State and territory reports

Summary

During the quarter, there were 1069 submissions[26] to state or territory government animal health laboratories that included detection or exclusion of a nationally notifiable disease in a clinically consistent domestic animal.[27] The number of these submissions in each state and territory by animal category is shown in Figure 12.

The numbers of submissions to investigate clinical disease in domestic animals by government veterinarians and biosecurity officers, or private veterinary practitioners is shown in Figure 13.

Livestock[28] surveillance in Australia includes testing to investigate clinical disease, certify freedom from disease, and as part of accreditation programs and targeted surveillance. The number of livestock submissions by state and territory government animal health laboratories is shown in Figure 14.

Data currently available on the National Animal Health Information System (NAHIS) include:

- serological testing for equine infectious anaemia (EIA) and equine viral arteritis (EVA), including for export certification
- bovine brucellosis testing of cattle for export and other (non-abortion investigation) reasons
- transmissible spongiform encephalopathies (TSE) testing.

The following reports from disease investigations are included to highlight ongoing surveillance, diagnostic capacity and response activities. These reports do not represent the full range of livestock disease incidents during the quarter.

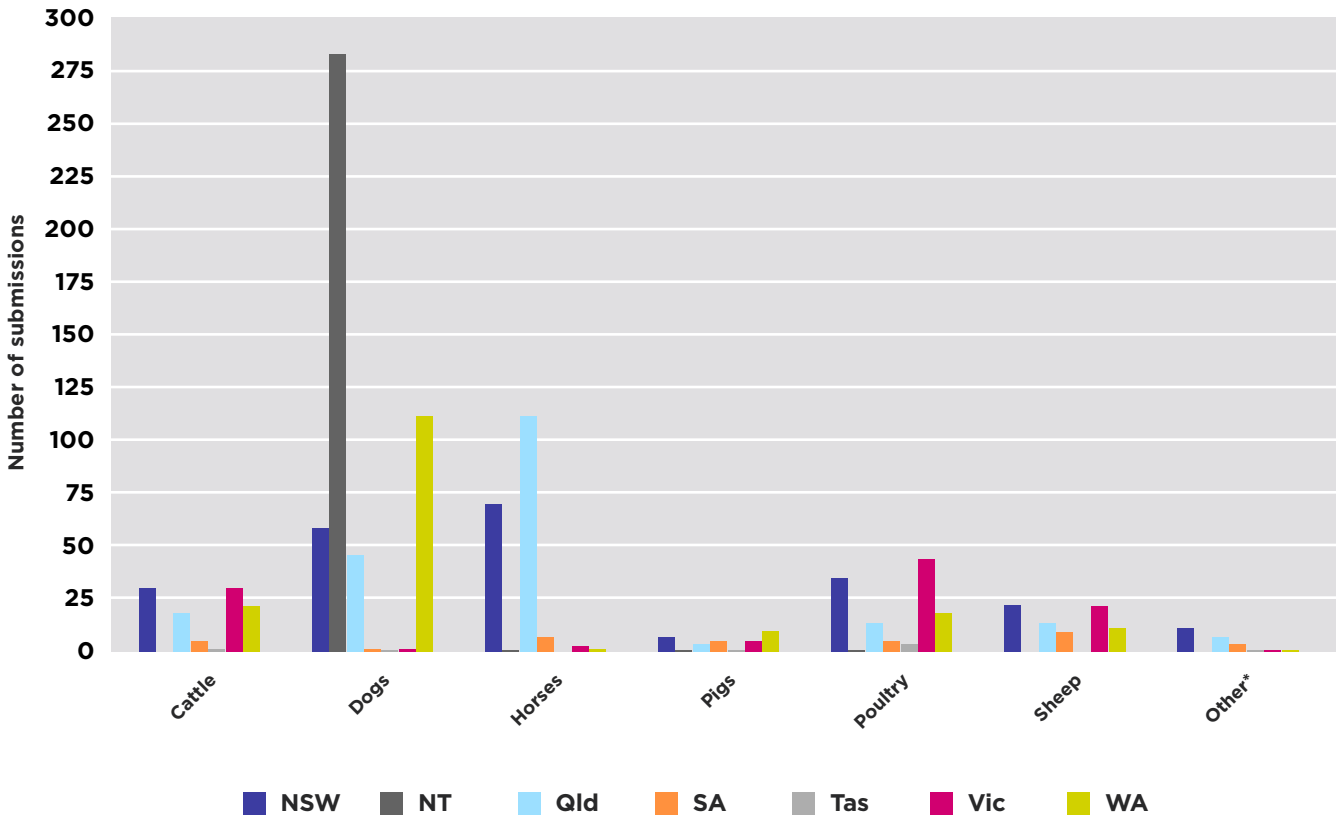

Figure 12 Submissions to state and territory government animal health laboratories to investigate clinical disease in domestic animals that include at least one test for a national notifiable disease, 1 January to 31 March 2021

*Other = domestic alpacas, aviary birds, buffalo, cats, goats, pigeons

26 Submission to a state or territory government animal health laboratory for laboratory testing. Investigation of a disease incident may involve multiple submissions.

27 Domestic animal includes livestock and companion animals. Excludes free-ranging wildlife (native or feral species) which are reported through Wildlife Health Australia.

28 Livestock means captive species usually kept for use or profit: any class of cattle, sheep, goats, pigs, horses (including mules and donkeys), poultry, emus, ostriches, alpaca, deer, camels and buffalo.

