NSW Arbovirus Surveillance and Mosquito Monitoring 2023-2024

Environmental Health Branch, Health Protection NSW

Weekly Update: Week ending 9 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.

SPHN (EH) 230938

Summary

Arbovirus detections

Sentinel chickens

• There were no arbovirus detections in sentinel chickens for the week ending 9 March 2024.

Mosquito isolates

• In the week ending 9 March 2024, Ross River virus was detected in mosquito samples from Tweed and Penrith; Barmah Forest virus was detected in a mosquito sample from Newcastle; Stratford virus was detected in mosquito samples from Tweed and Hills Shire; Edge Hill virus was detected in mosquito samples from Georges River and Grong Grong; Kokobera virus was detected in a mosquito sample from Leeton.

Mosquito abundance

Inland

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

Coastal

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

Sydney

- **Low:** Blacktown, Georges River, Hawkesbury.
- **Medium:** Earlwood, Hills Shire, Liverpool, Penrith.
- **High:** Bankstown, Canada Bay, Parramatta, Sydney Olympic Park.

Environmental conditions

Climate

- In the week ending 9 March 2024, rainfall was lower than average across most of NSW, with slightly higher than average rainfall in 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, 15 March to 21 March 2024, higher than average rainfall is expected across the NSW coastline.

- Minimum temperatures in NSW are expected to be higher than average in the northern region of Western NSW and Far West, Hunter New England and along the coast. Maximum temperatures in NSW are expected to be higher than average across most of NSW. Average temperatures are expected in Sydney, Illawarra Shoalhaven and across the Victorian border.

Tides

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

Human arboviral disease notifications

Ross River virus

Sixteen probable cases were notified in the week ending 9 March 2024.

Barmah Forest virus

No cases were notified in the week ending 9 March 2024.

Arbovirus detections

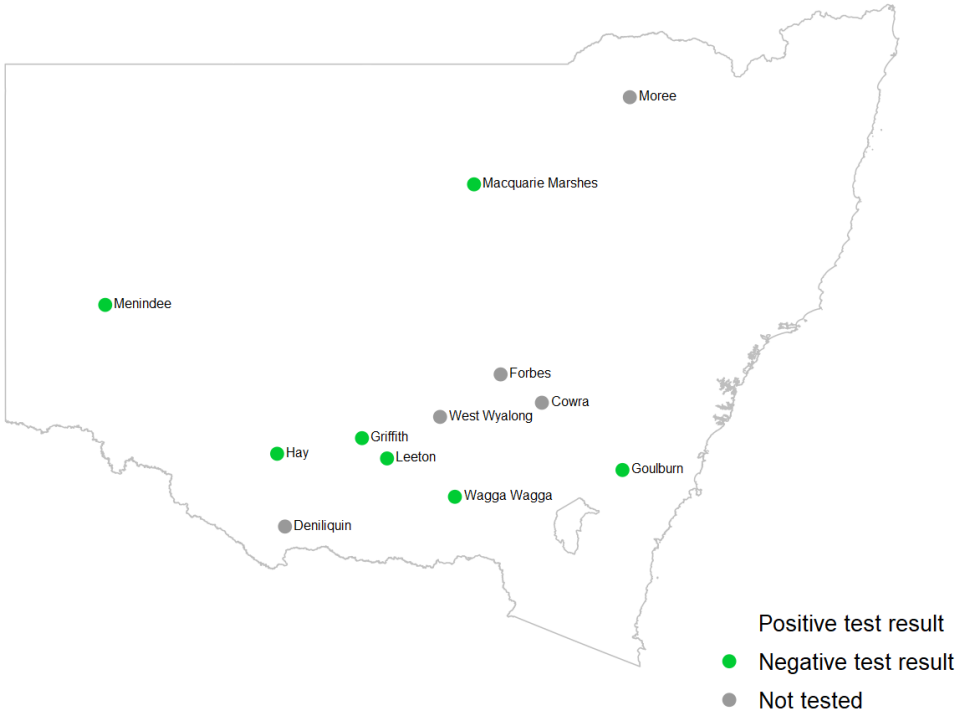
This section details detections of Murray Valley encephalitis virus, Japanese encephalitis virus, Kunjin virus, Ross River virus and Barmah Forest virus in the NSW Arbovirus Surveillance and Mosquito Monitoring Program.

