

NATIONAL ARBOVIRUS MONITORING PROGRAM 2024–2025 REPORT

OBJECTIVES OF THE NATIONAL ARBOVIRUS MONITORING PROGRAM

The National Arbovirus Monitoring Program (NAMP) has three specific objectives:

1

Market access – to facilitate the export of live cattle, sheep, goats and camelids, and their reproductive material, to

countries that apply import conditions to mitigate the risk of introducing bluetongue, Akabane and bovine ephemeral fever (BEF) viruses.

2

Bluetongue virus (BTV) early warning – to detect incursions of exotic strains of BTV and its vectors (*Culicoides* species biting

midges) that have the potential to adversely affect Australian livestock production and trade, by surveillance of the northern BTV-endemic area.

3

Risk management – to detect changes in the seasonal distribution of endemic bluetongue, Akabane and BEF viruses

and their vectors in Australia, to inform livestock producers and support trade.

NAMP monitors the distribution of economically important arboviruses of livestock (cattle, sheep, goats and camelids) and their associated insect vectors within Australia. Arboviruses are viruses transmitted by arthropods such as mosquitoes, ticks, sandflies and midges.

Arboviruses monitored by NAMP are focused on bluetongue, Akabane and BEF viruses. Clinical bluetongue disease is an uncommon occurrence in Australian sheep and has never been reported in any other susceptible animal species in Australia.

Australia's economy benefits from exporting ruminant livestock and their reproductive material (semen and embryos). This trade depends on mutual confidence between Australia and its trading partners that any risks to the animal health status of the importing country can be accurately assessed and properly managed. NAMP provides credible data on the nature and distribution of important specific arbovirus infections in Australia for use by the Australian Government, Australia's trading partners, and livestock exporters and producers. NAMP underpins Australian Government export certification that ruminants are sourced from areas that do not support transmission of these specified arboviruses. In addition, NAMP data are used during market access negotiations.

NAMP is jointly funded by the cattle, sheep, goat, dairy and wool industries, the livestock export industry, and the state, territory and Australian governments.

NAMP coordinators and management would like to thank all the producers and collaborators who assisted in gathering the valuable monitoring data that underpin this report. This assistance is critical in developing and maintaining market access.

OPERATION OF NAMP

NAMP data are gathered throughout Australia by serological monitoring of cattle in sentinel herds, strategic serological surveys of other cattle herds (serosurveys), and trapping of insect vectors.

Blood samples from groups of young cattle that have not previously been exposed to infection with these arboviruses are tested at regular intervals for evidence of new infection with bluetongue, Akabane and BEF viruses. The program seeks to align blood sampling frequency to the probability of arbovirus transmission (the greater the likelihood of viral transmission, the more frequent the sampling). Insect traps to detect *Culicoides* species are positioned near the monitored herds during the period of testing, or near herds where conditions are favourable for *Culicoides* species survival.

Monitoring sites (Figure 1) are selected to determine arbovirus distribution – sites are located along the border between areas where infection is expected and not expected, and in areas where infection occurs sporadically.

Areas that are known to be endemically infected are sampled to detect any new strains of virus and to assess the seasonal intensity of infection with each arbovirus.

