NSW GOVERNMENT Department of Primary Industries

April–June 2012 • Number 2012/2

WWW.DPI.NSW.GOV.AU

NEW SOUTH WALES

ANIMAL HEALTH SURVEILLANCE

Information contributed by staff of the Livestock Health and Pest Authorities and the Department of Primary Industries

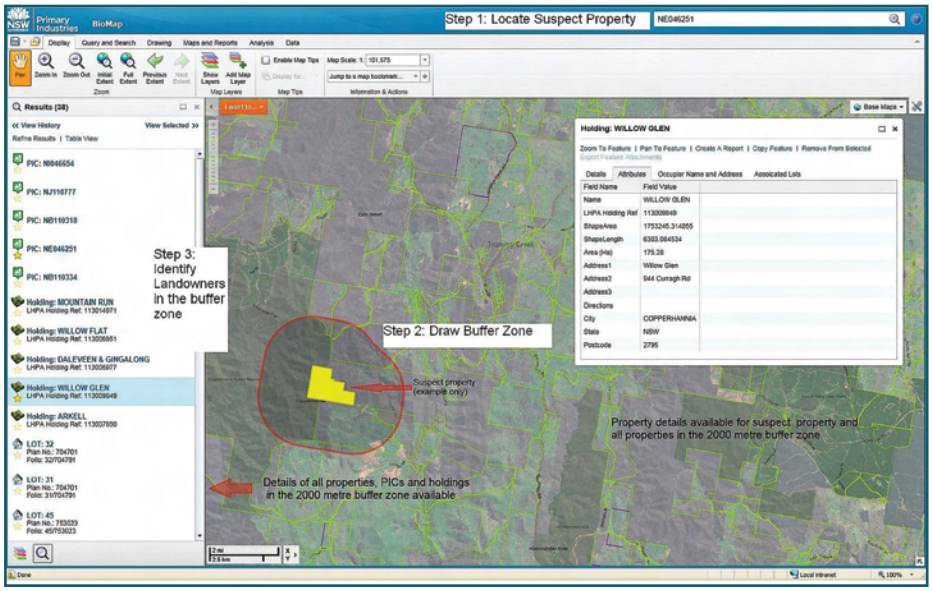
New electronic mapping tool helps biosecurity

In May 2012, Biosecurity NSW, which is a division of NSW DPI, implemented a new electronic mapping solution called BioMap for biosecurity incidents. BioMap displays property information from Land and Property Information (formerly the Department of Lands) and Livestock Health and Pest Authorities (LHPAs) on an electronic map. It displays geospatial layers such as aerial and satellite imagery as well.

BioMap was successfully used to help investigate a suspected case of low pathogenic avian influenza during the quarter. Its output was used to develop a comprehensive response plan within 6 hours of the diagnosis being made. Using BioMap on the Easter Monday, staff were able to:

- locate the suspect property using information that was initially limited
- map a 5-km-radius restricted area around the property within minutes
- identify the details of all the properties within the restricted area
- provide relevant maps and data for inclusion in the Emergency Animal Disease Response Plan and legal orders for the restricted zone
- identify the closest intensive poultry sheds by using the aerial imagery available through BioMap.

A BioMap screen looks like the example shown in the screen capture below.



Example of a BioMap screen for biosecurity incidents

In this issue!

First report: oxalate crystals and renal necrosis in stillborn lambs

There was a higher than usual number of stillborn lambs in a Dorper ewe flock on a property north of Nyngan in May 2012.

There were about 3000 ewes on the farm, and all mobs of ewes (of varying ages and in different paddocks) were affected. It was hard to estimate the exact number of stillborns, but the farmer definitely felt that it was more than in other years.

The ewes were grazing various natural-grass paddocks. Most of the dead lambs were found with the ewes still present. Four ewes were examined in one paddock; their fat scores were 3 or 3.5 and they were healthy. Blood was taken for laboratory analysis: levels of calcium, magnesium and ketone bodies were within normal ranges. One ewe had a *Leptospirosis hardjo* antibody titre of 50.

Four lambs were necropsied. There were no obvious abnormalities. Most of the lambs had breathed but not walked or suckled. They had good fat stores around the heart and kidney, indicating that exposure was probably not a factor in the losses.