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 9 March 2024

There were no arbovirus detections in sentinel chickens for the week ending 9 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

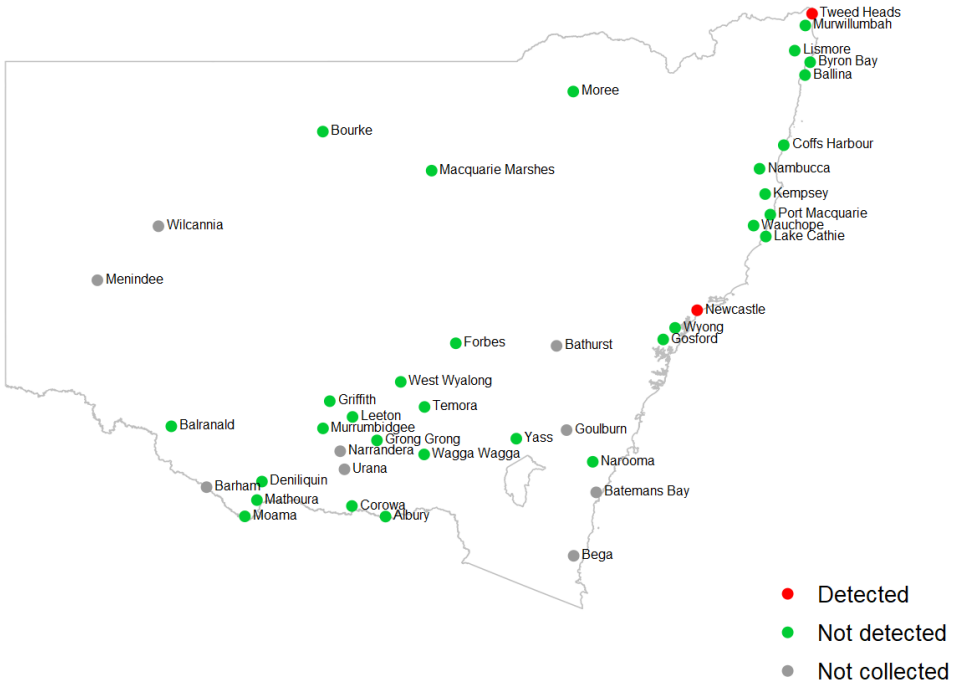
Whole grinds of collected mosquitoes are tested for arbovirus nucleic acids to determine the presence of arboviruses in mosquitoes. Test results for detections of Murray Valley encephalitis virus, Japanese encephalitis virus, Kunjin virus, Ross River virus and Barmah Forest virus for the past week are 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 9 March 2024

In the week ending 9 March 2024, Ross River virus was detected in mosquito samples from Tweed and Penrith; Barmah Forest virus was detected in a mosquito sample from Newcastle; Stratford virus was detected in mosquito samples from Tweed and Hills Shire; Edge Hill virus was detected in mosquito samples from Georges River and Grong Grong; Kokobera virus was detected in a mosquito sample from Leeton.

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

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

Date of sample collection	Location	Virus
2024-01-29	Tweed	Edge Hill
2024-01-29	Tweed	Ross River
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
2024-02-29	Forbes	Kokobera

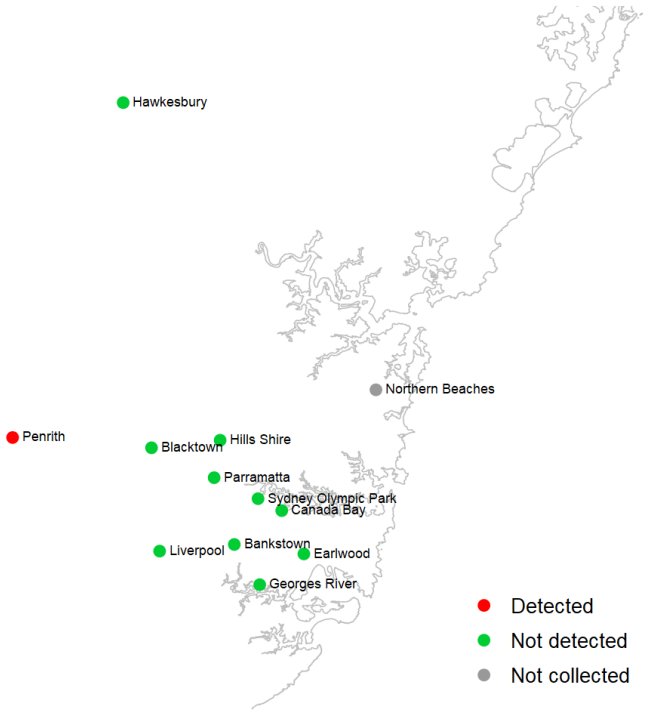
Inland and coastal sites - positive test results in the 2023-2024 surveillance season.