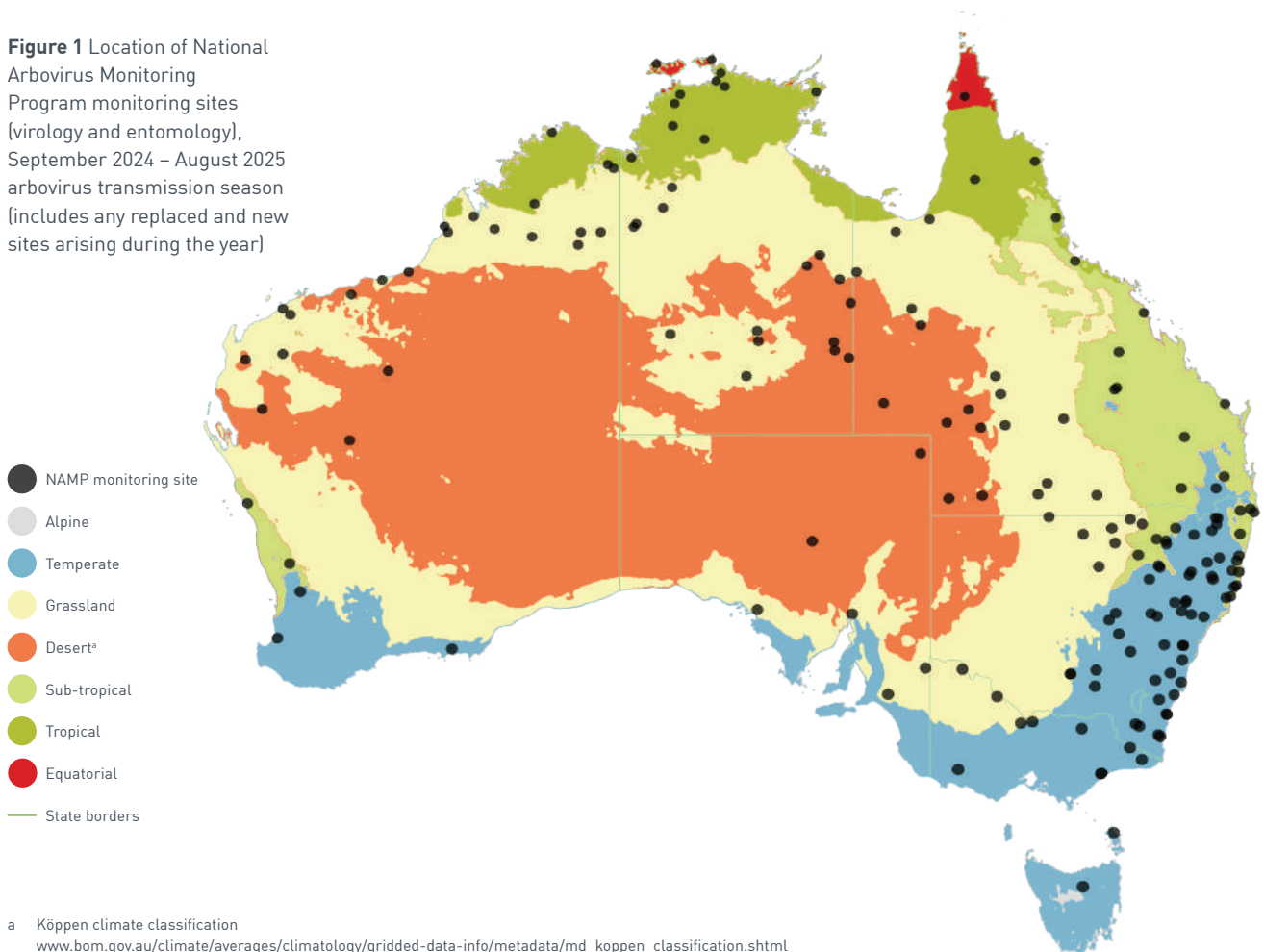
Serotyping, virus isolation and molecular testing are applied strategically in herds in New South Wales, the Northern Territory, Queensland and Western Australia after BTV seroconversions are detected. Beatrice Hill, in the far north of the Northern Territory, is a focus for exotic BTV surveillance – all blood samples collected at this location are subjected to virus isolation. NAMP surveillance data relating to early warning of bluetongue infection are supplemented by targeted surveillance activities conducted by the Northern Australia Quarantine Strategy (NAQS) in remote coastal regions of northern Australia (the Northern Territory, and northern Queensland and Western Australia).

EPIDEMIOLOGY

Bluetongue, Akabane and BEF viruses are non-contagious and are biologically transmitted by their insect vectors. Climatic factors (rainfall, temperature, and prevailing wind speed and direction) influence the distribution of potential vectors. These viruses are transmitted only if vectors are present in sufficient numbers.

The biting midge *Culicoides brevitarsis* is the main vector for both BTV and Akabane virus. There is a close correlation between the southern limits of *C. brevitarsis*

Figure 1 Location of National Arbovirus Monitoring Program monitoring sites (virology and entomology), September 2024 – August 2025 arbovirus transmission season (includes any replaced and new sites arising during the year)



and the distribution of BTV and Akabane virus, although the viruses are less widely distributed than their vectors. Other vectors of BTV in Australia include *C. actoni*, *C. dumdumi*, *C. fulvus* and *C. wadai*, but these are less widely distributed than *C. brevitarsis*.

