

NSW Arbovirus Surveillance and Mosquito Monitoring 2023-2024

Environmental Health Branch, Health Protection NSW

Weekly Update: Week ending 2 March 2024



Bottom left - Common banded mosquito, *Culex annulirostris* **Top and bottom right** - Saltmarsh mosquito, *Aedes vigilax* (Copyright 2020)

Weekly reports are available on [Mosquito-borne disease surveillance](#).

Please send questions or comments about this report to:

Surveillance and Risk Unit, Environmental Health Branch, Health Protection NSW: hssg-ehbsurveillance@health.nsw.gov.au

Testing and scientific services are provided by the Department of Medical Entomology, NSW Health Pathology, Institute of Clinical Pathology and Medical Research (ICPMR) for mosquito surveillance, and the Arbovirus Emerging Diseases Unit, NSW Health Pathology (ICPMR) for sentinel chicken surveillance.

The arbovirus surveillance and mosquito monitoring results in this report remain the property of the NSW Ministry of Health and may not be used or disseminated to unauthorised persons or organisations without permission.

SPHN (EH) 230938

Summary

Arbovirus detections

Sentinel chickens

- There were no arbovirus detections in sentinel chickens for the week ending 2 March 2024.

Mosquito isolates

- In the week ending 2 March 2024, Ross River virus was detected in mosquito samples from Grong Grong and Newcastle; Barmah Forest virus was detected in mosquito samples from Penrith and Newcastle; Stratford virus was detected in mosquito samples from Georges River and Lake Cathie.

Mosquito abundance

Inland

- **Low:** Albury, Balranald, Bathurst, Bourke, Corowa, Goulburn, Macquarie Marshes, Mathoura, Menindee, Moama, Moree, Murrumbidgee, Narrandera, Wagga Wagga, West Wyalong, Yass.
- **Medium:** Temora.
- **High:** Deniliquin, Forbes, Griffith, Grong Grong, Leeton, Wilcannia.

Coastal

- **Low:** Byron Bay, Kempsey, Lismore, Murwillumbah, Wauchope.
- **Medium:** Batemans Bay, Wyong.
- **High:** Ballina, Gosford, Lake Cathie, Nambucca, Narooma, Port Macquarie, Tweed Heads.
- **Very high:** Newcastle.

Sydney

- **Medium:** Hawkesbury, Hills Shire, Penrith.
- **High:** Georges River, Liverpool, Northern Beaches.
- **Very high:** Bankstown, Canada Bay, Parramatta, Sydney Olympic Park.

Environmental conditions

Climate

- In the week ending 2 March 2024, rainfall was lower than average across the most of NSW, with pockets of average or higher than average rainfall in Western NSW, Mid North Coast and Northern NSW.
- In February, rainfall was below average in Murrumbidgee and the southern region of Far West NSW and slightly above average in Illawarra Shoalhaven, Western NSW and the northern region of Far West NSW, with some areas in Mid North Coast and Northern NSW region experiencing particularly high levels of rainfall.
- In the coming week, 8 March to 14 March 2024, higher than average rainfall is expected across most of NSW. Average rainfall is expected in the Mid North Coast, North Coast and Hunter New England regions of NSW.

- Minimum and maximum temperatures in NSW are expected to be higher than average across NSW in the coming week. Maximum temperatures are expected to be higher than average particularly in the Mid North Coast, North Coast and Hunter New England regions of NSW.

Tides

• High tides over 1.8 metres are predicted for 8-13 March 2024, 6-12 April 2024 and 7-12 May which could trigger hatching of *Aedes vigilax*.

Human arboviral disease notifications

Ross River virus

Seven probable cases were notified in the week ending 2 March 2024.

Barmah Forest virus

Two probable cases were notified in the week ending 2 March 2024.

Arbovirus detections

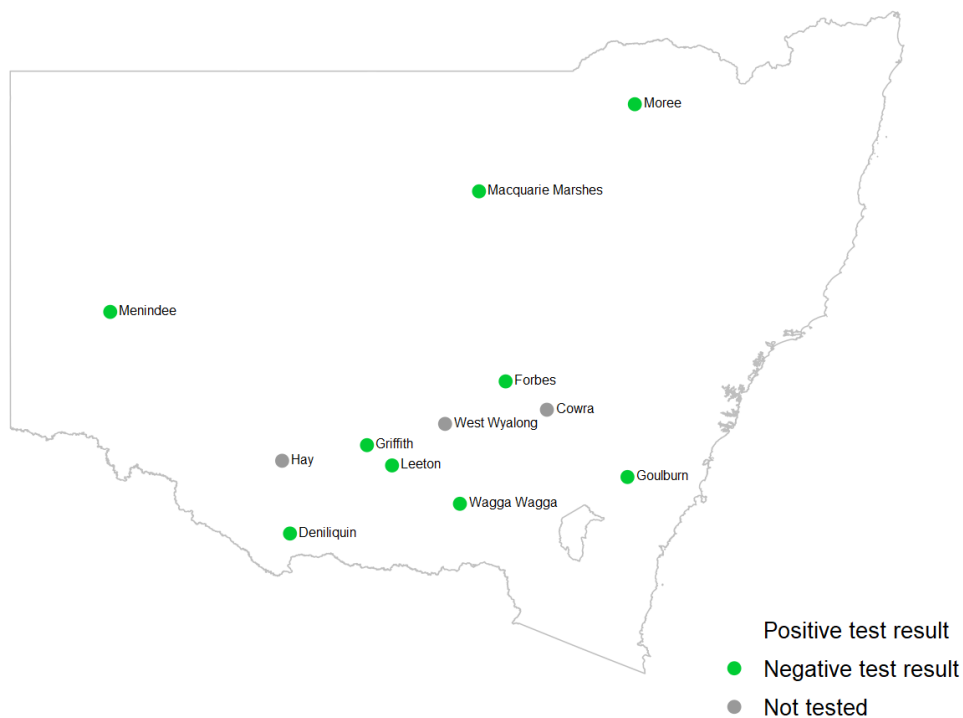
This section details detections of Murray Valley encephalitis virus, Japanese encephalitis virus, Kunjin virus, Ross River virus and Barmah Forest virus in the NSW Arbovirus Surveillance and Mosquito Monitoring Program.