Date of sample collection	Location	Virus
2024-03-04	Tweed	Ross River
2024-03-04	Tweed	Stratford
2024-03-04	Leeton	Kokobera
2024-03-04	Grong Grong	Edge Hill
2024-03-05	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

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

Date of sample collection	Location	Virus
2024-02-27	Georges River	Stratford
2024-02-27	Penrith	Barmah Forest
2024-02-29	Sydney Olympic Park	Barmah Forest
2024-02-29	Hills Shire	Stratford
2024-02-29	Canada Bay	Edge Hill
2024-03-04	Georges River	Edge Hill
2024-03-05	Penrith	Ross River
2024-03-06	Hills Shire	Stratford

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.

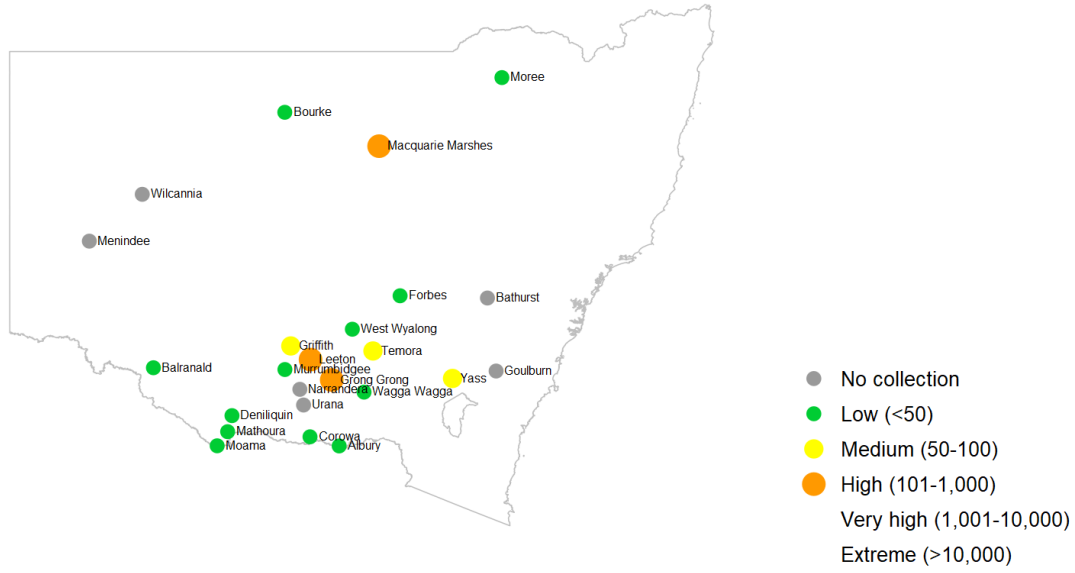
Culex annulirostris and *Aedes vigilax* are vectors of interest for Ross River virus and Barmah Forest virus, *Culex annulirostris* is also a vector for Japanese encephalitis virus.

Mosquito counts

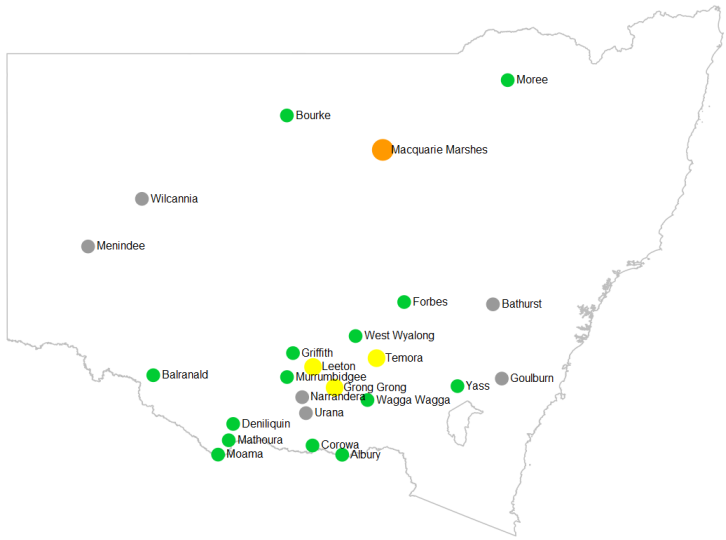
Mosquito counts (average per trap per location) for mosquito trapping sites reported in the week ending 9 March 2024