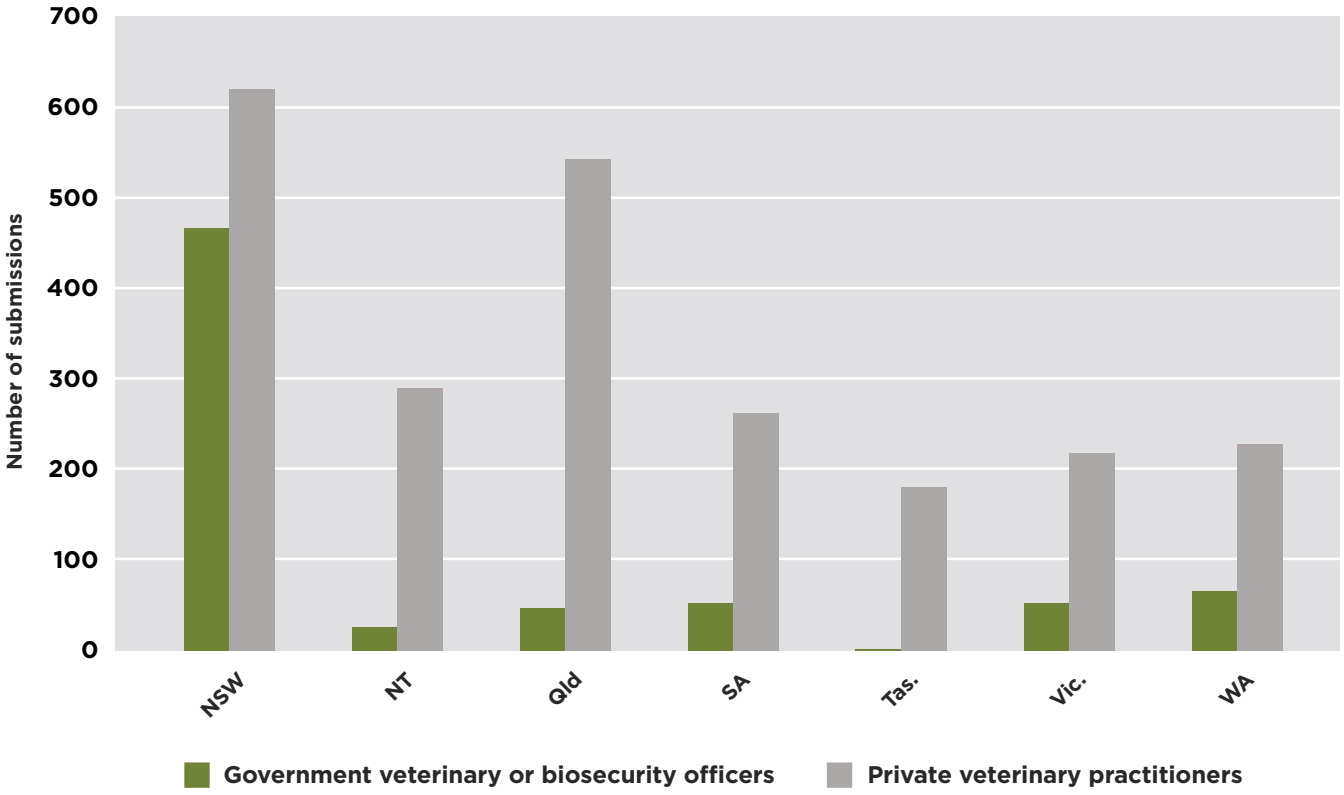

Figure 13 Submissions to state and territory government animal health laboratories to investigate clinical disease in domestic animals by government officers or private veterinarians, 1 January to 31 March 2021. Includes submissions both with and without a test for a national notifiable disease

