

NSW Arbovirus Surveillance & Mosquito Monitoring 2020-2021

Weekly Update: Week ending 19 December 2020

(Report Number 7)



Summary

Arbovirus Detections

- **Sentinel Chickens:** There were no arbovirus detections in sentinel chickens.
- **Mosquito Isolates:** There were no arbovirus detections in mosquito isolates.

Mosquito Abundance

- **Inland:** VERY HIGH at Griffith. MEDIUM at Albury. LOW at Bourke, Leeton and Wagga Wagga.
- **Coast:** HIGH at Gosford. MEDIUM at Ballina. LOW at Byron, Port Macquarie and Wyong.
- **Sydney:** HIGH at Bankstown, Georges River and Sydney Olympic Park. MEDIUM at Hawkesbury, Parramatta and Canada Bay. LOW at Hills Shire, Northern Beaches, Blacktown and Liverpool.

Environmental Conditions

- **Climate:** In the past week, there was low to moderate rainfall across most of NSW, with higher rainfall along the Mid North Coast. Higher rainfall than usual and below usual temperatures are predicted for large parts of NSW for the remainder of December and into January.
- **Tides:** High tides over 1.8 metres are predicted to occur from 30 December-3 January and 11-16 January and 28-31 January, which could trigger hatching of *Aedes vigilax*.

Human Arboviral Disease Notifications

- **Ross River Virus:** 3 cases were notified in the week ending 12 December 2020.
- **Barmah Forest Virus:** 2 cases were notified in the week ending 12 December 2020.

Comments and other findings of note

The previous weekly report was missing mosquito abundance data from Hills Shire. These data have been added to the Sydney cumulative mosquito abundance data table in this report.

Weekly reports are available at:

www.health.nsw.gov.au/environment/pests/vector/Pages/surveillance.aspx

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 were provided by the Department of Medical Entomology, NSW Health Pathology (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.

SHPN (HP NSW) 200547

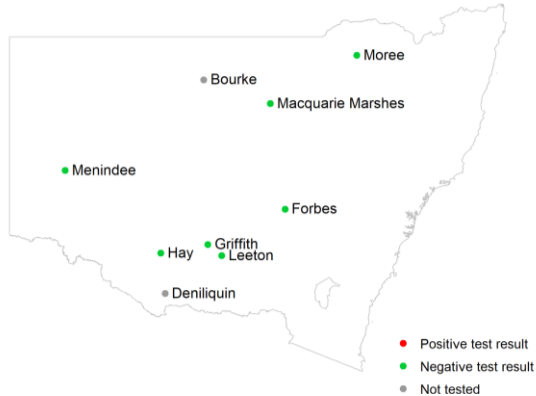
Arbovirus Detections

This section details detections of Murray Valley 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 and Kunjin virus, indicating exposure to these viruses. A test result is shown if it has been reported in the last two weeks.

Test results for sentinel chickens in the week ending 19 December 2020



Positive test results in the 2020-2021 surveillance season

| Date of sample collection | Location | Positive test results |
|---|----------|-----------------------|
| There have been no detections in sentinel chickens in the 2020-2021 surveillance season | | |

Mosquito isolates

Whole grinds of mosquitoes are tested for arbovirus nucleic acids (including Ross River virus and Barmah Forest virus). There were no detections of Ross River virus and Barmah Forest virus among sites that collected mosquitoes in this reporting week.

Test results for mosquito trapping sites in the week ending 19 December 2020

Inland and Coastal sites



Sydney sites



Ross River and Barmah Forest viruses detected in the past three weeks

| Date of sample collection | Location | Virus |
|--|----------|-------|
| There have been no detections in mosquitoes in the 2020-2021 surveillance season | | |

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 specimens collected in the current reporting week.

Culex annulirostris and *Aedes vigilax* are vectors of interest for Ross River virus and Barmah Forest virus.