Kidney samples from all four lambs had histological changes consistent with severe diffuse degeneration and necrosis of the proximal tubules of the kidney. There were large amounts of birefringent crystals, indicative of oxalate, in the tubules. The liver showed diffuse degeneration of hepatocytes (the main liver cells), with marked congestion of the sinusoids (special blood vessels in the liver); this suggested toxic damage.

Oxalosis (the accumulation of excessive levels of oxalate) can be prominent in the kidneys of aborted cattle foetuses, and it may reflect maternal intake of oxalate-containing plants (e.g. soursob, pigweed or spiny emex) or mouldy feed. The paddock was inspected but appeared to contain no plants known to contain high levels of oxalates. Necropsies of stillborn lambs on other farms in the area have not revealed these lesions.

In 2010, researchers looked at whether feeding oxalic acid to pregnant ewes would cause abortion. The ewes were fed 6 or 12 g of oxalic acid during pregnancy but didn't abort. Histological examination at the time of birth revealed oxalate crystals in the kidneys of most of the lambs from ewes fed oxalic acid at the high level throughout pregnancy or in the second half. Crystals were also found in some of the lambs from ewes fed the low level, but not in the control group. The researchers concluded that oxalic acid can cross the placental barrier, but that under their experimental conditions the doses weren't high enough to cause intra-uterine death and thus abortion.

For further information contact Jillian Kelly, District Veterinarian, Central West LHPA, Coonamble, on (02) 6822 1588.