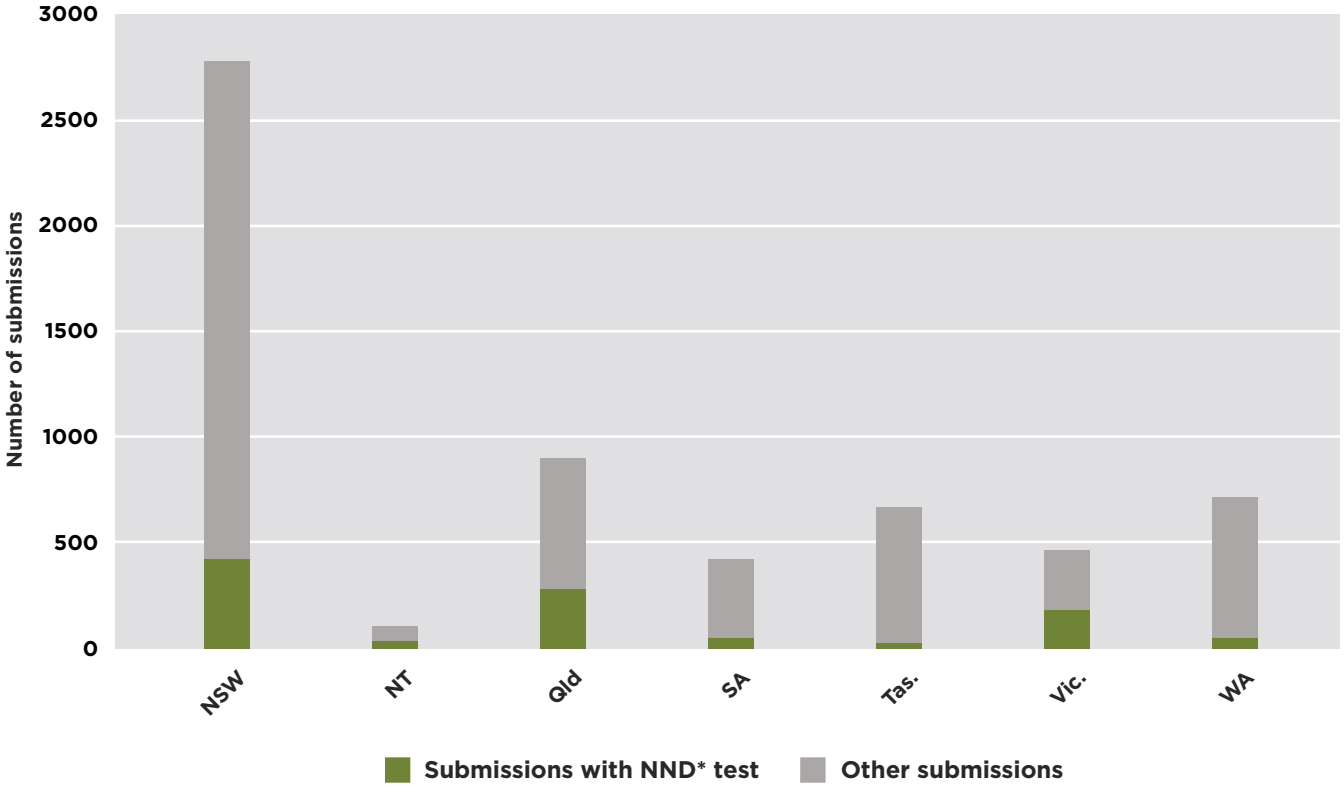

Figure 14 Number of livestock submissions to state and territory government animal health laboratories. Includes submissions to investigate both clinical disease and screening of healthy animals e.g., for health certification and accreditation programs, 1 January to 31 March 2021

*NND = nationally notifiable disease

Paralysis event in flying foxes in Queensland and New South Wales

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Anita Gordon, Queensland Department of Agriculture and Fisheries

Wildlife veterinarians and rehabilitators alerted authorities to an unusual event in flying foxes in December 2020.

A range of neurological signs were reported in flying foxes in a number of locations in northern New South Wales and southeast Queensland, with a small number of similar reports from further north and south of these regions. Hundreds, or possibly even thousands, of black flying foxes (*Pteropus alecto*) and little red flying foxes (*P. scapulatus*) have reportedly been affected. Clinical signs include paralysis or paresis, protruding tongues, inability to swallow, corneal ulcers and oedema (presumably due to lack of blinking) and respiratory difficulties, and some have presented with the mouth filled with dirt or sand. Affected animals have generally been extremely dehydrated but nutritional condition has varied widely. Some of the milder cases have recovered with supportive care.

Affected flying foxes that died or were euthanased on humane grounds were submitted for diagnostic investigation. In Queensland, over 80 bats were submitted to the Biosecurity Sciences Laboratory (BSL) between December 2020 and February 2021, and the majority of these (62) had a neurological presentation. A small number of bats were also submitted to the Elizabeth Macarthur Agricultural Institute in New South Wales.

While a number of cases have tested positive for Australian bat lyssavirus (ABLV) (see also the article on lyssavirus infections in little red flying foxes, page 7), the majority were not infected with ABLV and this virus is not considered to be the cause of the widespread paralysis event.

Histopathological examination of 16 affected bats did not identify any consistent changes to explain the neurological signs; examination included the brain of most bats, as well as spinal cords, skeletal muscle and peripheral nerves in a subset of bats. *Hepatocystis* schizonts were found in lungs and other tissues of seven little red flying foxes, but this is not considered to be the cause of the neurological signs. This haemosporidian parasite has previously been reported in this and other flying fox species.[29]