Sentinel chickens

Chickens are bled for detection of antibodies directed against Murray Valley encephalitis virus, Japanese encephalitis virus and Kunjin virus, indicating exposure to these viruses. Test results for the past week are shown in the map below. A positive test result indicates one or more chickens in a flock tested positive for the **first time** to antibodies directed against a particular virus, indicating newly acquired infection.

Sentinel chicken antibody test results for samples collected in the week ending 2 March 2024

There were no arbovirus detections in sentinel chickens for the week ending 2 March 2024.



Positive test results in the 2023-2024 surveillance season.

| Date of sample collection | Location | Virus |
|---------------------------|-----------|-----------------------|
| 2023-12-17 | *Menindee | Japanese Encephalitis |

*The sentinel chicken had only recently arrived in Menindee and is likely to have acquired Japanese encephalitis virus in Cowra prior to arrival in Menindee.

Mosquito isolates

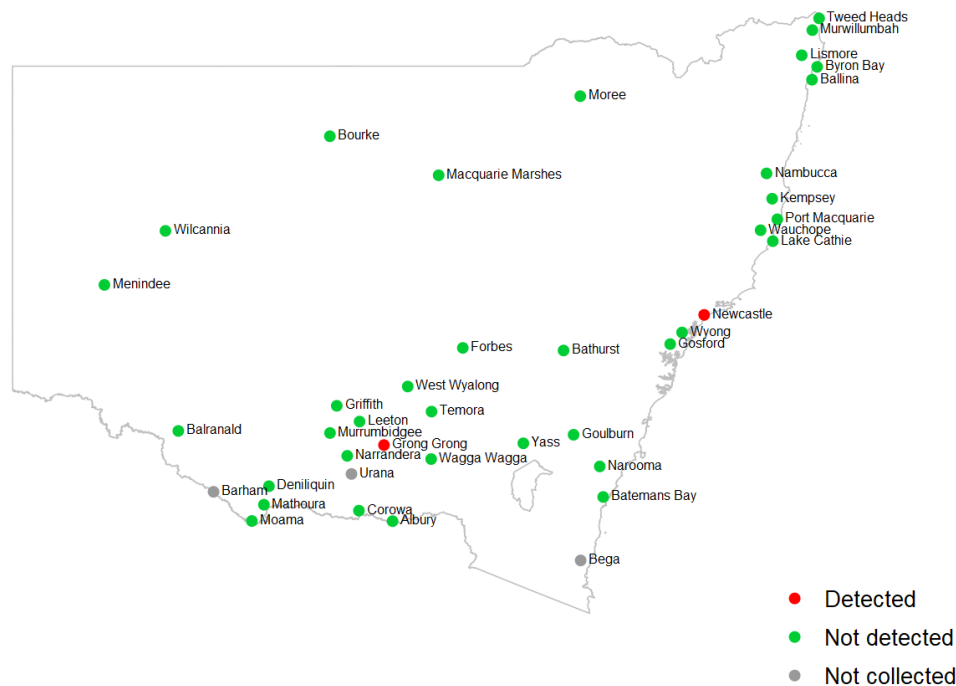
Whole grinds of collected mosquitoes are tested for arbovirus nucleic acids to determine the presence of arboviruses in mosquitoes. Test results for detections of Murray Valley encephalitis virus, Japanese encephalitis virus, Kunjin virus, Ross River virus and Barmah Forest virus for the past week are shown in the maps below. Detections of all arboviruses (including Edge Hill virus and Kokobera virus) for the season are detailed in the positive test results for the 2023-2024 surveillance season.

Test results for mosquito trapping sites reported in the week ending 2 March 2024

In the week ending 2 March 2024, Ross River virus was detected in mosquito samples from Grong Grong and Newcastle; Barmah Forest virus was detected in mosquito samples from Penrith and Newcastle; Stratford virus was detected in mosquito samples from Georges River and Lake Cathie.

Inland and coastal sites

The map highlights detections of arboviruses that can cause human notifiable conditions, such as Murray Valley encephalitis virus, Japanese encephalitis virus, Kunjin virus, Ross River virus, and Barmah Forest virus. Detections of all arboviruses (including Edge Hill virus, Stratford virus and Kokobera virus) for the season are detailed in the positive test results for the 2023-2024 surveillance season.