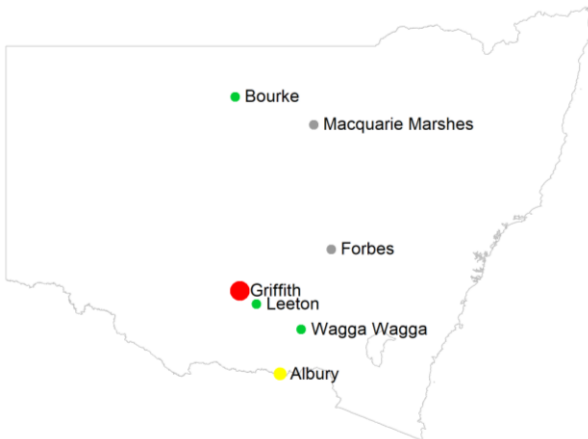
Mosquito counts in the week ending 19 December 2020

Key:

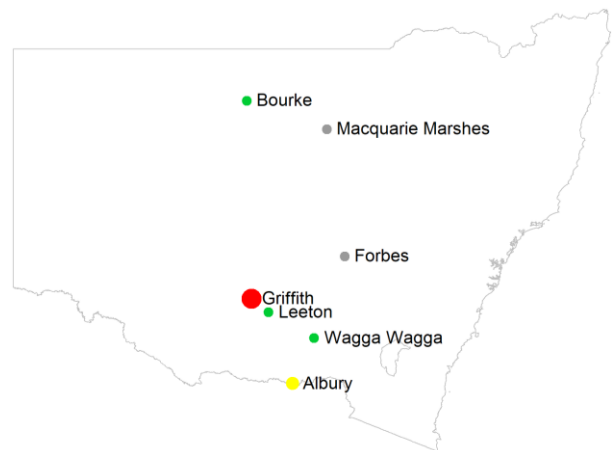
- No collection
- Low (<50)
- Medium (50-100)
- High (101-1,000)
- Very high (1,001-10,000)
- Extreme (>10,000)