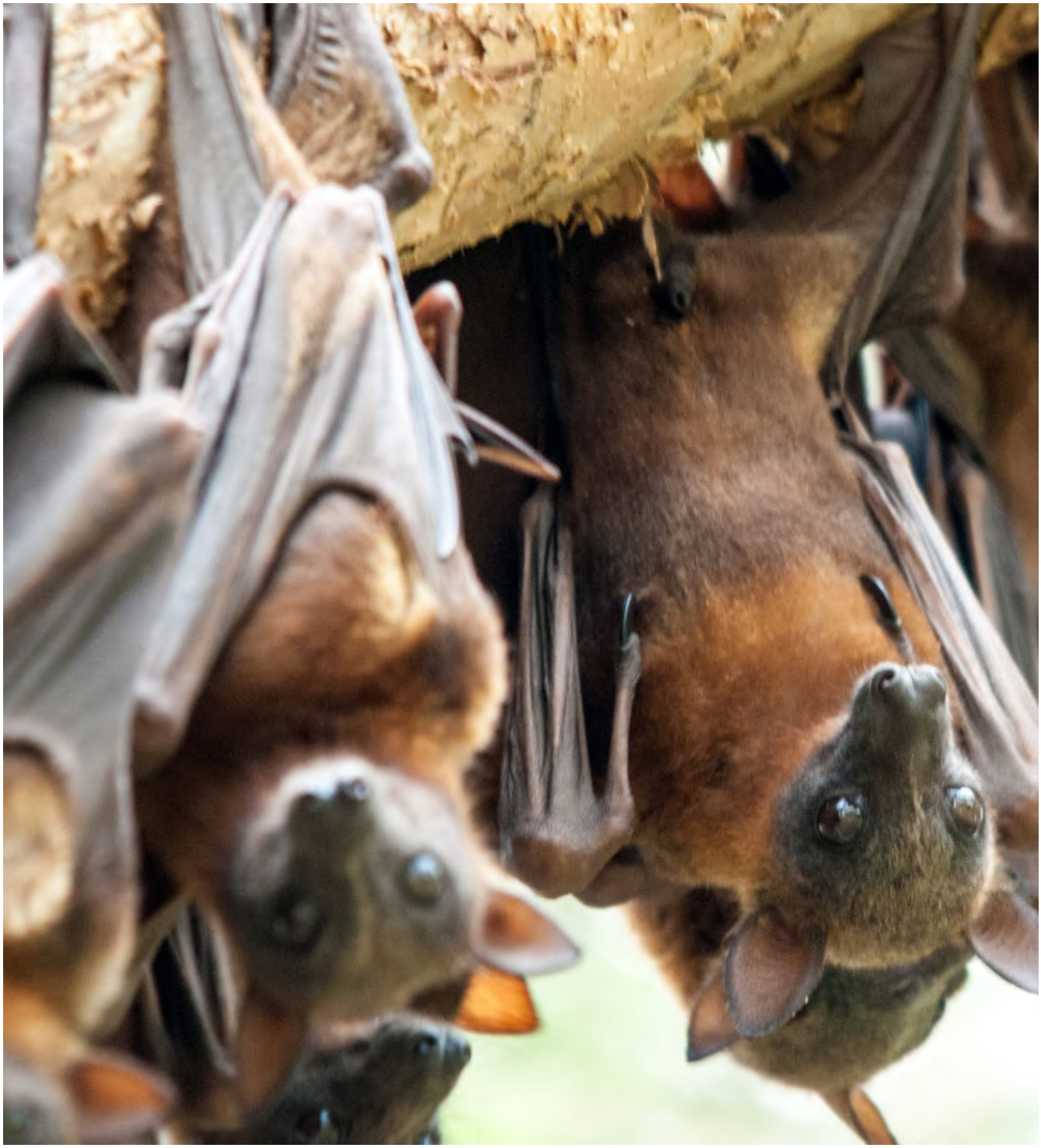
Aspiration pneumonia was detected in most of the black flying foxes and in one little red flying fox, but was considered to be secondary to paralysis.

Botulism was considered as a differential diagnosis based on the clinical signs, response to supportive treatment in some cases, and a previous report of this disease in captive flying foxes.[30] Botulinum toxin type C/D enzyme-linked immunosorbent assay (ELISA) at BSL was negative on samples of blood and/or gastrointestinal tract from nine bats. A subset of six bats were also negative for type C/D toxin by RT-PCR at the Western Australia Department of Primary Industries and Regional Development Diagnostic Laboratory Services. Tick paralysis was also considered, however a paralysis tick (*Ixodes holocyclus*) was only reported from the clinical examination of one case, and no ticks or evidence of tick bites were found on any of the animals submitted to BSL.