Inland sites

Total mosquito counts

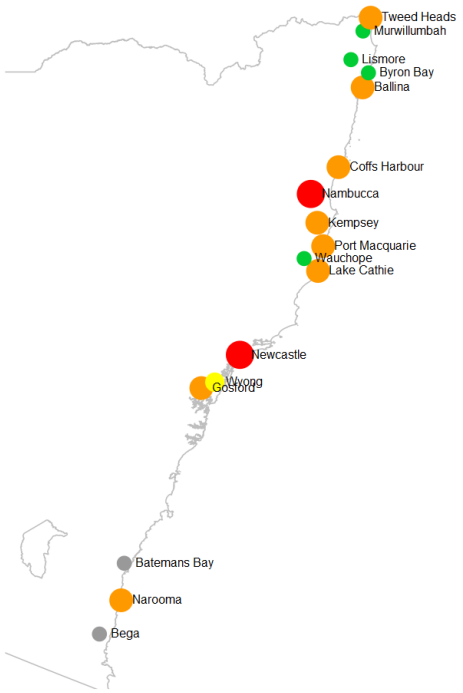


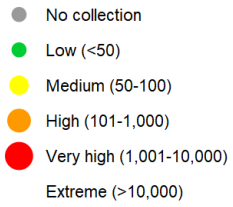
Culex annulirostris counts



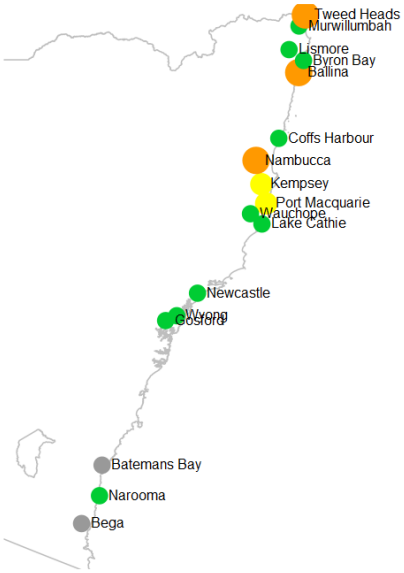
Coastal sites

Total mosquito counts

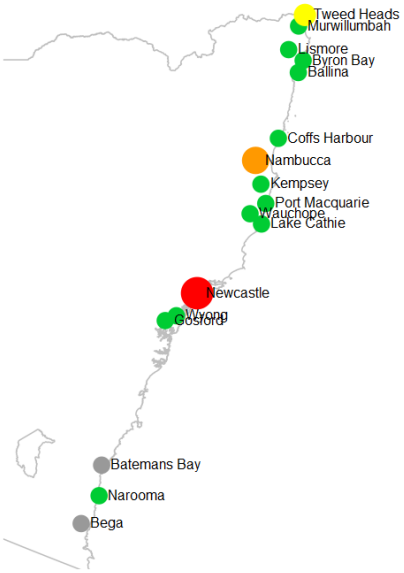




Culex annulirostris counts



Aedes vigilax counts



Sydney sites

Total mosquito counts

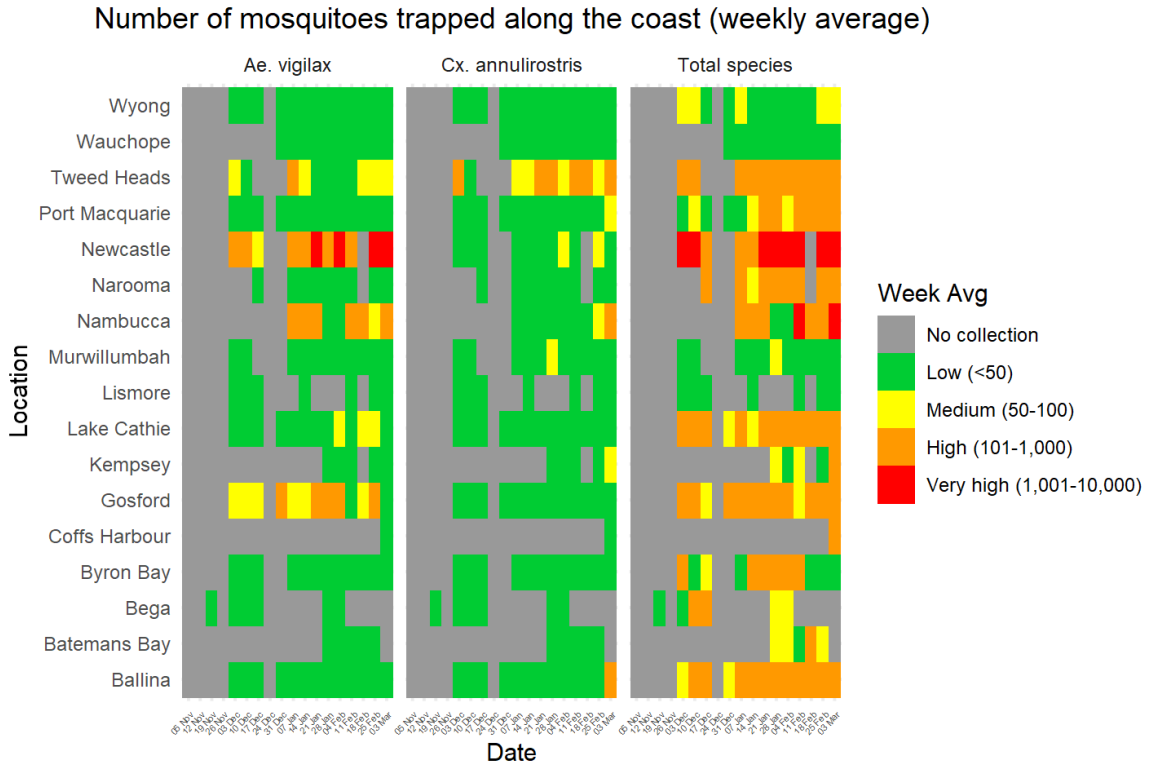