The mosquito *Culex annulirostris* is generally considered to be the main vector for BEF virus in Australia. *Culex annulirostris* has different ecological thresholds from *C. brevitarsis*, particularly in its tolerance to lower temperatures, which accounts for its wider distribution and the occurrence of BEF in regions not affected by BTV or Akabane virus, such as southern Australia.

Australian research since the mid-1970s has provided a detailed understanding of the epidemiology of BTV strains in Australia and their *Culicoides* species biting-midge vectors. These vectors enter northern Australia during significant weather events, occasionally resulting in new BTV serotypes in northern Australia.

The climatic conditions in many regions in Australia do not support the specific *Culicoides* vectors that can transmit BTV and Akabane virus. These conditions have a significant effect on vector distribution, which accounts for variations in the boundary between areas where viral transmission occurs and areas free of transmission.

MONITORING RESULTS FOR 2024–2025

This section summarises and explains the results of vector and virus monitoring and describes the limits of distribution of bluetongue, Akabane and BEF viruses in the 2024–2025 arbovirus transmission season (September 2024 to August 2025). The numbers of monitoring sites for sample collection in each state and territory are shown in Table 1.

Table 1 Number of active NAMP monitoring sites, by state and territory, September 2024 – August 2025

Jurisdiction	Sentinel herds	Serosurvey sites	Insect traps
New South Wales	43	2	36
Northern Territory	8	10	13
Queensland	18	10	20
South Australia	3	0	3
Tasmania	1	0	2
Victoria	9	0	6
Western Australia	15	10	16
TOTAL	97	32	96

BLUETONGUE VIRUS AND VECTOR DISTRIBUTION

The limits of BTV transmission in Australia are shown on the interactive [Bluetongue Virus Zone Map](#),¹ which defines the areas in which no viral transmission has been detected for the past two years.

Bluetongue virus transmission is endemic in northern and northeastern Australia (New South Wales, Northern Territory, Queensland and Western Australia), and remains undetected in South Australia, Tasmania and Victoria (Figure 2). No new serotypes were detected in Australia from samples collected during the 2024–2025 season; types detected during the period were BTV-1, 7, 12, 15, 16 and 21.

In the **Northern Territory**, the wet season brought average to slightly-below-average rainfall, with the monsoon arriving later than usual and no cyclones crossing the coastline. Mean minimum and maximum temperatures were very much above average across the Territory.

Seroconversions occurred in all sentinel herds except at Alice Springs, which remained negative, consistent with previous seasons. The main serotypes detected were BTV-1, 7 and 16, with smaller numbers of BTV-12 and BTV-21. Transmission extended slightly southward following detections northeast of Alice Springs, resulting in a minor BTV Transmission Zone change.

Key vector species detected included *C. brevitarsis*, *C. actoni*, *C. wadai* and *C. fulvus*, consistent with previous seasons. Routine trapping confirmed continued movement of the midge *C. nudipalpis* beyond Croker Island, with specimens found at Beatrice Hill and in West Arnhem Land, though no evidence of establishment was observed at those sites. No key vector species were recorded in the BTV Transmission-Free Zone.

In **Western Australia**, rainfall varied widely, with heavy wet-season storms and multiple cyclones impacting the Kimberley, while the Pilbara saw isolated wet weather. The Gascoyne and central west of the state recorded above-average rainfall, the south west had high winter rainfall but remained seasonally dry, and the south coast experienced significant rain from cloud bands and troughs. Mean minimum temperatures were above average statewide, with occasional frosts only in the Great Southern region in September 2024. Wet conditions in the north likely supported vector breeding early in the season, but intense rainfall later disrupted breeding sites and reduced activity.