There is no evidence of an infectious cause of this widespread disease event. A toxic or metabolic cause is considered

29 Schaer J, McMichael L, Gordon AN, Russell D, Matuschewski K, Perkins SL et al. 2018. Phylogeny of *Hepatocystis* parasites of Australian flying foxes reveals distinct parasite clade. *International Journal for Parasitology: Parasites and Wildlife*; 7(2), 207–212.

30 Kemsley P 2019. Botulism in bats. *NSW Animal Health Surveillance*, January–June 2019, Issue 2019/1.



most likely, however the route of exposure and causative agent are a challenge to identify given the long distances travelled by flying foxes between foraging sites and roosts, and the large geographic extent of this event. This event is ongoing into the second quarter of 2021.

This event demonstrates the effectiveness of Australia's general surveillance system for wildlife. Early reporting of this significant disease event by wildlife veterinarians and rehabilitators to the government biosecurity agencies facilitated the investigation. Submission of appropriate samples to government laboratories allowed for diagnostic investigation and exclusion of significant infectious diseases. Funding was provided from the National Significant Disease Investigation Program (NSDIP) to assist the investigating veterinarians and enable additional diagnostic testing. Wildlife Health Australia (WHA), working with the national Bat Health Focus Group, issued a notification for the event[31] and a request for information to better understand the geographic range, species and age of animals affected, and the range of clinical signs. The collaborative effort between government agencies, veterinarians and rehabilitators assisted the investigation of this significant event.

31 www.wildlifehealthaustralia.com.au/DiseaseIncidents/OngoingIncidents.aspx

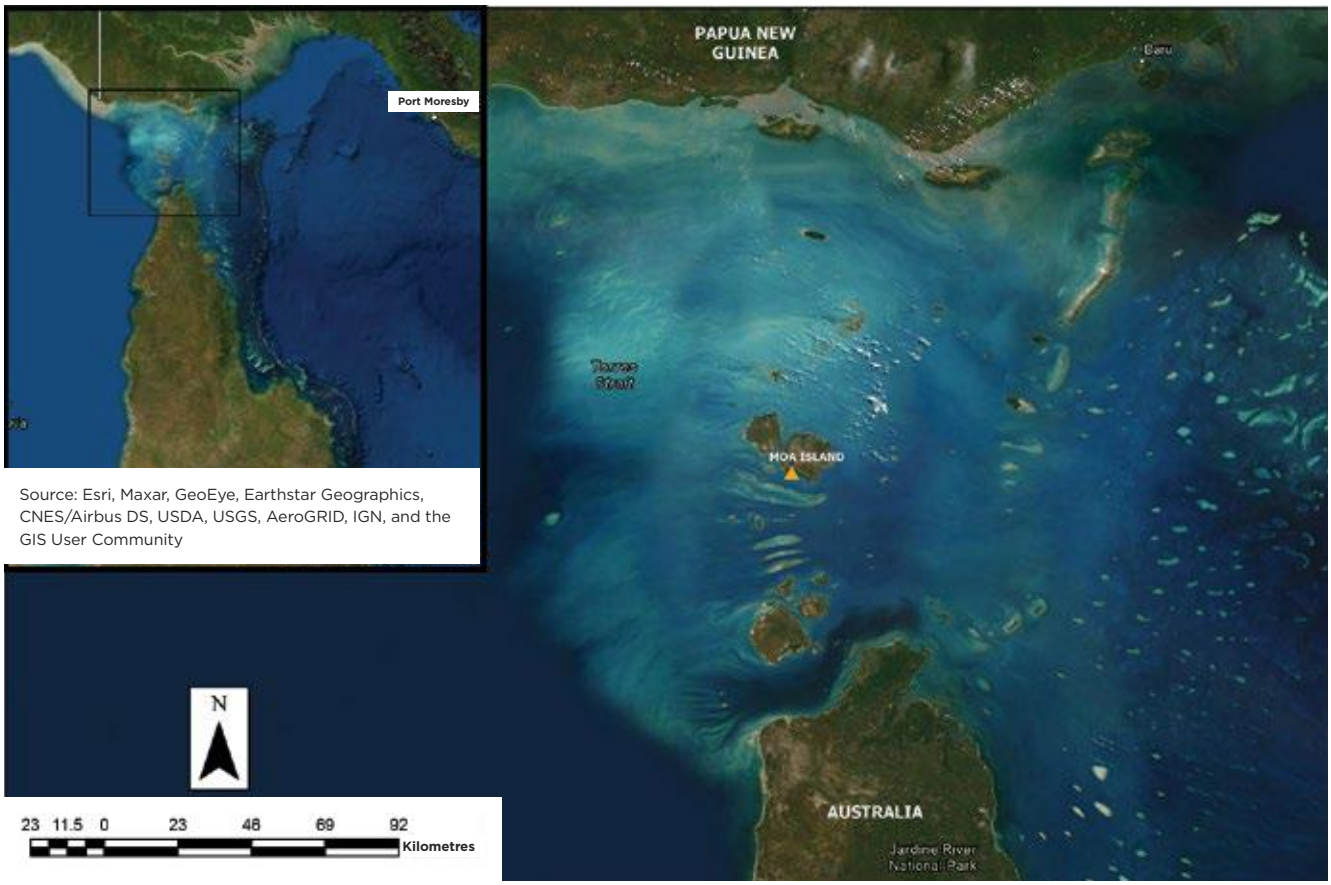
Swine fevers excluded in the Torres Strait