Inland and coastal sites - positive test results in the 2023-2024 surveillance season.

| Date of sample collection | Location | Virus |
|---------------------------|-------------------|------------|
| 2024-01-03 | Gosford | Edge Hill |
| 2024-01-16 | Gosford | Edge Hill |
| 2024-01-22 | Macquarie Marshes | Kokobera |
| 2024-01-23 | Newcastle | Edge Hill |
| 2024-01-29 | Tweed | Edge Hill |
| 2024-01-29 | Tweed | Ross River |

Inland and coastal sites - positive test results in the 2023-2024 surveillance season.

| Date of sample collection | Location | Virus |
|----------------------------------|-----------------|---------------|
| 2024-01-29 | Temora | Kokobera |
| 2024-01-29 | Narrandera | Kokobera |
| 2024-01-30 | Forbes | Kokobera |
| 2024-02-04 | Narooma | Stratford |
| 2024-02-05 | Byron Bay | Ross River |
| 2024-02-06 | Batemans Bay | Edge Hill |
| 2024-02-06 | Newcastle | Barmah Forest |
| 2024-02-06 | Newcastle | Edge Hill |
| 2024-02-06 | Newcastle | Stratford |
| 2024-02-07 | Central Coast | Edge Hill |
| 2024-02-07 | Central Coast | Stratford |
| 2024-02-12 | Byron Bay | Ross River |
| 2024-02-12 | Ballina | Ross River |
| 2024-02-12 | Lake Cathie | Edge Hill |
| 2024-02-12 | Newcastle | Edge Hill |
| 2024-02-12 | Newcastle | Stratford |
| 2024-02-19 | Tweed | Sindbis |
| 2024-02-19 | Griffith | Kokobera |
| 2024-02-22 | Central Coast | Stratford |
| 2024-02-26 | Lake Cathie | Stratford |
| 2024-02-26 | Grong Grong | Ross River |
| 2024-02-27 | Newcastle | Ross River |
| 2024-02-27 | Newcastle | Barmah Forest |

Please note: Human cases of Edge Hill virus, Stratford virus or Kokobera virus have rarely been reported. Infection may present as a mild self-limiting febrile illness with body aches.

Sydney sites

The map highlights detections of arboviruses that can cause human notifiable conditions, such as Murray Valley encephalitis virus, Japanese encephalitis virus, Kunjin virus, Ross River virus, and Barmah Forest virus. Detections of all arboviruses (including Edge Hill virus, Stratford virus and Kokobera virus) for the season are detailed in the positive test results for the 2023-2024 surveillance season.



Sydney - positive test results in the 2023-2024 surveillance season.

| Date of sample collection | Location | Virus |
|---------------------------|---------------------|---------------|
| 2024-01-29 | Sydney Olympic Park | Edge Hill |
| 2024-01-29 | Northern Beaches | Edge Hill |
| 2024-01-30 | Bankstown | Edge Hill |
| 2024-01-30 | Georges River | Edge Hill |
| 2024-02-05 | Sydney Olympic Park | Edge Hill |
| 2024-02-05 | Sydney Olympic Park | Stratford |
| 2024-02-06 | Parramatta | Edge Hill |
| 2024-02-06 | Hawkesbury | Stratford |
| 2024-02-07 | Georges River | Edge Hill |
| 2024-02-07 | Georges River | Stratford |
| 2024-02-12 | Bankstown | Stratford |
| 2024-02-20 | Northern Beaches | Edge Hill |
| 2024-02-27 | Georges River | Stratford |
| 2024-02-27 | Penrith | Barmah Forest |

Mosquito abundance

This section details counts of mosquitoes in the NSW Arbovirus Surveillance and Mosquito Monitoring Program. Each location represents the count average for all trapping sites at that location for the most recent week that collections were provided prior to preparation of this report.

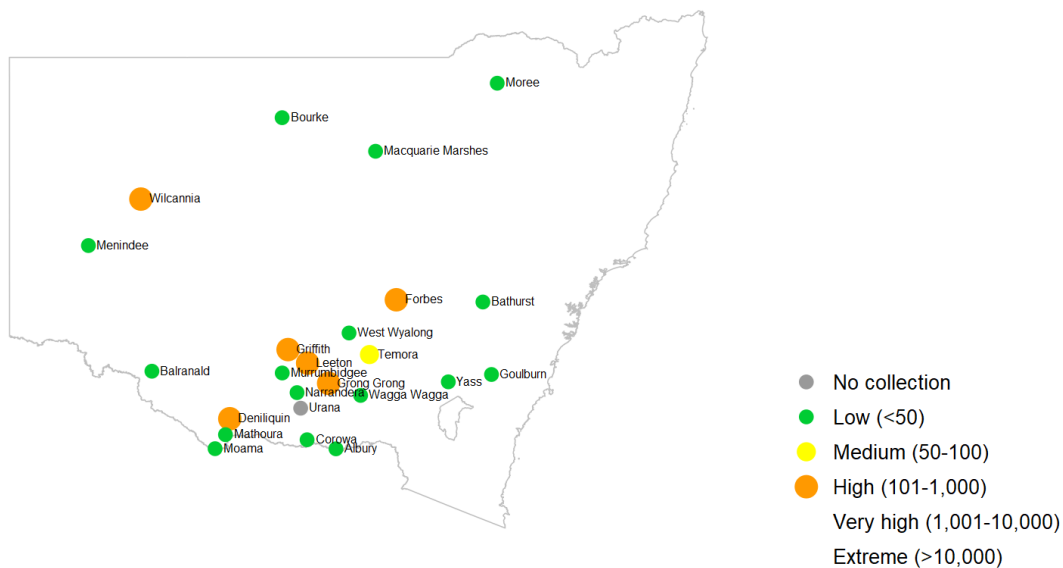
Culex annulirostris and *Aedes vigilax* are vectors of interest for Ross River virus and Barmah Forest virus, *Culex annulirostris* is also a vector for Japanese encephalitis virus.