¹ namp.animalhealthaustralia.com.au

Transmission was confined to the BTV Transmission Zone in the Kimberley region, with serotypes BTV-1, 12, 15, 16 and 21 detected. Seropositive cattle were detected in a herd in the eastern Kimberley in March 2025, and large numbers of seropositive cattle were detected in herds in the central Kimberly and near Halls Creek in June 2025. Seropositive animals were detected in the western Kimberley in October 2024, consistent with prior years. Bluetongue virus transmission was not detected at any sites outside the BTV Transmission Zone. No exotic species of *Culicoides* were found at trapping sites in Western Australia. Nineteen species of *Culicoides* were identified, with *C. brevitarsis* being the most abundant. Similar to previous years, low numbers of *C. brevitarsis* were also collected at a site south of Broome, within the BTV Transmission Buffer Zone. A single specimen of *C. brevitarsis* was found outside the BTV Transmission Zone at a coastal Gascoyne site and is suspected to have been blown down from the Pilbara.

In **Queensland**, extreme rainfall dominated 2024–2025, following an already wet prior year. Heavy winter rains caused flooding, spring brought high temperatures and severe storms, and summer saw continued rainfall, particularly in the north, with widespread inundation extending west towards Lake Eyre in South Australia. Two successive wet seasons likely supported *Culicoides* survival and spread, alongside increased livestock density in previously drought-affected regions, heightening arbovirus transmission risk.

Bluetongue virus activity was widespread, beginning early in northern herds near Cooktown, Normanton and Townsville, and later at Innisfail. Central herds showed significant pre-summer exposure at Bundaberg, Capella and Mackay (near-coastal), while herds at central inland sites remained negative. Southern detections were limited to Cunnamulla and Quilpie in serosurvey herds, though east-coast sentinel herds recorded high seroconversion late in summer. These patterns reflect progressive spread from north to south, consistent with previous years. The predominant serotype was BTV-16, followed by BTV-21, BTV-1 and BTV-15.

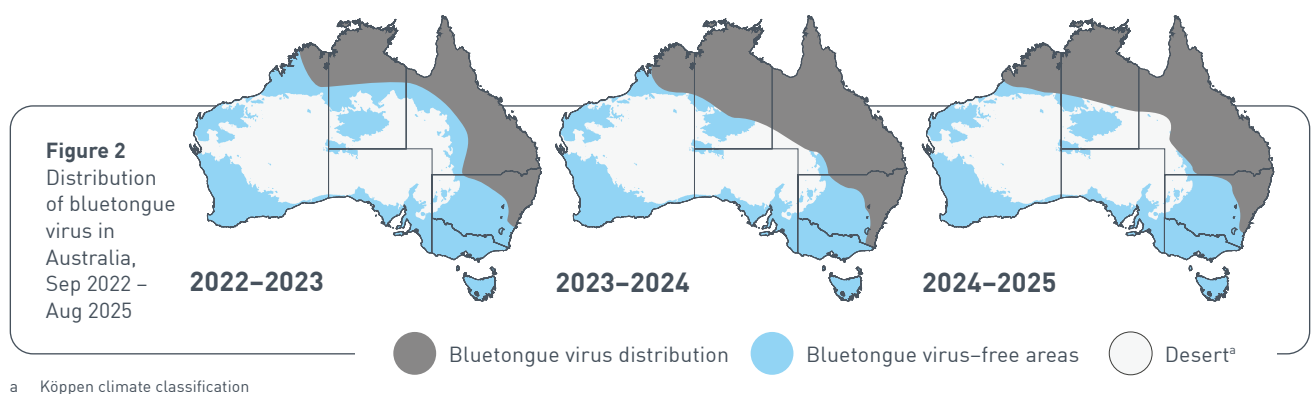
Vector monitoring showed increased abundance, distribution and diversity compared to the previous year,

with *C. brevitarsis* most prevalent, followed by *C. wadai*, which was detected as unusually far south as Gatton and Allora in inland southeast Queensland. Lower numbers of *C. fulvus* and *C. actoni* were captured at Cooktown, Innisfail and Townsville.

In **New South Wales**, rainfall from July 2024 to June 2025 was above average across the northeast and average to below average in the southwest. Significant rain events occurred in January 2025 on the coastal plain and eastern ranges; in March–April 2025 across the north coast, northern tablelands and slopes; and in May 2025 with major flooding in the Mid North Coast and Hunter regions. Winter began dry. Maximum temperatures were mostly above average to record highs, except July 2024 and June 2025, which were near average. Minimum temperatures were generally above average, with brief cooler periods in September 2024 and June 2025.