Guy Weerasinghe
Northern Australia Quarantine Strategy

African swine fever (ASF) and classical swine fever (CSF) were excluded from two piglets that had died suddenly on Moa Island, Queensland in late December 2020. Moa Island is located within the band of islands known as the Torres Strait, between Cape York on mainland Australia and Papua New Guinea (PNG). It is approximately 55 km from the northern-most tip of Cape York and a little over 95 km from the southern border of PNG (see Figure 15).

Two feral piglets had been captured on Moa Island in August 2020 and were being kept in a secure pen for a ceremonial event in July 2021. They were on a diet of vegetables, fruit and pasta, with no exposure to meat products. In late December 2020, prior to the Christmas holiday period, the two piglets were found dead. They had been seen the day prior and were reported to be healthy and comfortable. The owner of the pigs immediately contacted a local Northern Australia Quarantine Strategy (NAQS) Biosecurity Officer, who passed on the information to the Cairns-based NAQS Veterinary Officer. NAQS also passed the report on to the Queensland Chief Veterinary Officer, notifying the Australian Chief Veterinary Officer out of courtesy.

The imminent Christmas holiday break presented logistical challenges in staff availability and



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Figure 15 Location of the investigation, showing proximity to Australian mainland and PNG

transport to access the location. In collaboration with Biosecurity Queensland, NAQS was able to find flights immediately after the Christmas public holidays, and the NAQS Veterinary Officer based in Cairns agreed to return from leave early to conduct the investigation, arriving on Moa Island seven days after the death of the pigs.

A number of time-stamped photos (see Figure 16) taken by the owner in the days immediately after the pigs' deaths helped provide some perspective on carcass degradation rates in the Torres Strait region during the monsoonal season. In this case, the myiasis was rapid; within a day of death both pigs showed high burdens of maggots, and within a week, the maggots had eaten all available flesh as well as some bone marrow.

At the time of attendance, only bones and desiccated skin remained. After communication with virologists from the Australian Centre for Disease Preparedness (ACDP) in Geelong, Victoria, these bones were collected and dispatched directly to ACDP. The virologists were able to harvest bone marrow tissue from the submitted bones. ASF was excluded using the Haines and USDA TaqMan assays, and CSF was excluded using both the pan-pestivirus and PIADC TaqMan assays. Given the lack of suitable samples available for testing, ACDP was only able to test for ASF and CSF.