Culex annulirostris counts

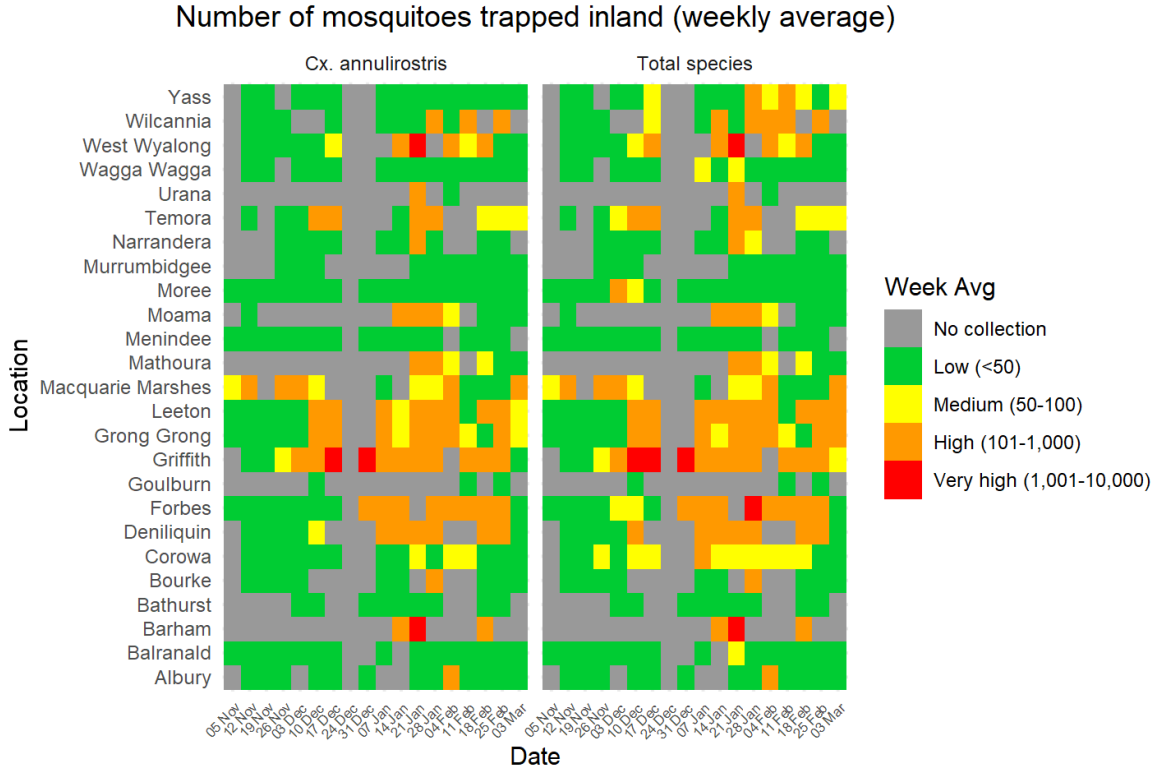
Aedes vigilax counts

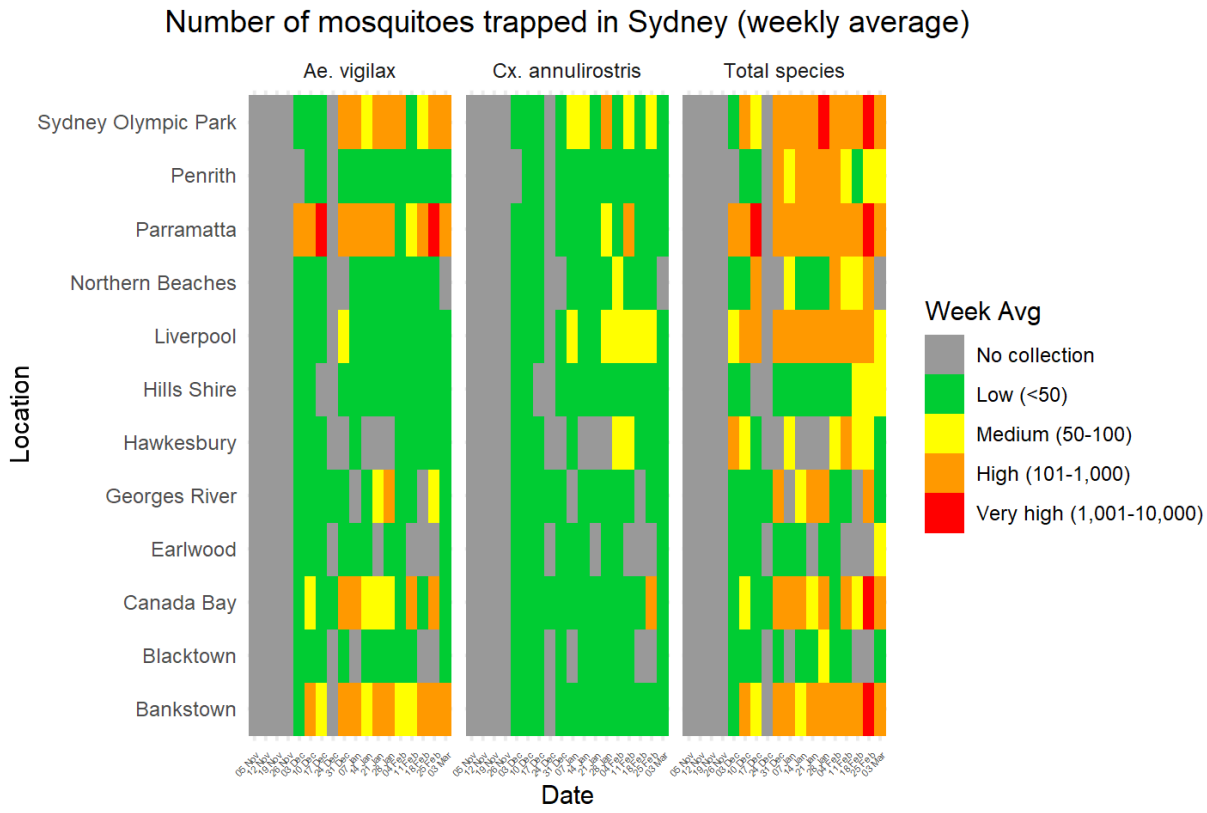
Mosquito abundance results for the 2023-2024 season

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 in Sydney (weekly average)
Ae. vigilax
Cx. annulirostris
Total species
Sydney Olympic Park
Penrith
Parramatta
Northern Beaches
Liverpool
Hills Shire
Hawkesbury
Georges River
Earlwood
Canada Bay