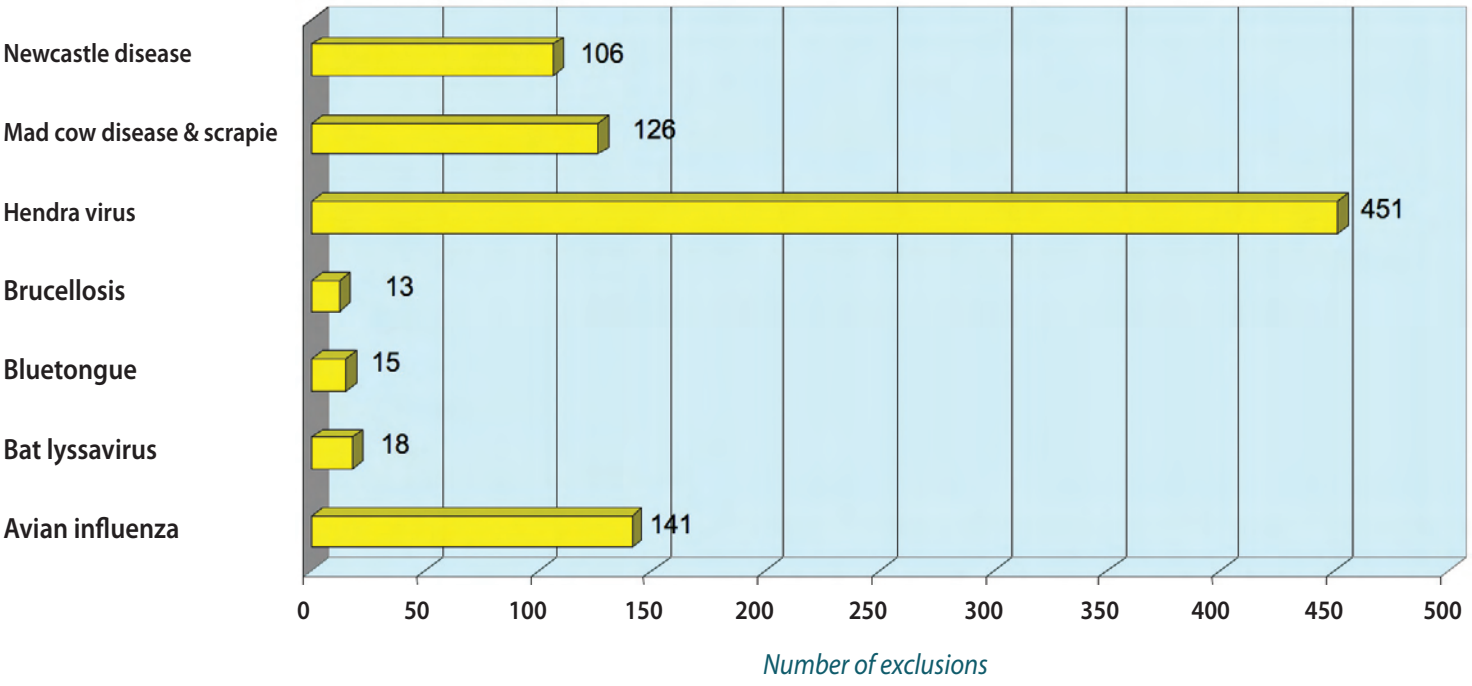
Emergency disease exclusions

One of the objectives of the NSW Animal Disease Surveillance Business Plan is to detect emergency animal diseases early.

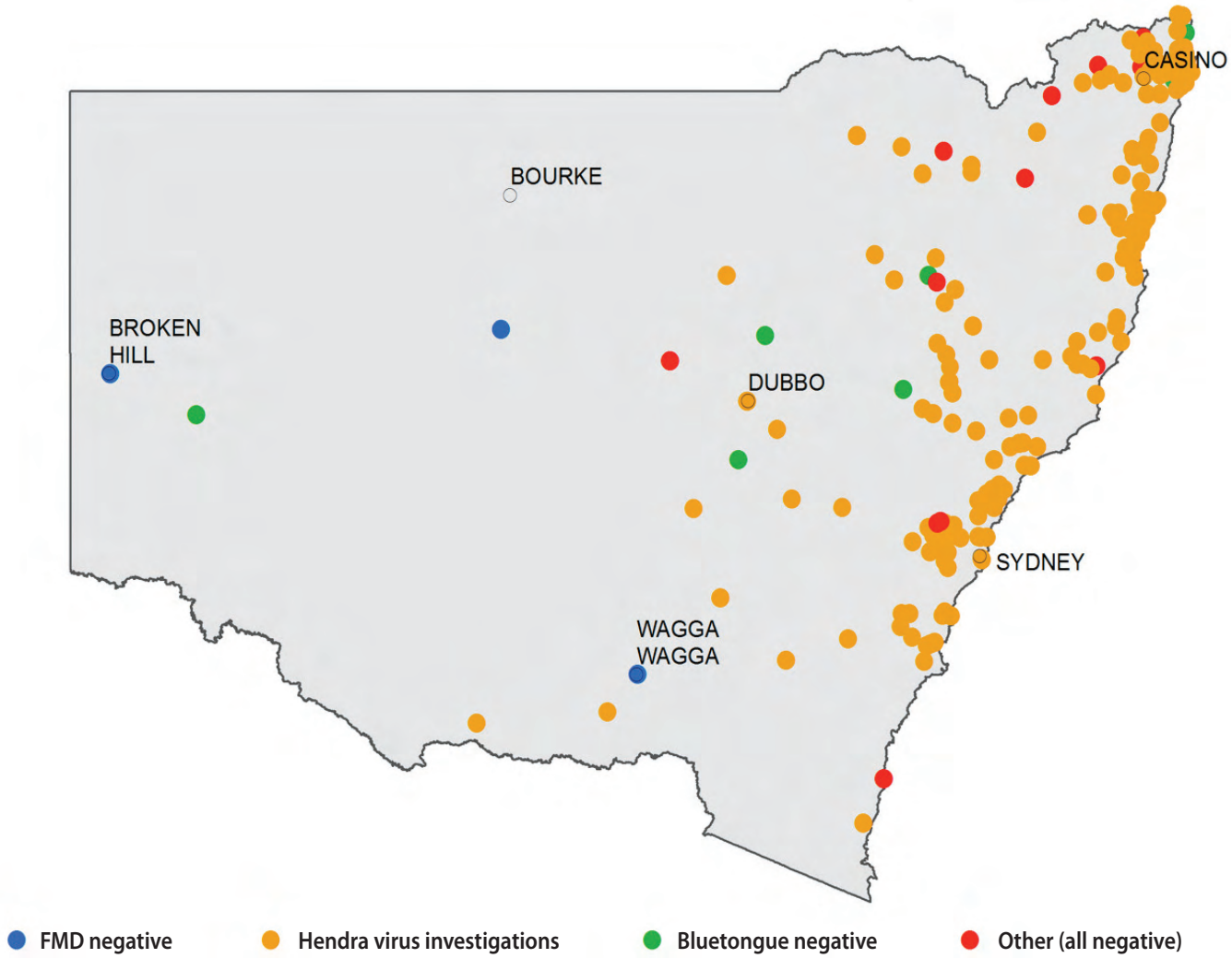
Over the last 12 months, government and private vets have investigated more than 763 incidents where an emergency disease was considered possible and have sent samples to EMAI (the Elizabeth Macarthur Agricultural Institute at Camden). Because of the Hendra virus outbreak in horses, this was much more than the target of 200 submissions a year. The vast majority turned out not to be emergency diseases, but we did find positive cases of Hendra virus in horses, pigeon paramyxovirus in domesticated pigeons, non-pathogenic avian influenza in ducks and turkeys, anthrax and, strangely, swine brucellosis in a dog. The most common diseases excluded are shown in the table on the next page.