Mosquito counts

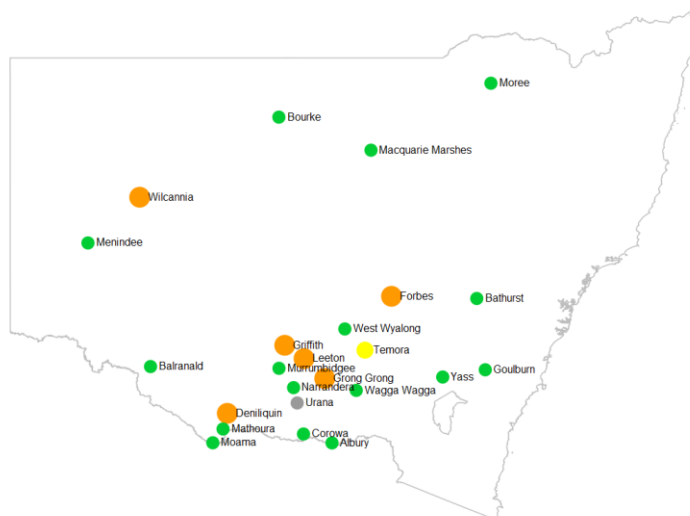
Mosquito counts (average per trap per location) for mosquito trapping sites reported in the week ending 2 March 2024

