

National Centre for Disease Investigation and deer diseases

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MAF's National Centre for Disease Investigation (NCDI) was established mid 1998. Its animal disease functions include: investigation of exotic, new and emerging diseases; contribution to the design and management of surveillance programmes, reporting of disease status information, laboratory diagnosis of diseases of national interest

Its main sources of animal disease information include notifications about possible exotic, new or emerging diseases via MAF's animal disease hotline, technical experts, veterinary regional laboratories; scientific literature

Suspected exotic diseases are investigated to a point of rule-out and alternative diagnosis, and this has to occur within specified timelines. If an exotic disease cannot be excluded then an incursion response would usually be declared. New and emerging disease notifications are evaluated by MAF usually in conjunction with technical experts and Industry leaders. Appropriate actions may include experimental study, disease surveys or drafting of disease control recommendations.

National and international disease status reporting occurs in official international reports, MAF's Surveillance magazine, scientific journals, Industry reports and internal reports.

Since the NCDI became operational in 1998, there have been approximately 200 animal disease investigations. Only 11 of these have involved deer but from these have resulted three significant field and experimental investigations. These are *Brucella ovis* orchitis, wasting syndrome and an as yet unidentified but possibly pathogenic blood protozoal parasite in deer.

Background

MAF's Biosecurity system exists in order to preserve New Zealand's privileged disease status and our consequent international trade advantages. It has five components.

- pre-border risk management,
- border security,
- post border surveillance,
- Pest Management Strategies (TB, American Foul Brood, *Varroa*) and
- disease incursion responses

MAF's National Centre for Disease Investigation was established mid 1998 in order to investigate and help manage exotic, new and emerging diseases, help with disease surveys, compile international disease status reports and actually diagnose diseases of interest.

Structure and function of the National Centre for Disease Investigation

There are three components to the NCDI. Administration, the Exotic Disease Response Centre (EDRC) and the New Zealand Animal Health Reference Laboratory (NZAHRL).

Exotic Disease Response Centre

The EDRC has three core functions

to investigate and manage exotic, new or emerging diseases within policy guidelines provided by MAF Biosecurity Authority;

to help in the design, implementation, analysis and reporting of 'active surveillance' disease surveys,

to compile international disease status reports

Exotic, new or emerging diseases

Suspected exotic deer disease are investigated once notified via MAF's emergency hotline (0800 809 966), which operates 24hr per day 7 days per week. Sources of information include veterinary practitioners, farmers, technical specialists, Industry, veterinary laboratories, DoC, MFish, scientific literature and internet discussion groups. Firstly, an Initial Investigating Veterinarian (IIV) would be despatched within 30 minutes of notification in order to investigate and report on the incident. IIVs are trained in the diagnosis and initial control of exotic diseases. Most of them are AgriQuality veterinarians but for coverage, some are contracted practitioners. If an IIV diagnosis were 'not negative', an EDRC Exotic Disease Investigator (EDI) would be despatched. EDIs have more practical exotic disease experience and they have Biosecurity Act regulatory powers and instruments needed to implement local control procedures should a disease response be declared. Contracted specialists in deer diseases are available to EDIs for diagnostic advice.

'New' diseases are not usually new – they are usually newly found. An example would be *Brucella ovis* orchitis. MAF has no automatic commitment to investigate or control these diseases. It assesses their likely impact and discusses options with interested parties.

The same is true of emerging diseases, of which *Salmonella brandenburg* is an example. The existence of the latter in the South Island has been known for several years but a worsening situation and detection in the North Island has resulted in the convening of a widely representative working party.

Surveillance surveys

Arguably, our best tool for detection of exotic, new and emerging diseases is passive surveillance – whereby people inform us of the existence of what turns out to be a disease of interest. Nevertheless, disease surveys are useful and in some cases prescribed for formal declaration of disease status. Scientifically credible disease surveys are always expensive so their design must be efficient. This is the role of veterinary pathologists within the EDRC. Design is one thing but actually carrying out a national survey is another. Contracted parties, which may include veterinary practitioners, usually conduct field work under supervision of NCDI staff. Analysis is done by EDRC epidemiologists. Reporting is done with input from Industry and wider MAF.

Disease reporting

New Zealand reports its animal disease status to the OIE and other international organisations as a prerequisite to international trade. The animal and aquatic reports are in template form and are filed quarterly (Appendix 1). There is also a more substantial annual report. Significant new disease conditions are notified immediately.

New Zealand Animal Health Reference Laboratory

The New Zealand Animal Health Reference Laboratory (NZAHRL) offers a complete range of tests for diseases of national interest. These are done either locally or by international reference laboratories. Its expertise includes virology, immunology, bacteriology and anatomical pathology.

Testing is done for export animals if this is required by importing authorities, for the veterinary industry on a cost recovery basis if there is no commercial supplier and for EDRC investigations.

Significant diseases notified

There have been about 200 animal disease investigations, usually of suspected exotic diseases, since 1999. Only 11 of these have involved deer but three of these have resulted in significant field and experimental activity with financial input from MAF (Table 1). Results have been reported in the scientific literature and NZVA SIB Proceedings.