The map on the next page shows the geographic distribution of surveillance for selected diseases of sheep, cattle and horses over a 12-month period. It reminds us that emergency disease exclusions are more common than we might imagine. It also reminds us that it's important to have an efficient, official field veterinary service in place.

Table 1: Number of exotic disease exclusions 2011–2012



Map 1: Surveillance for <u>some</u> emergency animal diseases, April 2011 to March 2012. FMD, foot and mouth disease



Bovine ephemeral fever hits the Northern Slopes and Plains

The first reported case of bovine ephemeral fever (BEF) on the northern slopes of NSW for the 2012 summer–autumn season was on a property located half-way between Moree and Narrabri. On 6 March 2012, one heifer and one cow were examined for gait stiffness and general lethargy. Both animals were positive on PCR testing for BEF virus.

This region had experienced an outbreak of BEF only 2 years before, so it had been presumed that there was good herd immunity. As it turned out, this presumption was mostly correct, but to the east of the region there were substantial numbers of cattle that had not been exposed to the virus. After this initial detection, a wave of BEF spread widely through the Northern Slopes and Plains region from Goondiwindi on the Queensland border east for up to 200 km.

Presentations varied from multiple, unconfirmed cases of death to animals with mild lameness, with marked hindlimb stiffness and reluctance to move, or lying down, for anything from 1 to 14 days followed by a period of recovery. Interestingly, many cattle aged over 5 years that had been presumed to be immune were affected, in addition to the expected heavy incidence of affected weaners and young cattle.

The textbooks describe an abortion level of 5%. Towards the end of the insect season, in late April and May, the North West LHPA offices received numerous calls about aborted or 'slipped' calves. This continued into June, resulting in many investigations from private and LHPA vets. Positive antibody responses to BEF virus in cows and heifers that had aborted implicated BEF as the cause.

With many producers reporting disease from March until late May, early intervention with vaccine for valuable stock such as bulls may have been worthwhile, but vaccination uptake was poor because most farmers believed it was too late once the disease had arrived; they didn't expect that the disease would last so long within their herds.

For further information contact Ted Irwin, North West LHPA, Warialda, on (02) 6727 1528.

Drooling dairy heifers

An outbreak of bottle jaw and severe drooling occurred in 11 out of 81 head of dairy heifers in a Lachlan herd.

The affected heifers showed severe, thick salivation at rest. They had normal temperatures, but under the jaw they had large swellings ranging from soft and fluid-filled to more discrete palpable nodules. The animals were generally bright and alert and in some cases hyperexcitable.

Most of the animals had erupting teeth, with damage to the mucosa around the eruption sites. Their tongues were generally enlarged and thickened at the junction between the torus and apex. Two of the animals examined had a thick yellow nasal discharge but had no lesions in the nasal cavity or other respiratory signs.

Lab testing of samples ruled out mucosal disease and liver fluke, but two out of three animals tested were positive for bovine respiratory syncytial virus (BRSV) antibodies.