Inland sites

Total mosquito counts

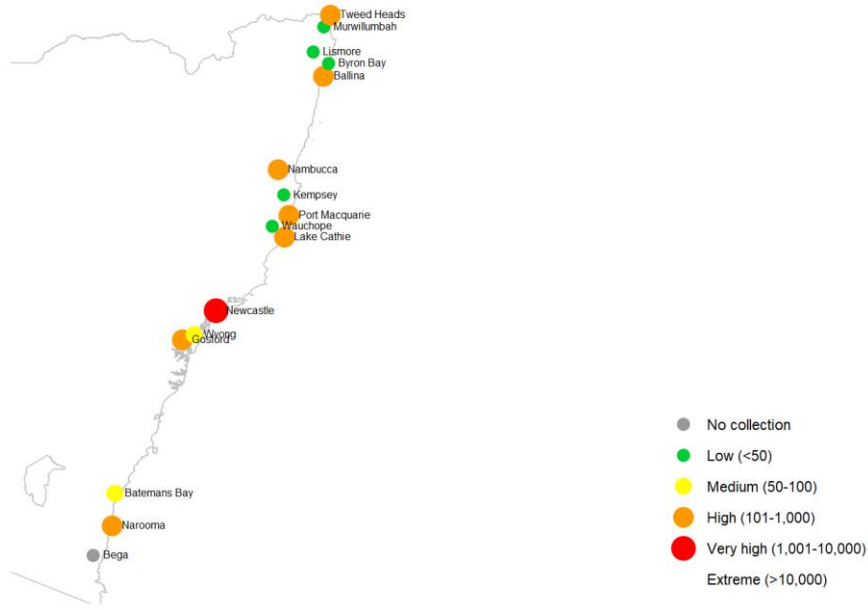


Culex annulirostris counts

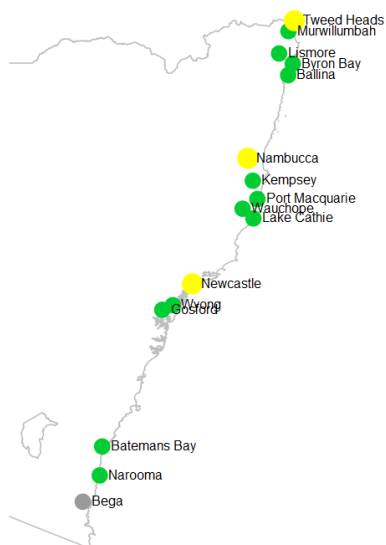


Coastal sites

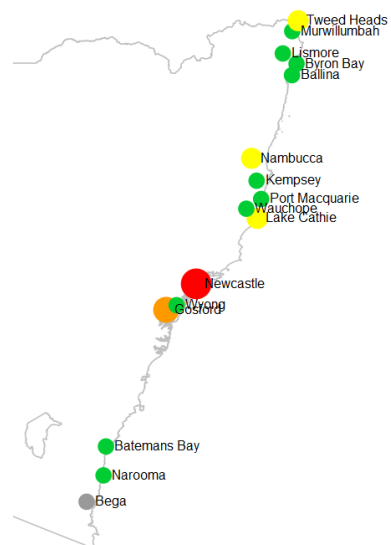
Total mosquito counts



Culex annulirostris counts

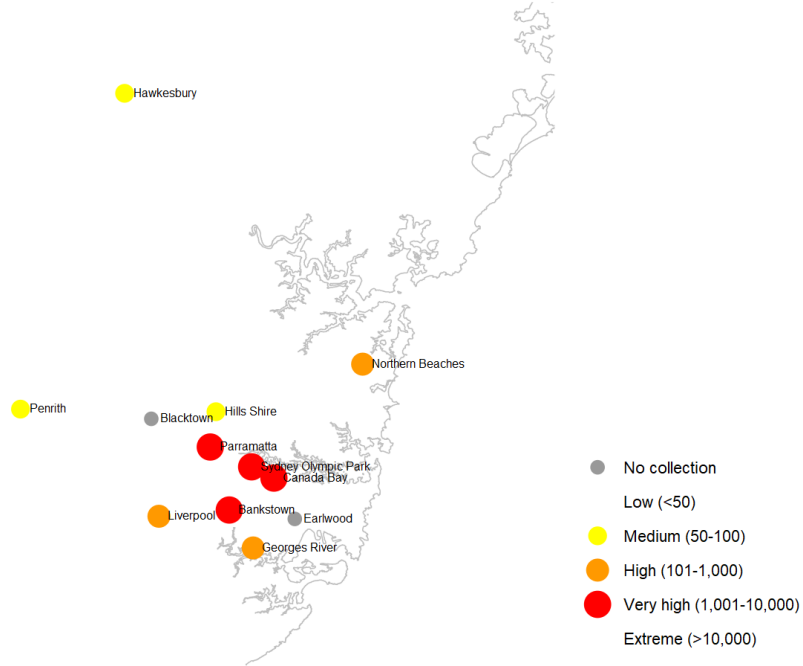


Aedes vigilax counts

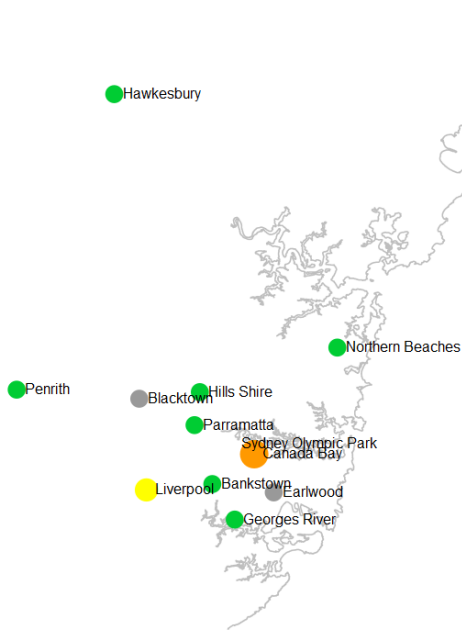


Sydney sites

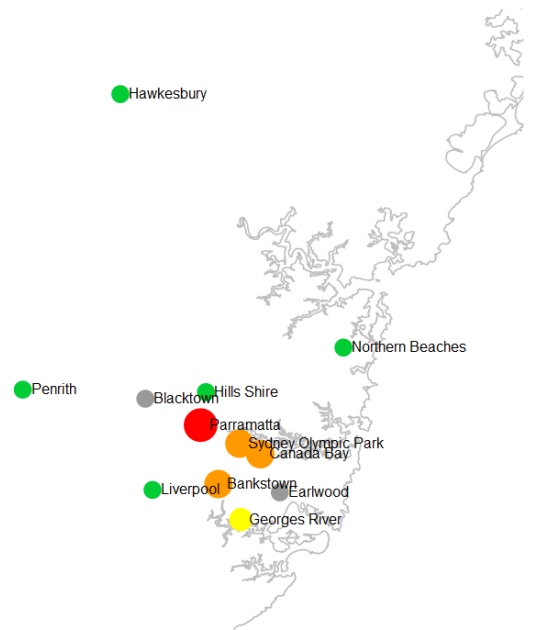
Total mosquito counts



Culex annulirostris counts



Aedes vigilax counts



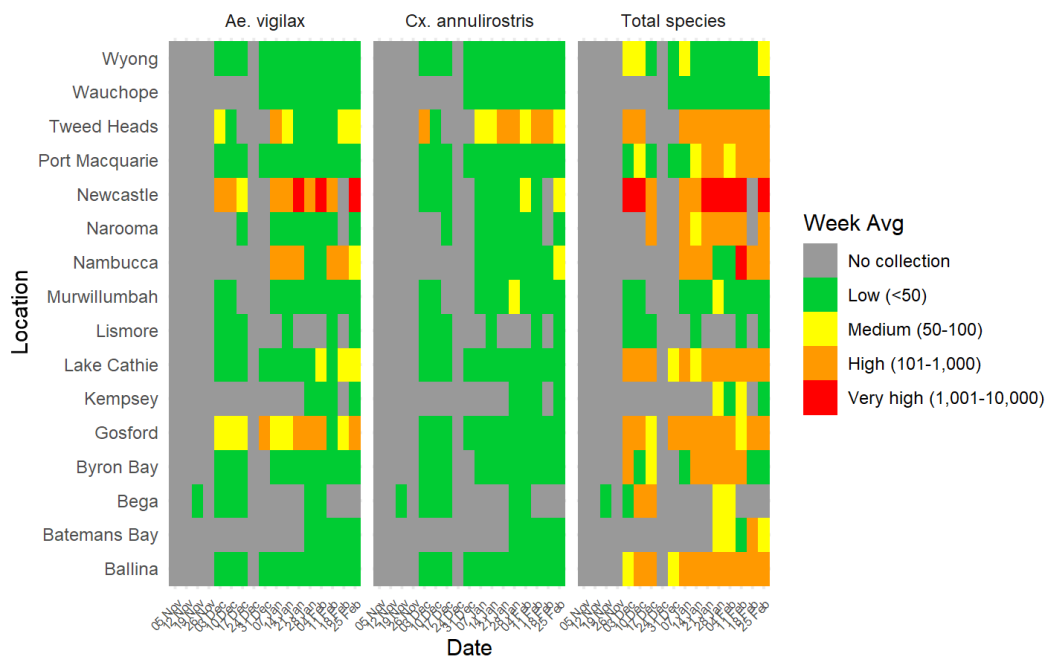
Mosquito abundance results for the 2023-2024 season

season

This section shows all mosquito trapping results by location and species type to date for the current arbovirus season.