Table 1

Deer disease investigated	Number of incidents investigated
Blood parasites (protozoal, unidentified)*	3
Hydatids	1
<i>Brucella ovis</i> orchitis*	3
Enteritis	1
TSE	1
Wasting deer syndrome	1
<i>Salmonella typhimurium</i> 160*	1

*significant field and experimental investigation

Exotic disease response

An exotic disease response is declared by MAF once there is evidence that a disease incursion may have occurred. Parts of the Biosecurity Act then apply to empower MAF Inspectors and Authorised Persons for disease control activities

The essential elements in an exotic disease response are simple. movement control to prevent spread, tracing to locate infected places, destruction of infected animals, cleaning and disinfection of contaminated places in order to remove the agent and post eradication surveillance to prove disease freedom as a prerequisite to resumption of international trade

Implementation, however, is not simple because of numerous logistical factors, not to mention media and political dimensions. Success requires

An adequate response structure, which means trained people and an efficient organisation

Adequate response tools, which means buildings, data capture and decision support systems

Technical plans that provide guidelines for effective action

The EDRC response structure follows the Coordinated Incident Management System (CIMS), which is the same used by other emergency response organisation such as Police, Fire Department and Civil Defence (Appendix 2). A National Control Centre (NCC, essentially MAF Biosecurity Authority) provides policy direction (strategy) whilst the EDRC manages the response within policy guidelines (tactics) A Field Outbreak Response Team (FORT) implements field activities.

In the CIMS model, an Incident Controller is responsible for effectively progressing the response. There are three main managers, Logistics, Operations and Intelligence 'Logistics' facilitate the response. 'Operations' deals with tracing, movement control, prioritisation of inspections, mapping and Industry liaison 'Intelligence' provides technical information – anything from information about the agent to modelling the disease outbreak and possibilities for control e.g. pre-emptive slaughter or vaccination.

Appendix 1- Quarterly Epidemiology Report (example)

Country New Zealand

Period January to March 2001

List A Diseases	Number of cases or see below*			Effective surveillance system**	Comment Numbers
	Month				
	January	February	March		
1 Foot and mouth disease (A,O,C,Asia-1)	0000	0000	0000	yes	
2 Rinderpest	0000	0000	0000	yes	
3 Peste des petits ruminants	0000	0000	0000	yes	
4 Contagious bovine pleuropneumonia	0000	0000	0000	yes	
5 Bluetongue	0000	0000	0000	yes	
6 Sheep pox and goat pox	0000	0000	0000	yes	
7 Classical Swine Fever	0000	0000	0000	yes	
8 Highly pathogenic avian influenza	0000	0000	0000	yes	
9 Newcastle disease	+?	+?	+?	yes	1
10 Other List A disease	0000	0000	0000	yes	
List B Diseases					
1 Aujeszky's disease	(1995)	(1995)	(1995)	yes	
2 Leptospirosis	+	+	+	no	
3 Rabies	0000	0000	0000	no	
4 Haemorrhagic septicaemia	0000	0000	0000	no	
5 Bovine tuberculosis	+	+	+	yes	
6 Bovine brucellosis	(1989)	(1989)	(1989)	no	
7 Enzootic bovine leukosis	+	+	+	no	
8 IBR/IPV	+	+	+	no	
9 Caprine arthritis/encephalitis	+	+	+	no	
10 Contagious caprine pleuropneumonia	0000	0000	0000	no	
11 Ovine pulmonary adenomatosis	0000	0000	0000	no	
12 Maedi-visna	0000	0000	0000	no	
13 Scrapie	(1954)	(1954)	(1954)	yes	
14 Contagious equine metritis	0000	0000	0000	no	
15 Japanese encephalitis	0000	0000	0000	no	
16 Equine infectious anaemia	(1999)	(1999)	(1999)	no	
17 Equine influenza (virus type A)	0000	0000	0000	no	
18 Equine rhinopneumonitis	+	+	+	no	
19 Glanders	0000	0000	0000	no	
20 Equine viral arteritis	+?	+?	+?	yes	2
21 Transmissible gastroenteritis	0000	0000	0000	no	
22 Infectious bursal disease (Gumboro disease)	+?	+?	+?	no	3
23 Marek's disease	+	+	+	no	
24 Viral haemorrhagic disease of rabbits	+	+	+	no	
25 Fish diseases of importance	+()	+()	+()	yes	
26 Other diseases of importance	0	0	0	no	

- If the number of cases is not known, please use the following signs
- Name
- + Diseases reported or known to be present
- +? Serological evidence and/or isolation of causative agent
- MAF Biosecurity Authority
- but no clinical diseases
- ? Suspected by reporting officer but presence not confirmed
- +() Occurrence limited to certain zones
- *** No information available
- 0000 Never reported
- Not reported (but disease is known to occur)
- (year) Year of last occurrence
- ** Existence of effective surveillance system
- Yes System exists, No System does not exist

Approved by

Barry O'Neil

Position Group Director

Signature _____

Date 5 June 2001

Appendix 2

INCIDENT RESPONSE MANAGEMENT STRUCTURE – LIVESTOCK EDPR