Although these heifers didn't have the typical 'tongue-out' appearance, it was suspected that they had 'wooden tongue', which is caused by *Actinobacillus lignieresii*. The condition responded to antibiotics and sodium iodide. Typically this is a condition of individual cattle, but outbreaks are occasionally recorded. Infection is thought to occur via trauma to the oral mucosa when cattle are grazing rough feeds ('weedy' hay or silage, straw, or soil-contaminated silage). In this case the paddock feed was not particularly weedy

Bottle jaw in diary heifers. Note the submandibular oedema in the heifer immediately behind the gate. Photo: E. Braddon

or rough, but there had been recent flooding after high rainfall.

The BRSV-positive titres may have reduced the overall herd immunity; when this was combined with the tooth eruption in this age group and the grazing on recently flooded pastures, the end result was an outbreak of 'wooden tongue'.

For further information, contact Eliz Braddon, Senior District Veterinarian, Lachlan LHPA, Young, on (02) 6382 1255.

Superphosphate poisoning in sheep

Seven ewes out of a mob of 200 had become sick over several weeks, and four had died. One ewe was presented to the district veterinarian lying on its side and with severe depression, injected mucous membranes, and a temperature of 38.4 °C. The mob had been on red grass and clover pasture for 2 weeks; before that they had been drenched with a naphthalophos–benzimidazole–levamisole combination drench. The mob was generally in good body condition score and had just finished joining.

On necropsy, obvious white pellets resembling superphosphate fertiliser could be seen in the rumen contents. The gastrointestinal tract was generally filled with fluid and no internal parasites were found. The kidneys were large and soft.

Serum biochemistry results from this ewe showed marked azotaemia (abnormally high blood levels of nitrogen compounds such as urea), abnormally high serum phosphate levels, high serum sulfate levels and low serum calcium levels. Histopathology of the kidney showed that the distal and proximal tubules were dilated in many places, with long, thin epithelial cells. The dilated tubules contained fluid with high levels of eosinophils (a type of white blood cell) mixed with sloughed epithelial cells and debris. The pathologist commented that the high blood levels of phosphate were consistent with ingestion of the pellets found in the rumen. The high blood sulfate level, which may have led to polioencephalomalacia (softening of the grey matter of the brain cortex) and the low serum calcium level were likely factors in the clinical presentation.

Although superphosphate is not particularly palatable, sheep may eat it when it is in the granular form, which has the size and texture of grain. The poisoning is mainly due to the fluorine present, although calcium pyrophosphate and calcium orthophosphate also contribute. The typical result of these toxicoses is proximal renal tubular necrosis. In this case some left-over superphosphate had been discarded by the producer in the paddock and the sheep had helped themselves to it.

For further information, contact Eliz Braddon, Senior District Veterinarian, Lachlan LHPA, Young, on (02) 6382 1255.

Pellets of superphosphate in the rumen. Photo: E Braddon

Barber's pole worm and ill-thrift in western cattle

Haemonchus contortus (the predominant *Haemonchus* spp. in sheep and goats) contributed to an ill-thrift syndrome in a mixed mob of 120 homebred Shorthorn weaners near Carinda (in the North West of the state) during May 2012.

The weaners had appeared 'wormy' and 'poor doing' and were yarded for drenching after the producer had run a pooled faecal egg count test that showed about 1200 eggs per gram (epg) of faeces. Two heifers in particularly poor condition were examined by the district veterinarian. The worst-affected heifer was euthanased and necropsied. The heifer had a large liver abscess containing about 3 L of purulent material. A large number of *Haemonchus* spp. worms were found in the abomasum.

On laboratory examination, a profuse predominant growth of *Arcanobacterium pyogenes* (*Trueperella pyogenes*) was cultured from the abscess fluid. A faecal sample taken from the heifer had a strongyle egg count of 2680 epg, with 62% *Haemonchus* spp., 32% *Cooperia* spp. and 6% *Oesophagostomum* spp. The *Haemonchus* spp. was further tested and found to be *Haemonchus contortus*.

Both of the poor heifers were negative on testing for persistent infection with pestivirus.