Cumulative mosquito abundance tables

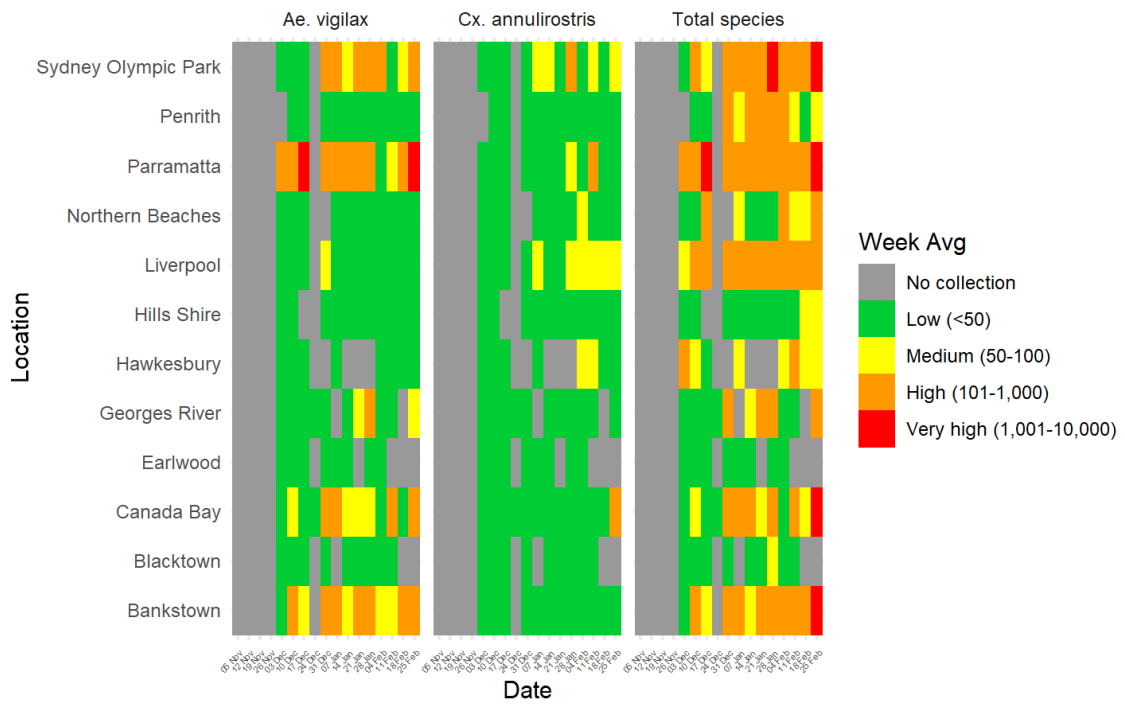
Number of mosquitoes trapped along the coast (weekly average)



Number of mosquitoes trapped inland (weekly average)



Number of mosquitoes trapped in Sydney (weekly average)



Environmental conditions

Mosquitoes require water to breed. Rainfall and tides (for the salt marsh mosquito, *Aedes vigilax*) are important contributing factors for proliferation of mosquito numbers. Unseasonably warm weather can also contribute to higher mosquito numbers.

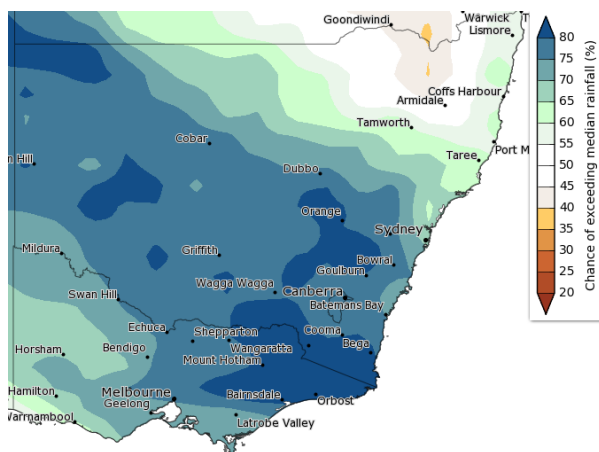
Rainfall

In the week ending 2 March 2024, rainfall was lower than average across the most of NSW, with pockets of average or higher than average rainfall in Western NSW, Mid North Coast and Northern NSW. In February, rainfall was below average in Murrumbidgee and the southern region of Far West NSW and slightly above average in Illawarra Shoalhaven, Western NSW and the northern region of Far West NSW, with some areas in Mid North Coast and Northern NSW region experiencing particularly high levels of rainfall.