Bluetongue virus transmission began in December 2024, with the first seroconversions detected on the Far North Coast in January 2025, spreading to the Hunter Valley by March 2025, the Sydney Basin by April 2025, and reaching Nowra by June 2025. Transmission was less extensive than the previous season and mainly confined to the coastal plain and Hunter Valley, with a single detection on the Northern Tablelands in July. Serotypes detected were BTV-1, 16 and 21, with BTV-21 the most widespread (although not detected on the Mid North Coast). The serotype BTV-16 was mainly confined to the coastal plain, particularly the Mid North Coast, and BTV-1 dominated the Far North Coast and southernmost sites. No cases of bluetongue disease in sheep were reported this season.

Culicoides brevitarsis was detected at much lower levels than prior seasons, with limited presence west of the Great Dividing Range and low numbers on the ranges. Coastal detections followed usual patterns, including southerly persistence at Bodalla. *Culicoides wadai* was more common than in previous years, extending as far south as Bellingen and reappearing at sites where it had not been recorded for five years. Notable non-vector detections included *C. smeei* and *C. subimmaculatus* along the southern coast.



In **Victoria**, rainfall was mostly below average through winter, spring and autumn, with only parts of Gippsland recording above-average totals. Summer was the driest since 2013–2014. Temperatures were consistently above average across all seasons, with autumn recording the highest on record for maximum temperatures in most areas.

In **South Australia**, rainfall was generally below average during winter, spring and summer, with the exception of August; as well as this, parts of the north recorded above-average rainfall. Autumn was marked by severe rainfall deficiencies in the south, while the northeast experienced heavy rain and flooding linked to extremely high rainfall across Queensland.

Temperatures in South Australia were consistently warmer than average across all seasons.

In **Tasmania**, conditions were significantly drier and warmer than average. Rainfall was generally below average across most regions, with autumn 2025 being the driest since 2002. Maximum and minimum temperatures were consistently above average throughout the year, with autumn recording the highest mean maximum temperatures on record for much of the state.

No *Culicoides* species known to be capable BTV vectors were detected in Victoria, South Australia or Tasmania, consistent with the serological evidence of virus absence.

AKABANE VIRUS DISTRIBUTION

The distribution of Akabane virus (Figure 3) varies within the limits of its vector, *C. brevitarsis*, occurring endemically in northern Australia and showing a distinct seasonal spread in New South Wales and southern parts of Queensland.

In the **Northern Territory**, there was no evidence of transmission outside the endemic zone, and sentinel herd monitoring near Alice Springs remained negative (noting that no surveillance was conducted within the endemic region).

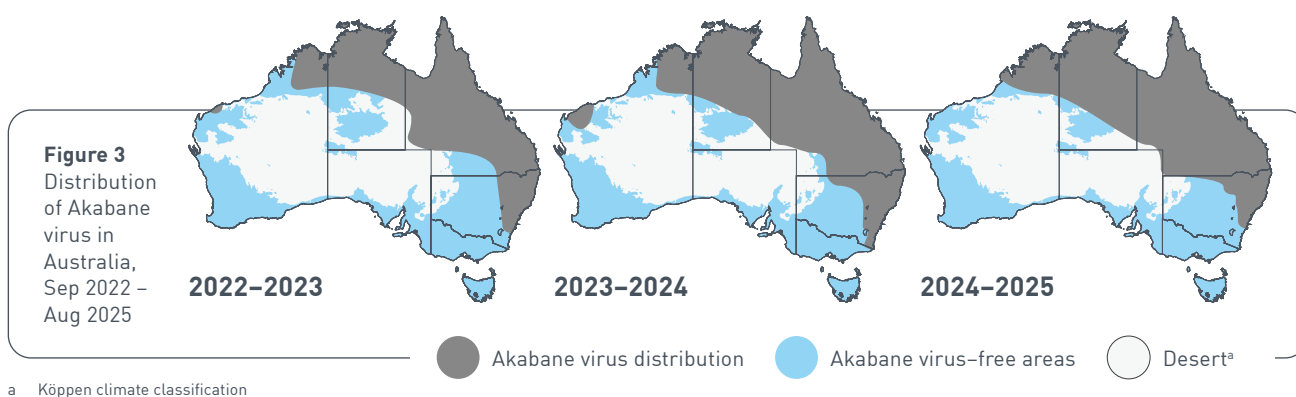
In **Western Australia**, detections occurred in the Kimberley, consistent with previous years, including at survey sites in the Gibb River and Halls Creek regions.