Blacktown
Bankstown
Location
Date
Week Avg
No collection
Low (<50)
Medium (50-100)
High (101-1,000)
Very high (1,001-10,000)

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.

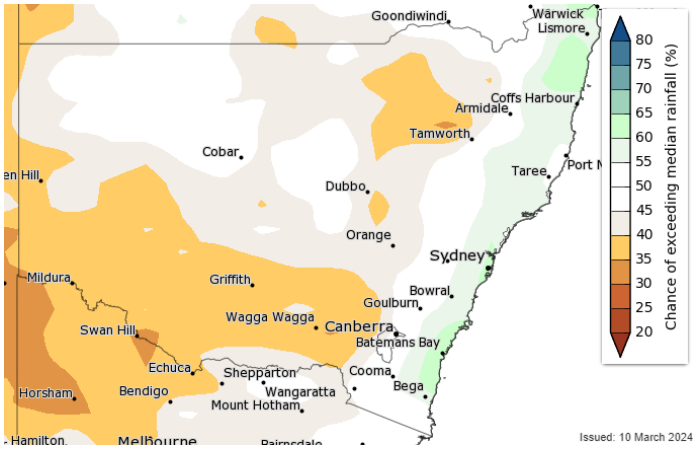
Rainfall

In the week ending 9 March 2024, rainfall was lower than average across most of NSW, with slightly higher than average rainfall in 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.

