

TRANSMISSIBLE SPONGIFORM ENCEPHALOPATHIES (TSE) SURVEILLANCE PROGRAMME

New Zealand is free from bovine spongiform encephalopathy (BSE), classical scrapie of sheep and goats, and chronic wasting disease (CWD) of deer. The TSE risk management measures implemented in New Zealand have been well described in previous annual reports (McIntyre, 2009), and have not changed materially in the past year. This surveillance programme is ongoing and will continue to be refined in accordance with new knowledge, tests, standards and market access needs.

Table 1 summarises the tests performed for TSEs in 2012. Routine surveillance consists of an incentivised passive surveillance programme, under which veterinary practitioners submit brain material from animals showing clinical signs of neurological disease. In addition, samples from all imported cattle, sheep, goats and deer are tested for TSE by Bio-Rad ELISA on brain tissue after they die or are culled. All tests conducted were confirmed as negative. **Figure 1** shows the samples submitted by calendar month. Although samples are submitted year round, there is a clear peak from July to September.

During 2010, changes were made to the choice and use of rapid TSE tests. The Prionics western blot for BSE and the Prionics western blot for small ruminants were replaced with the Bio-Rad TeSeE ELISA ruminants (Bio-Rad ELISA) as the routine screening test used at the IDC Wallaceville. The Bio-Rad western blot test was introduced for confirmatory testing but was discontinued in 2011 due to costs and lack of need to use this test. Routine testing of brains by both histopathology and the rapid test was performed up to 2011; subsequently, rapid tests are only performed when histopathology either cannot exclude a TSE diagnosis, or has not been done.

The BSE surveillance programme is a mature surveillance programme that has been accumulating BSE points since 2005. New Zealand has consistently maintained well in excess of the necessary 150 000 points required for type B surveillance as specified by chapter 11.5 of the OIE Terrestrial Animal Health Code. BSE testing in 2012 generated 35 242 BSE points (**Table 1**).

In October 2009, MPI announced the finding of the first confirmed case of atypical scrapie/Nor98 in a New Zealand-born sheep (Kittelberger & McIntyre, 2009; Kittelberger *et al.*, 2010). This finding was not entirely unexpected (McIntyre, 2007), and a second case was found two years later (Anonymous, 2012). MPI strongly supports the view of the World Organisation for Animal Health (OIE) that atypical scrapie is “clinically, pathologically, biochemically and epidemiologically unrelated to ‘classical’ scrapie, may not be contagious and may, in fact, be a spontaneous degenerative condition of older sheep” (OIE, 2009). The very low perceived likelihood of the prion causing classical scrapie being present, in combination with the labour-intensive nature of testing of the brains, led to research being initiated in 2010 to evaluate the validity of testing medial retropharyngeal lymph nodes (MRLNs) from sheep and goats (McIntyre, 2011) as an alternative diagnostic procedure (Kittelberger *et al.*, 2013, submitted).

The New Zealand CWD surveillance programme has been running for many years. Because the number of veterinary practitioner submissions of deer brains from animals meeting the submission criteria has declined sharply since 2008, a literature review of rapid tests for the detection of CWD was conducted to identify opportunities to improve efficiency and effectiveness during large-scale surveillance activities. This concluded

TABLE 1: NUMBERS OF ANIMALS TESTED FOR TSEs IN 2012

SPECIES	TISSUE	TEST TYPE	SOURCE OF TEST TISSUE		
			ROUTINE SURVEILLANCE	IMPORTED ANIMAL	NUMBER OF POSITIVE TESTS
Cattle	Brain	Histopathology	89*	–	0
		Bio-Rad ELISA	8	5	0
Deer	Brain	Histopathology	12	–	0
		Bio-Rad ELISA	0	0	0
	MRLN†	Bio-Rad ELISA	298	–	0
Sheep	Brain	Histopathology	9	–	0
		Bio-Rad ELISA	0	9	0
	MRLN	Bio-Rad ELISA	0	–	0
Goat	Brain	Histopathology	0	–	0
		Bio-Rad ELISA	0	1	0
	MRLN†	Bio-Rad ELISA	0	–	0

* This level of testing earned 35,242.1 surveillance points for BSE in accordance with Chapter 11.6 of the 2010 OIE Terrestrial Animal Health Code. Only cases where the veterinary practitioner submits a TSE submission form are reported here and counted for BSE points. Many other cases screened test negative but are not counted.

† MRLN = medial retropharyngeal lymph node.