It is likely that all three of these types of worms were contributing to the ill-thrift syndrome shown by these weaners. Northern Tablelands data suggest that where sheep and cattle are routinely co-grazed it's not unusual for cattle to carry *H. contortus* more commonly than *Haemonchus placei* (the *Haemonchus* strain derived from cattle). Nevertheless, ill-thrift due to haemonchosis in cattle is an unusual diagnosis in cattle in the North West region. The property in question does co-graze both sheep and cattle, although it is predominantly a cattle property. Three consecutive summers of ideal conditions for haemonchosis (high rainfall, mild temperatures and flooding) probably contributed to a high *H. contortus* burden in these animals. The cause of the hepatic abscess in the necropsied heifer was not found.

The weaners were treated with pour-on ivermectin and were reported to be improving in condition 2 weeks later.

For further information contact Libby Read, District Veterinarian, North West LHPA, Narrabri, on (02) 6792 2533.

Lepto returns to the North West

Leptospirosis has been diagnosed in two cattle herds in the Narrabri district after an absence of 7 years. Leptospirosis was a common diagnosis in the Narrabri district before 2000 (with 28 cases in the 1990s), but it has been uncommon since.

In contrast to the dry decade of the '00s, the last 3 years have been wetter than usual. It's also perhaps not coincidental that in the last 12 months feral pig numbers have increased to levels not seen since the 1990s.

The two affected herds both had high antibody titres to *Leptospira pomona*.

In the first herd, 11 from 42 unvaccinated heifers that had been joined over a 6-week period were found to be not pregnant on testing by a vet. Blood samples collected by the LHPA confirmed leptospirosis.

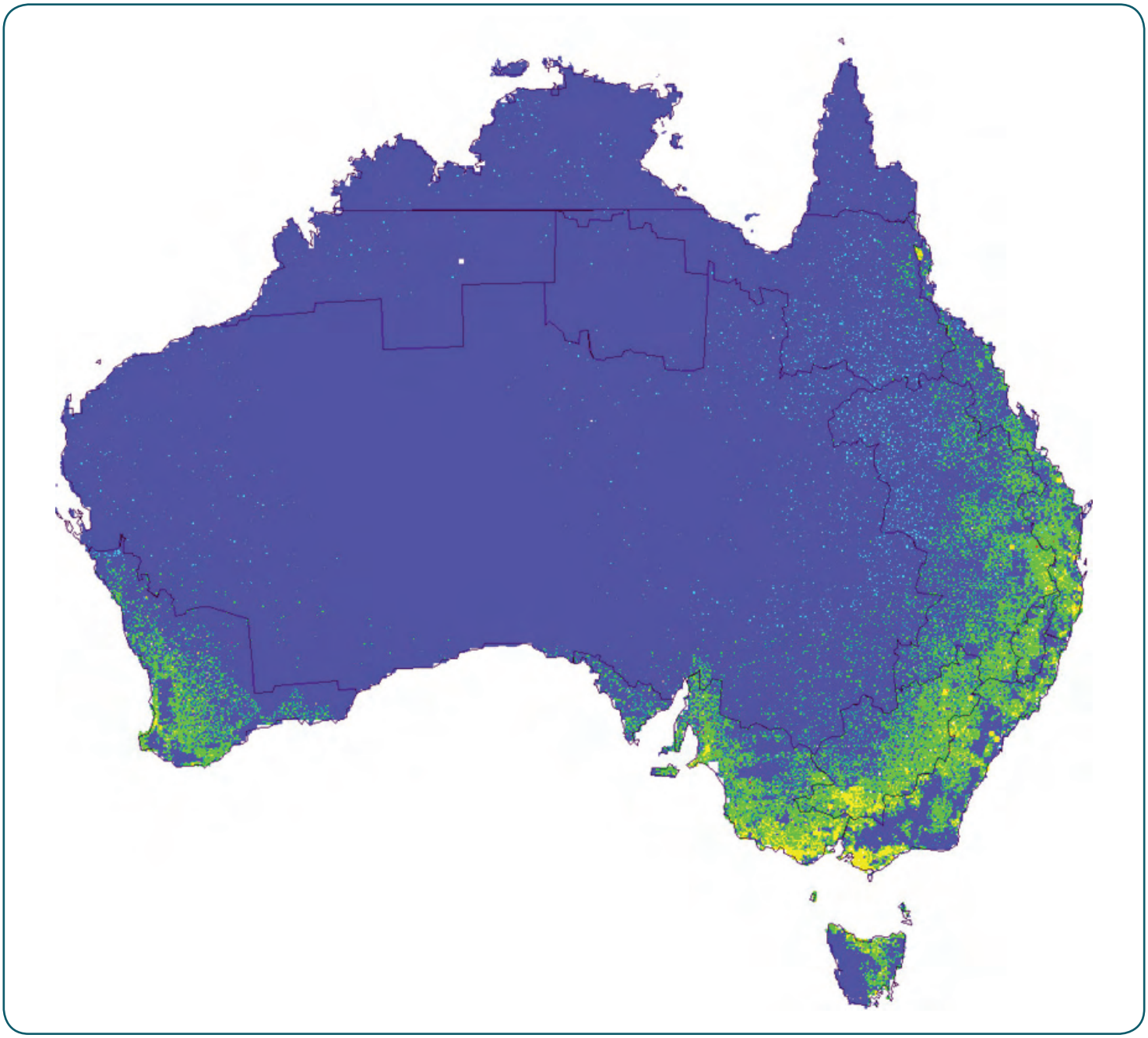
The second herd was a small mob of 20 cows and 11 heifers with unlimited joining. One cow and another heifer were observed to have aborted. In addition, from 12 cows and heifers expected to calve in autumn–early winter, only two had calved. Sampling of the aborted