Upcoming week's rainfall and temperature outlook

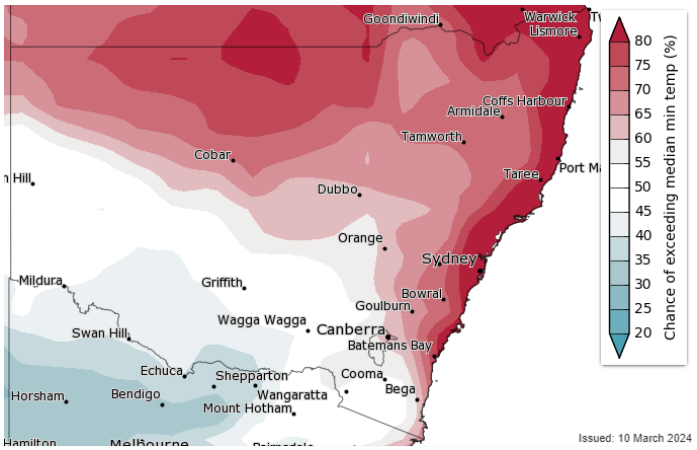
In the coming week, higher than average rainfall is expected across the NSW coastline.

Rainfall 15 March to 21 March, 2024



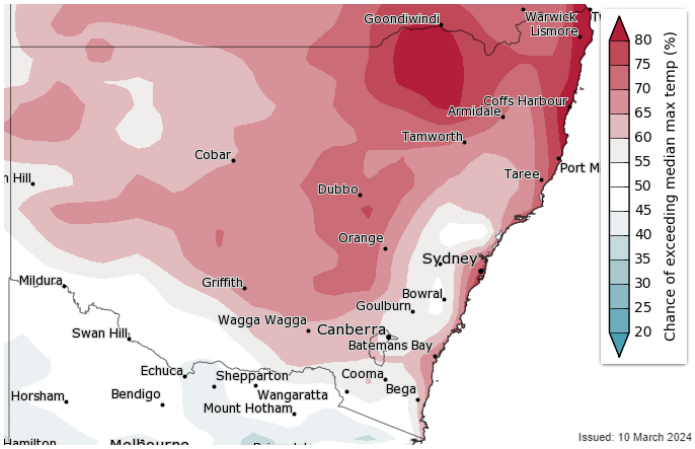
Minimum temperature 15 March to 21 March, 2024

In the upcoming week, minimum temperatures are expected to be higher than average in the northern region of Western NSW and Far West, Hunter New England and along the coast.



Maximum temperature 8 March to 14 March, 2024

In the upcoming week, maximum temperatures in NSW are expected to be higher than average across most of NSW. Average temperatures are expected in Sydney, Illawarra Shoalhaven and across the Victorian border.



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)

- 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

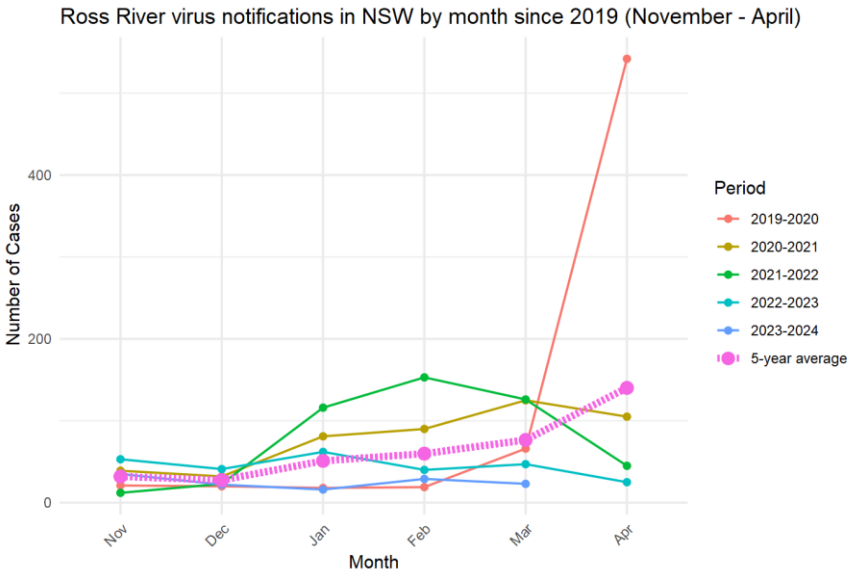
Under the *NSW Public Health Act 2010*, human arboviral infections are notifiable in NSW.