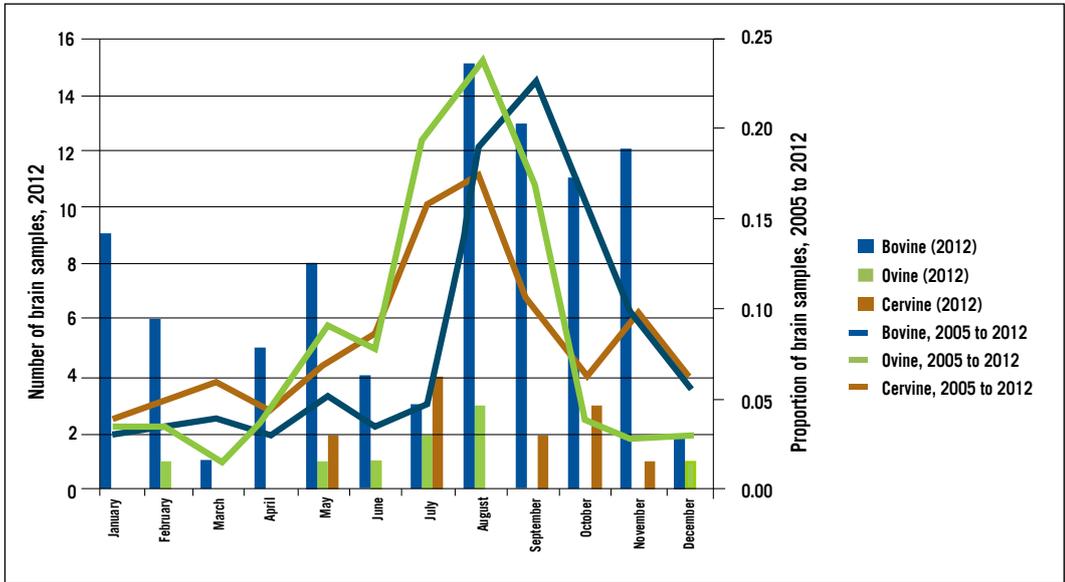


Figure 1: Numbers of brain samples tested for BSE, scrapie and CWD under the incentivised scheme during 2012 (left axis), and trend by calendar month of samples submitted from 2005 to 2012 (right axis).

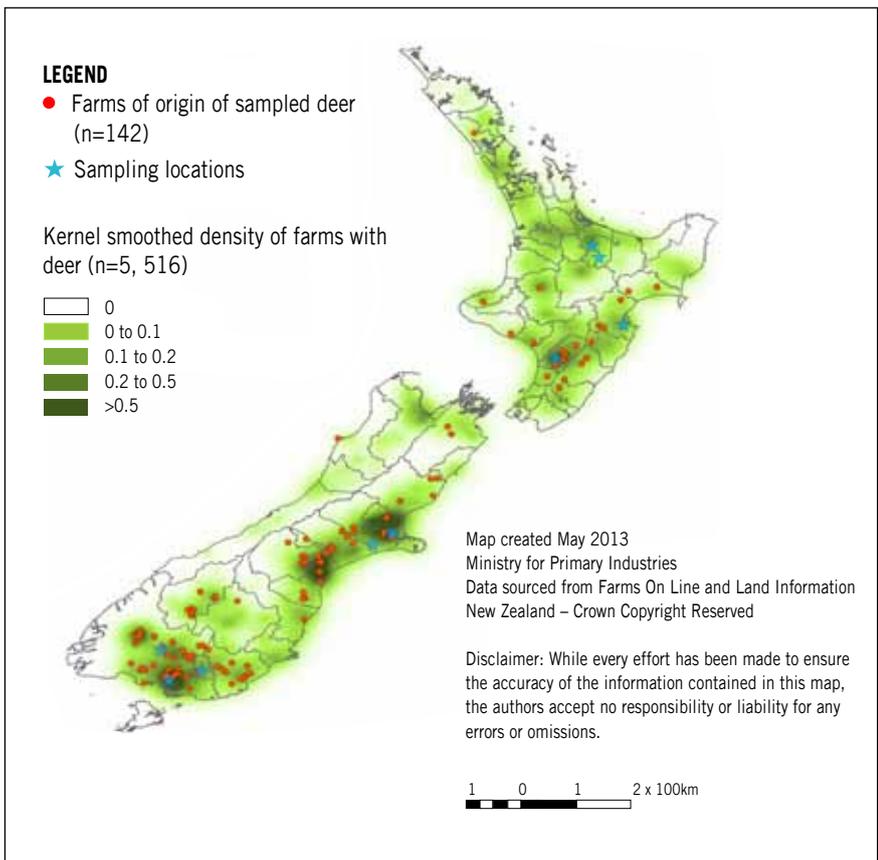


Figure 2. Density map of deer farms, showing point location of farms that supplied deer tested in the 2012 lymph node surveillance project, and the sampling locations.

that the Bio-Rad ELISA had the potential to be an excellent and effective diagnostic tool for evidence of CWD infection. To evaluate whether lymphoid tissue could be used with confidence for surveillance, a research project was initiated in 2009. Paired brain and MRLNs taken from adult (> 2 years) deer were tested using the Bio-Rad ELISA test at IDC Wallaceville. No difficulties which would preclude the use of lymph nodes were encountered. For the next three years (2010–2012), as part of active surveillance, about 300 samples per year of MRLNs from culled normal adult deer sent to slaughter at commercial meat processing plants were sampled and tested. These numbers were based on a sample size calculation designed to detect disease at a low prevalence in the population. In 2012, 298 MRLNs were collected, identified as to farm of origin (n=146) and tested. The farms demonstrated reasonable geographic spread (**Figure 2**). To date, all samples have tested negative.

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