animals and three heifers confirmed leptospirosis.

For further information contact Shaun Slattery, Senior District Veterinarian, North West LHPA, Narrabri, on (02) 6792 2533.

Mapping the chances of foot and mouth

Following work initiated by NSW as part of a national program for Australia's preparedness for a foot and mouth disease (FMD) outbreak, specialist epidemiologists from many governments have produced a map showing the relative likelihoods of introduction, exposure, establishment and spread of this disease Australia. The colour scale moves through red (most likely) to yellow, green, light blue and dark blue (least likely), but note that it doesn't give an absolute indication of likelihood. Nevertheless, it's useful to be able to visualise that, whatever the probability of an outbreak of FMD on the Mornington Peninsula (parts of which are red), it's at least 1000 times less likely that there will be an outbreak in the Channel Country. Information like this is used to help target surveillance resources to the highest-risk areas. Sharp-eyed readers will note that only one of the three FMD exclusions shown in the map in the exotic diseases exclusions story on page 3 was in the highest-risk area. This shows that more effort may be needed to remind vets in the eastern regions to practise submitting samples to AAHL for FMD exclusion.



Relative probabilities of finding foot and mouth disease. Red is most likely, followed by yellow, green, light blue and dark blue (least likely). Map courtesy Iain East, Department of Agriculture, Forestry and Fisheries

Getting information on animal diseases

This surveillance report can convey only a very limited amount of information about the occurrence and distribution of livestock diseases in New South Wales. If you would like more specific information about diseases occurring in your part of the state, contact your local Livestock Health and Pest Authorities District Veterinarian or Departmental Regional Veterinary Officer.

For Statewide information, contact the Department of Primary Industries Animal and Plant Biosecurity Branch in Orange on (02) 6391 3237 or fax (02) 6361 9976.

For more information on national disease status, check the National Animal Health Information System (NAHIS) via the internet at:
http://www.animalhealthaustralia.com.au/status/nahis.cfm

This is a report under the Animal Disease Surveillance Operational Plan, Project 8, 'Reporting for Animal Disease Status in NSW'.

Prepared by Rory Arthur, Animal and Plant Biosecurity Branch,
Department of Primary Industries, Kite St, Orange 2800.
Phone 02 6391 3608
E-mail: rory.arthur@industry.nsw.gov.au

Copies of NSW Animal Health Surveillance reports are available on the internet at: http://www.dpi.nsw.gov.au/newsletters/animal-health-surveillance

Disclaimer

NSW GOVERNMENT Department of Primary Industries

LIVESTOCK HEALTH AND PEST AUTHORITIES LHPA Safeguarding Agriculture in NSW

JN 11387 Jul2012