Upcoming week's rainfall and temperature outlook

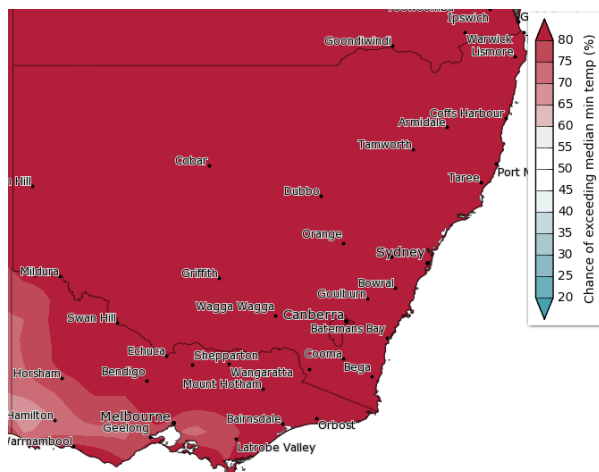
Higher than average rainfall is expected across most of NSW in the coming week. Average rainfall is expected in the Mid North Cost, North Coast and Hunter New England regions of NSW.

Rainfall 8 March to 14 March, 2024



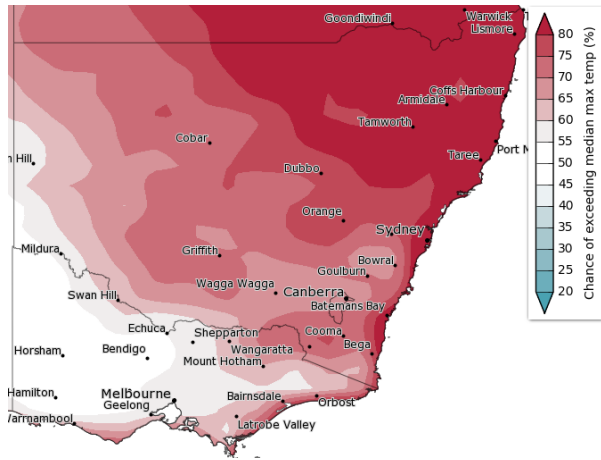
Minimum temperature 8 March to 14 March, 2024

In the upcoming week, minimum temperatures are expected to be higher than average across NSW.



Maximum temperature 8 March to 14 March, 2024

In the upcoming week, maximum temperatures are forecast to be higher than average across NSW, particularly in the Mid North Coast, North Coast and Hunter New England regions of NSW.



Tides

Tidal information is relevant for the prediction of the activity of the salt marsh mosquito, *Aedes vigilax*. Typically for NSW, high tides of over 1.8 m, as measured at Sydney, can induce hatching of *Aedes vigilax* larvae. Predicted tide heights can provide some indication of when this is likely to occur.

Dates of predicted high tides of over 1.8 m at Sydney (Fort Denison)

- 8-13 March 2024
- 6-12 April 2024
- 7-12 May

Source: [Australian Government, Bureau of Meteorology](#). Note: Measured tides at Sydney Port Jackson for the current week are available from the NSW Government, [Manly Hydraulics Laboratory](#).

Human arboviral disease notifications

Under the *NSW Public Health Act 2010*, human arboviral infections are notifiable in NSW.

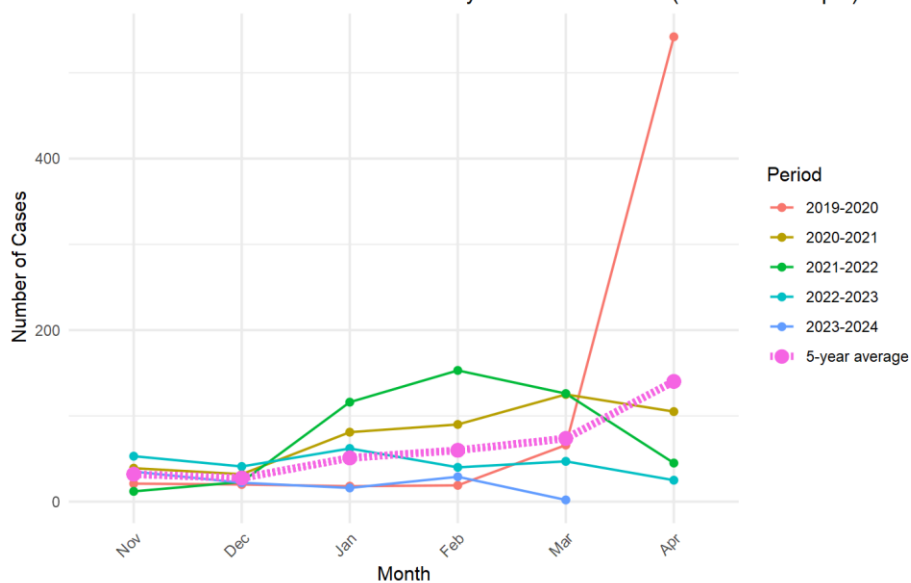
Recent notifications of Ross River virus and Barmah Forest virus infections in humans (by date of case report received)

Notifications of Ross River virus and Barmah Forest virus infections, by month of disease onset (the earlier of patient-reported onset or specimen collection date), are available online at the [NSW Health website - infectious diseases data](#).