While no cause of death was able to be identified, this investigation provided assurance that neither CSF nor ASF were responsible for the pig deaths. Both these diseases are present in the New Guinea land mass immediately to the north of Torres Strait, with CSF apparently limited to the Indonesian provinces, while PNG is currently experiencing outbreaks of ASF. Based on biosecurity inspection and interception data, pigs and pig products are not known to move directly into Torres Strait from these northern neighbouring countries. The possibility of illicit movements cannot be ruled out. For this reason, investigating disease events like this to rule out significant biosecurity threats such as ASF and CSF is considered important.

Another positive outcome from this incident was that it served as a good exercise for conducting a significant disease investigation within the Torres Strait, identifying, in particular, the challenges with mounting a rapid response in a remote region during a national public holiday period. In this case, the challenges included limited commercial flight availability (worsened in this case due to COVID-19 impacts on flight schedules), limited charter flight availability, and limited availability of experienced, suitably skilled and trained staff; a perfect storm of factors impacting an efficient response.

Following this investigation, in early 2021, Biosecurity Queensland conducted a public awareness campaign for African swine fever in the Torres Strait region, reinforcing messaging delivered by NAQS through a similarly targeted campaign in 2020. This campaign has been distributed throughout Torres Strait through a range of media formats.

Since this incident, there have been no further reports of pig deaths amongst this pig population, despite regular follow-up with the locally based NAQS Biosecurity Officer and Torres Strait Regional Authority Rangers (who have responsibility for managing pest species, including feral pigs, in Torres Strait).

Biosecurity Queensland is currently working with the Torres Strait Island Regional Council (TSIRC) and Torres Shire Council (TSC) to deliver training to TSIRC-employed Environmental Health Workers and TSC Compliance Officers, who have responsibility for domestic animal health management in Torres Strait. This training, planned to be conducted in Cairns in May 2021, will serve to reinforce key biosecurity and animal welfare messages, and provide training in post-mortem and sample collection techniques. Post-mortem kits will be distributed to the Environmental Health Workers and Compliance Officers at the same time. It is hoped that investing in the capability of these local government staff with an interest in, and responsibility for, animal health, will allow future disease investigations in the Torres Strait to commence and possibly be completed in full by these officers, with remote veterinary support. NAQS, which employs the northern-most government veterinarians in Queensland, will be helping to deliver this training.

NAQS runs a surveillance program across northern Australia to aid early detection of pests and diseases, and, through this program, regularly receives reports of animal disease and deaths from its stakeholders. These reports are routinely passed on to the relevant jurisdictional biosecurity agency — in this case Biosecurity Queensland — to facilitate an appropriate response. When an investigation is warranted, such as in this case, NAQS often conducts the field investigation on behalf of the jurisdictional agency, working closely with that agency to confirm field investigation and diagnostic testing objectives. This case provides an example of how that biosecurity partnership works in practice.

Figure 16: a. Pig 1, 24 hours after death; b. Pig 2, 24 hours after death; c. Pig 1, 48 hours after death; d. Pig 2, 48 hours after death; e. Pig 1, seven days after death; f. Pig 2, seven days after death

Tuberculosis exclusion in a feral fallow deer

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Department of Primary Industries and Regions, South Australia

Eleven feral fallow deer (eight adult females and three fawns) were shot as part of a routine cull on the Adelaide Plains. One of the adult females was observed to have bilateral lumps in the groin, which could have been consistent with granulomas (Figure 17).

A post-mortem on the affected deer was conducted jointly by the private veterinarian and a government veterinarian. No other significant gross lesions were observed. Samples of lungs (frozen and fixed) and of the cutaneous lesions (fixed) were taken and submitted to Gribbles VETLAB (the South Australian State Veterinary Diagnostic Laboratory).

Histology of the skin mass was consistent with benign fibromas. The lung tissue showed diffuse, chronic, mild interstitial pneumonia within occasional eosinophilic granulomas, which was consistent with previous exposure to parasites within the lungs. There were no lesions in the skin masses or lungs consistent with mycobacteriosis.

No further action was taken.

Figure 17 Feral fallow deer carcass showing a fibroma in the groin