spp. (liver fluke in dogs) <sup>(28)</sup>				1			1
Rabbit oral papillomavirus (ROPV) <sup>(29)</sup>	1						1
<i>Salmonella</i> spp. (exotic strains) <sup>(30)</sup>		1					1
<i>Spirometra erinacei</i> <sup>(31)</sup>				1			1
<i>Streptococcus gallolyticus</i> <sup>(32)</sup>		1					1
<i>Theileria orientalis</i> Ikeda strain <sup>(33)</sup>						*E 1	1
<i>Varroa destructor</i> (bees, South Island) <sup>(34)</sup>		*E 1					1
<b>Total</b>	<b>11</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>7</b>	<b>7</b>	<b>48</b>

\*B These previously exotic disease agents became established in New Zealand, either during the year if indicated in a time column, or before this period if indicated next to the disease agent name. They may remain the subject of exotic disease investigations for the purposes of describing an emerging disease, because they were found in new animal host species or as suspected new incursions.

\*C Investigation of transmissible spongiform encephalopathy (TSE) agents reported here is in addition to the testing occurring in the TSE surveillance programme. See Watts J and Kittelberger R (1993), *Surveillance* 39(3), 27–28, for a review of the TSE surveillance programme.

**NOTES TO TABLE 4**

\*A The investigations listed in this table are those that have resulted in exclusion of an OIE-notifiable disease, or other diseases investigated more than once in the time period. Some investigations resulted in multiple exclusions using specific laboratory methods and these are recorded against each disease. Investigation reports are published in *Surveillance* in the “Quarterly report of investigations of suspected exotic disease”

\*D These may involve interception at the border, or soon after entry. Establishment of organisms has not occurred.

\*E An outbreak investigation consisting of multiple individual investigations was conducted.

## REFERENCES

- (1) See Rawdon TG *et al.* (2007), *Surveillance* 34(3), 10–17 for a report on MPI investigations of avian mortality including risk profiling, and analysis of spatial and temporal trends.
- (2) See Tana T *et al.* (2007), *Surveillance* 34(2), 11–13 ; Frazer J *et al.* (2008), *Surveillance* 35(2), 14–16 ; Frazer J *et al.*, (2009) *Surveillance* 36(2), 17–18 ; Frazer J *et al.*, (2010) *Surveillance* 37(2) and Stanislawek W *et al.* (2011), *Surveillance* 38(3) for reports on New Zealand's avian influenza surveillance programme. Also see Zheng T *et al.* (2010), *New Zealand Veterinary Journal* 58(2), 74–80 for a cross-sectional survey of influenza A infection and management practices in small rural backyard poultry flocks in New Zealand, and Rawdon TG *et al.* (2010), *New Zealand Veterinary Journal*, 58(6), 292–298 for a paper describing a cross-sectional survey for avian influenza subtypes H5 and H7 in chickens and turkeys farmed commercially in New Zealand.
- (3) McFadden AMJ, Rawdon TG, Meyer J, Makin J, Morley CM, Clough RR, Tham K, Mullner P, Geysen D (2011). An outbreak of haemolytic anaemia associated with infection of *Theileria orientalis* in naive cattle. *New Zealand Veterinary Journal* 59(2), 79–85.
- (4) See Potter KA *et al.* (2009) *New Zealand Veterinary Journal* 57(1), 70 for an abstract describing the investigation of an outbreak of severe tracheobronchitis in racing greyhounds in New Zealand.
- (5) See Bingham PC, McFadden AMJ, Wang J, Kittelberger R, Clough RR, Tham KM (2010). Investigation of a pig herd with animals seropositive for classical swine fever and where porcine circovirus-associated disease had been diagnosed. *New Zealand Veterinary Journal*, 58(5), 253–259.
- (6) See McFadden AMJ *et al.* (2007), *Surveillance* 34(4), 4–8 for a report on MPI's response to manage the risk of equine influenza in horses imported from Australia during the 2007 Australian epidemic.
- (7) McFadden AMJ, Christensen H, Fairley RA, Hill FI, Gill JM, Keeling SE, Spence RP (2011). Outbreaks of pleuritis and peritonitis in calves associated with *Pasteurella multocida* capsular type B strain. *New Zealand Veterinary Journal*, 59(1), 40–45.
- (8) See Bingham P, Kittelberger R and Clough R (2006), *Surveillance* 33(1), 7–10 for a report detailing the investigation of a suspected case of human echinococcosis involving a Chatham Island resident.
- (9) See Bingham P, Christensen N and Stanislawek WL (2006), *Surveillance* 33(1), 3–6 for a report detailing the investigation of infectious bursal disease seropositivity identified on two commercial free-range layer properties.
- (10) See Stone M and McDonald W (2005), *Surveillance* 32(4), 3–6 for a report detailing an investigation into the *Coxiella burnetti* status of a Northland farm.
- (11) See McFadden AMJ *et al.* (2007), *New Zealand Veterinary Journal* 55(4), 198–202 for an investigation into non-systemic erosive stomatitis of unknown aetiology in a dairy cow herd in New Zealand.
- (12) See McFadden A (2011), *Surveillance* 38(1), 8–20 for methods and summaries of four clinical and epidemiological investigations into vesicular disease.
- (13) See Bingham P (2011), *Surveillance* 38(4), 26–35 for a summary investigation report of the findings of *Avibacterium gallinarum* and *Avibacterium paragallinarum*.
- (14) See Bingham P (2006), *Surveillance* 33(3), 11–14 for a summary investigation report of the finding of an avipox virus in a paradise duck.
- (15) See Bingham P (2008), *Surveillance* 35(1), 16–21 for a summary investigation report of the finding of an avipox virus in a feral turkey.
- (16) See Bingham P (2010), *Surveillance* 37(2), 43–49 for a summary investigation report of the finding of canine transmissible venereal tumour in an imported dog.
- (17) See Bingham P (2007), *Surveillance* 34(3), 27–31 for a summary investigation report of the finding of deformed wing virus (DWW) in three beekeeping enterprises.
- (18) See Bingham P (2009), *Surveillance* 36(2), 36 for a summary investigation report describing the first identification of equine papillomavirus (type 2) in New Zealand.
- (19) See Heath ACG, *Surveillance* 28(4), 13–15, 2001, for a full review of exotic tick interceptions between 1980 and 2000. See also Loth L, *Surveillance* 32(3), 7–9, 2005, for a further review of exotic tick interceptions. Tick interceptions are recorded in the 'Quarterly report of investigations of suspected exotic disease' of the *Surveillance* issue for the relevant period.
- (20) See McKenna PB (2006), *Surveillance* 33(4), 6–7 for the register report of new host-parasite records; Bingham P (2006), *Surveillance* 33(1), 17–23 for a summary investigation report of the finding of *Lamanema chavezii* in alpaca in New Zealand; and McKenna PB *et al.*, (2009), *New Zealand Veterinary Journal* 57(6), 395–396 for a report describing the confirmation of the occurrence of the nematode parasite *Lamanema chavezii* Becklund, 1963 in South American camelids in New Zealand.
- (21) See Bingham P (2007), *Surveillance* 34(2), 32–35 for a summary investigation report of the finding of *Moraxella (Branhamella) catarrhalis* in a dairy herd.
- (22) See Bingham P (2011), *Surveillance* 38(2), 34 for a summary investigation report describing the first identification of *Leptospira grippityphosa* serovar Valbuzzi in New Zealand.
- (23) See Smits B, Willis R and Fyfe JA (2011), *New Zealand Veterinary Journal* 59(3), 153 for a report confirming canine leproid granuloma syndrome in New Zealand.
- (24) See Bingham P (2008), *Surveillance* 35(1), 16–21 for a summary investigation report of the finding of *Mycoplasma bovis* in Perendale rams. Also see report by Crosbie D, Rawdon T and Fitzmaurice J (2008), Proceedings of the Society of Sheep and Beef Cattle Veterinarians of the *New Zealand Veterinary Association*, 65–71, 2008.