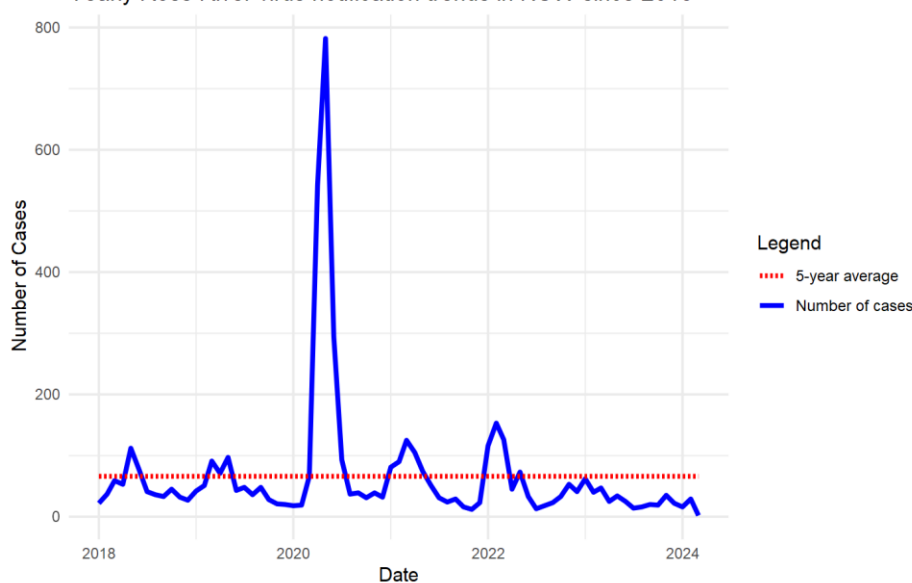
The following figures show notifications for the current NSW Arbovirus Surveillance and Mosquito Monitoring season (2023-2024), and the same period in the previous four years.

Ross River virus

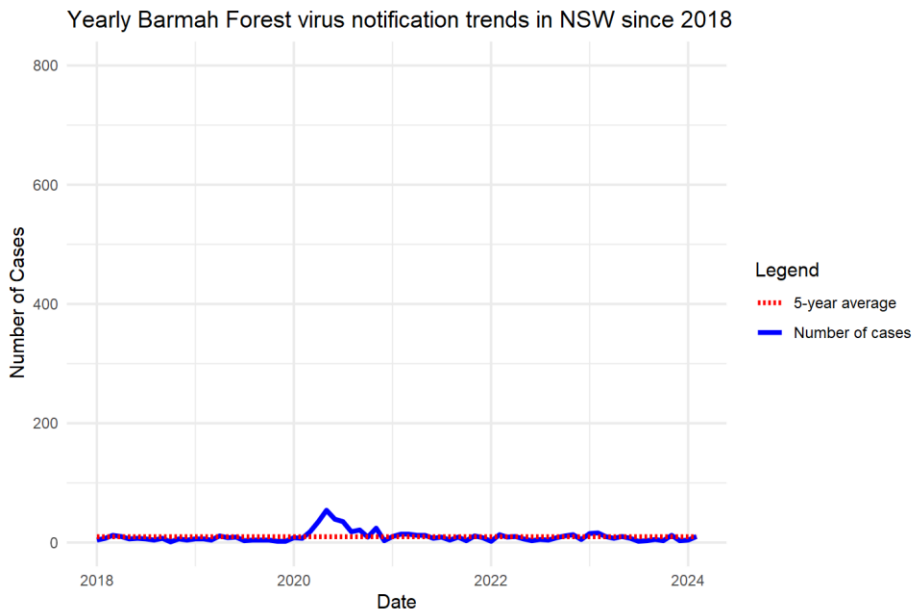
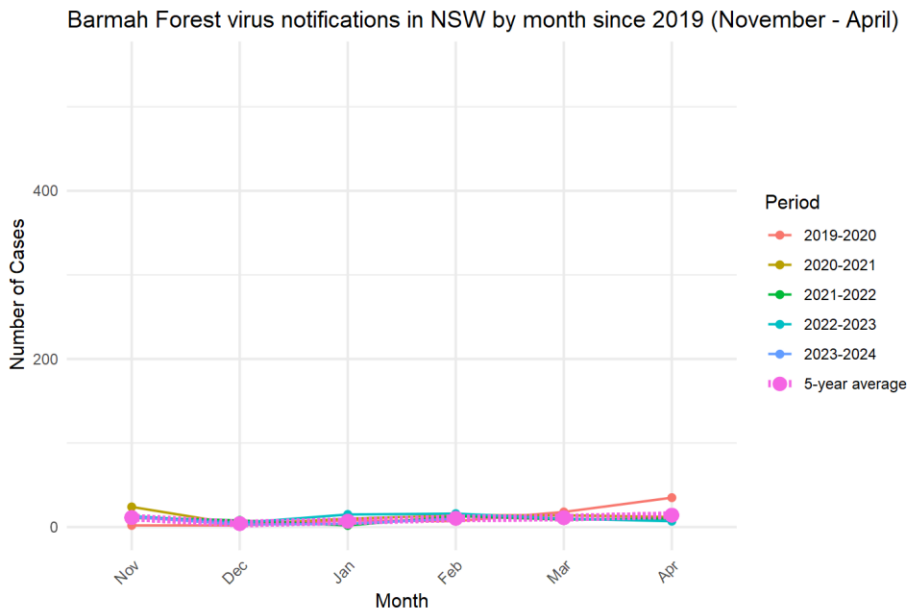
Ross River virus notifications in NSW by month since 2019 (November - April)



Yearly Ross River virus notification trends in NSW since 2018



Barmah Forest virus



Note: Presented human cases include both confirmed and probable cases.