There was a single seroconversion in the Pilbara.

In **Queensland**, Akabane virus was widespread, with high exposure levels throughout the northern and central regions, less common inland near Quilpie, and extended further southwest than usual, beyond the BTV Transmission Zone.

In **New South Wales**, transmission was detected along the coastal plain from the Far North Coast through to the Sydney Basin and Hunter Valley, and extending inland to the Northern Tablelands and the North West Slopes. No cases of Akabane disease were reported.

No Akabane virus transmission was detected in Victoria, South Australia or Tasmania.



BOVINE EPHEMERAL FEVER VIRUS DISTRIBUTION

Bovine ephemeral fever virus is endemic in northern Australia, where disease can occur in both the dry and wet seasons (spring, summer or autumn). Cold winters limit occurrence of the virus by restricting the distribution of its mosquito vector. Significant rainfall and flooding events throughout much of southeast

Australia facilitated BEF virus transmission in the 2024–2025 season (Figure 4).

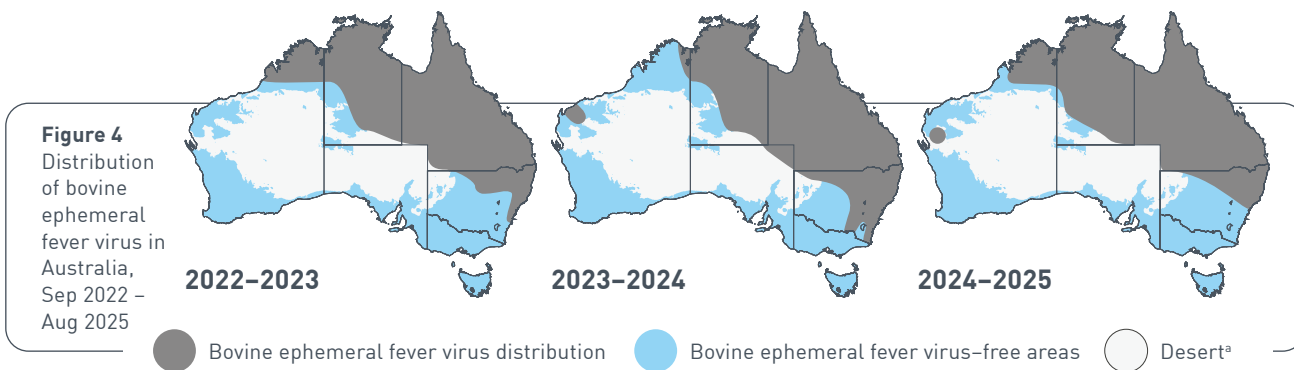
In the **Northern Territory**, transmission was widespread, with seroconversions peaking between January and March, while Alice Springs remained free of infection.

In **Western Australia**, BEF virus was detected in animals across the Kimberley and sporadically in the southern Pilbara.

Bovine ephemeral fever virus activity was recorded throughout **Queensland**, including early-season activity and practically year-round activity at the northerly sites of Burketown, Cloncurry, Cooktown, Hervey Range, Innisfail and Normanton. Activity was more seasonal in the central and particularly the southern regions, but compared to previous years, detections occurred earlier, shifting from the usual late summer–winter period to early–late summer.

In **New South Wales**, no seroconversions were detected in monitored sentinel herds; however, polymerase chain reaction (PCR)–confirmed cases occurred on the Far North Coast from mid-December 2024, in the Hunter Valley from March 2025, and unexpectedly on the North West Slopes in early June 2025.

No evidence of BEF virus transmission was detected in Victoria, South Australia or Tasmania.



^a Köppen climate classification

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