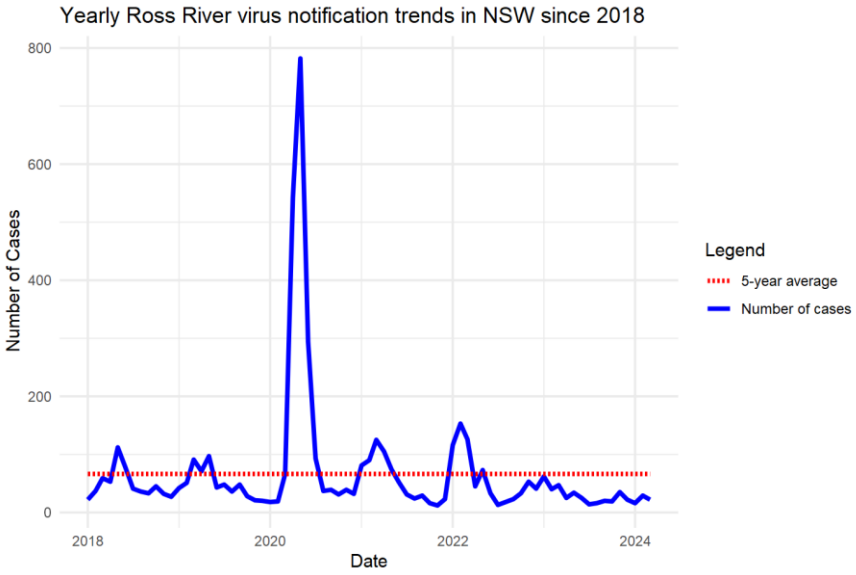
Recent notifications of Ross River virus and Barmah Forest virus infections in humans (by date of case report received)

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.

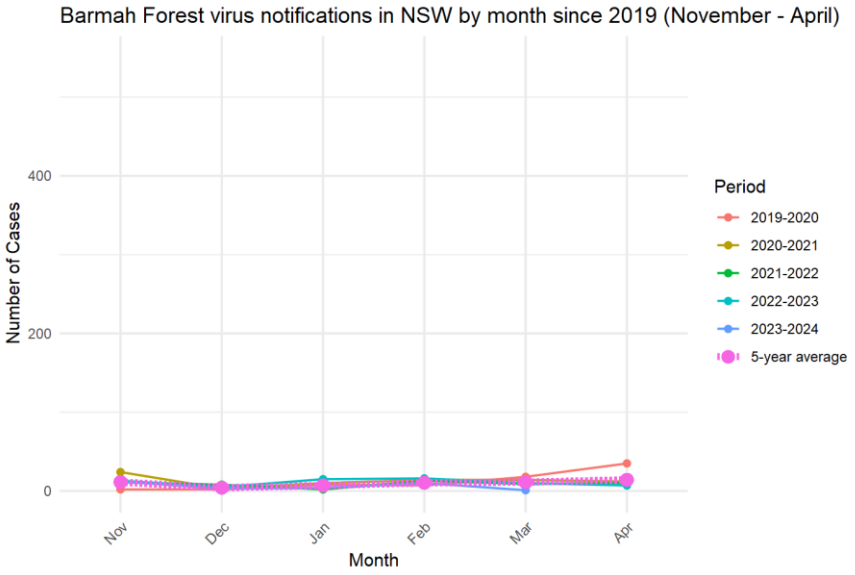
The following figures show notifications for the current NSW Arbovirus Surveillance and Mosquito Monitoring season (2023-2024), and the same period in the previous four years.

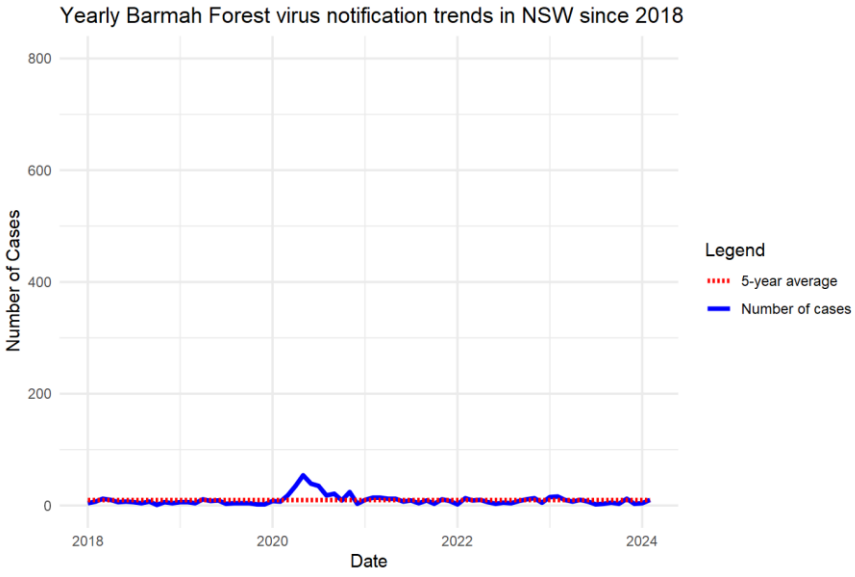
Ross River virus





Barmah Forest virus





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