- (25) See Bingham P (2010), *Surveillance* 37(1), 22–28 for a summary investigation report of the finding of *Mycoplasma spumans* in a dog.
- (26) See Bingham P (2009), *Surveillance* 36(2), 38 for a summary investigation report describing the first identification of *Myxobolus aldrichetti* in yellow-eyed mullet in New Zealand.
- (27) See Bingham P et al. (2013), *Surveillance* 40(2), 20–24 for a report describing the investigation into the first diagnosis of *ostreid herpesvirus type 1* in Pacific oysters.
- (28) See van Andel M (2011), *Surveillance* 38(2), 710 for a report describing the identification of the liver fluke parasite *Paragonimus spp.* in an imported dog in New Zealand.
- (29) See Bingham P (2007), *Surveillance* 34(2), 32–35 for a summary investigation report of the finding of rabbit oral papillomavirus (ROPV) in a pet Flemish Giant rabbit.
- (30) Investigations into cases of suspect exotic salmonella in animals are recorded in the 'Quarterly report of investigations of suspected exotic disease' in the *Surveillance* issue for the relevant period. See Bingham P (2006), *Surveillance* 33(1), 17–23 for a summary investigation report of the finding of *Salmonella enterica* ssp. *enterica*, serovar Mount Pleasant, in a green iguana. See Gartrell BD et al. (2007), Failure to detect *Salmonella* species in a population of wild tuatara (*Sphenodon punctatus*), *New Zealand Veterinary Journal* 55(3), 134–136.
- (31) See van Andel M, Walker K (2010), *Surveillance* 37(4), 11–13 for a report describing the finding of *Spirometra erinacei* (zipper worm) in two imported dogs.
- (32) See Bingham P (2009), *Surveillance* 36(2), 37 for a summary investigation report describing the first identification of *Streptococcus gallolyticus* in New Zealand. Also see report by Christensen N, Hill F, Bruce I, King C (2009), *Surveillance* 36(4), 13.
- (33) See McFadden AMJ et al. (2013), Epidemiology of *Theileria orientalis* in cattle in New Zealand. *Dairy Cattle Branch of NZVA Conference 2013*, for a summary of the outbreak investigations of *Theileria orientalis* Ikeda strain.
- (34) See Bingham P (2008), *Surveillance* 35(4), 17–22 for a summary investigation and response report into the finding of *Varroa destructor* in Canterbury.

Cara Brosnahan  
Scientist Bacteriology and Aquatic diseases  
Ministry for Primary Industries  
[Cara.Brosnahan@mpi.govt.nz](mailto:Cara.Brosnahan@mpi.govt.nz)

Kylee Walker  
Incursion Investigator  
Surveillance and Incursion Investigation (Animals and Marine)  
Ministry for Primary Industries  
[Kylee.Walker@mpi.govt.nz](mailto:Kylee.Walker@mpi.govt.nz)

Jonathan Watts  
Senior Adviser  
Surveillance and Incursion Investigation (Animals and Marine)  
Ministry for Primary Industries  
[Jonathan.Watts@mpi.govt.nz](mailto:Jonathan.Watts@mpi.govt.nz)