Inland sites

Total mosquito counts

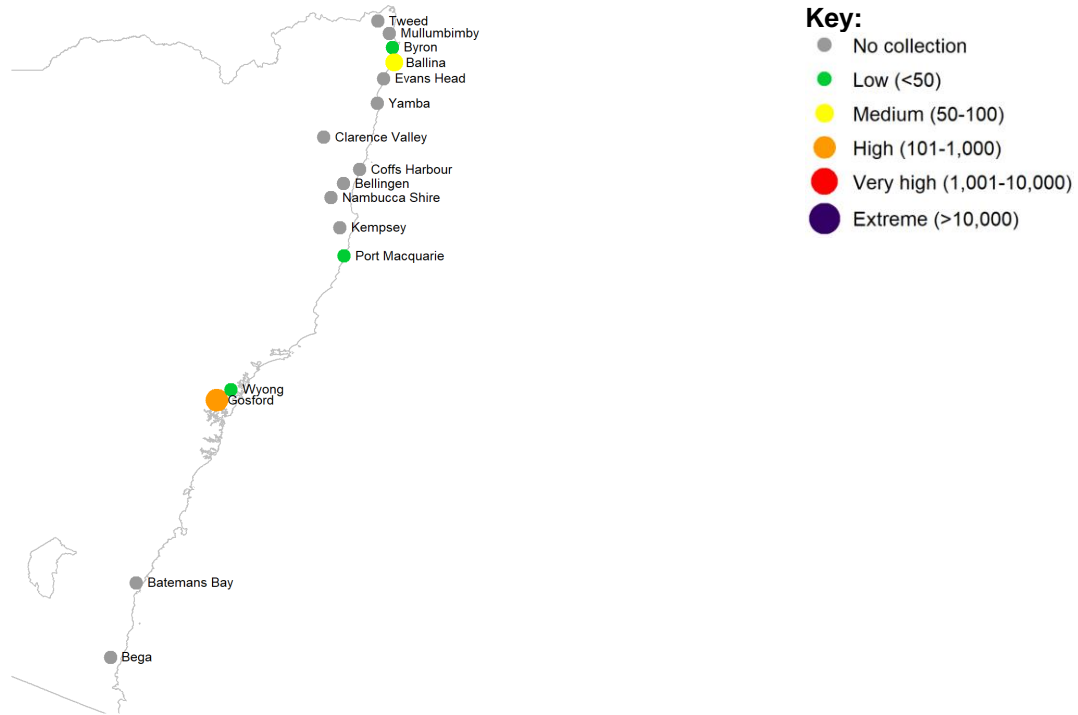


Culex annulirostris counts

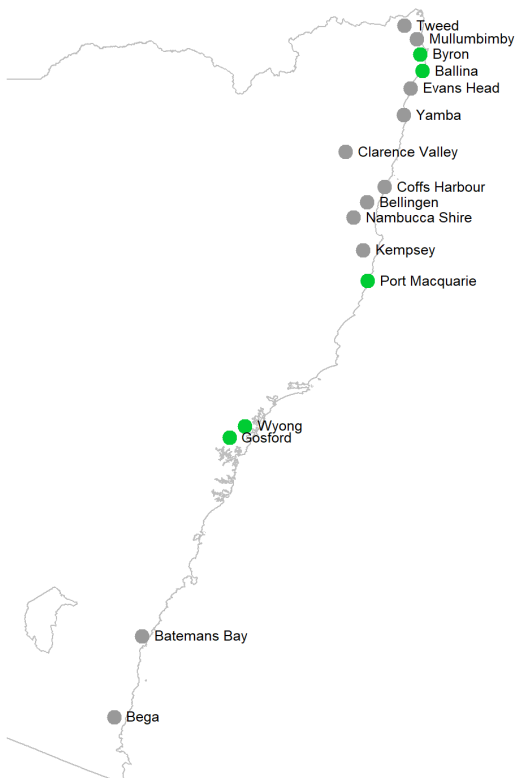


Coastal sites

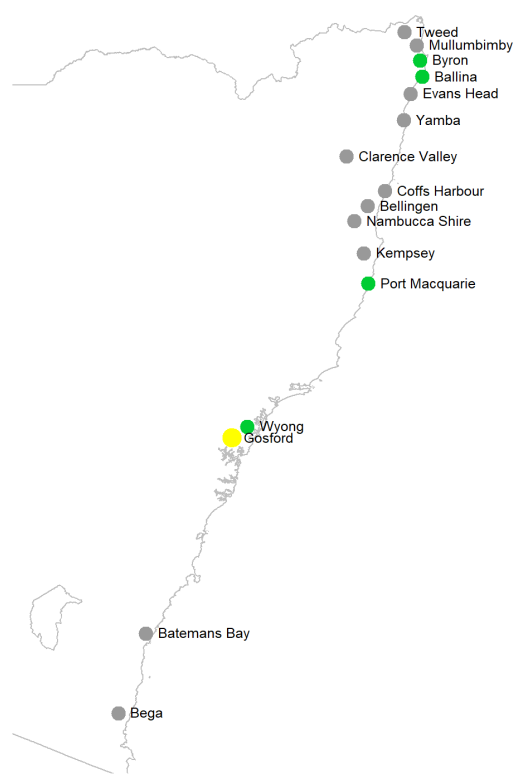
Total mosquito counts



Culex annulirostris counts

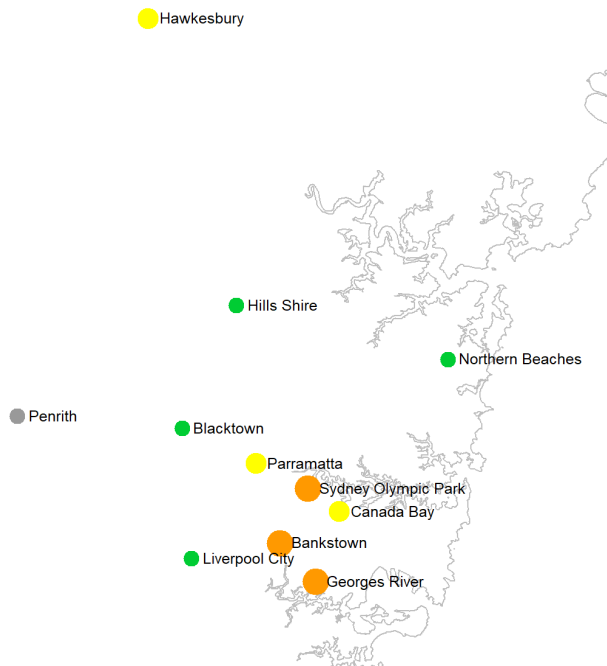


Aedes vigilax counts



Sydney sites

Total mosquito counts



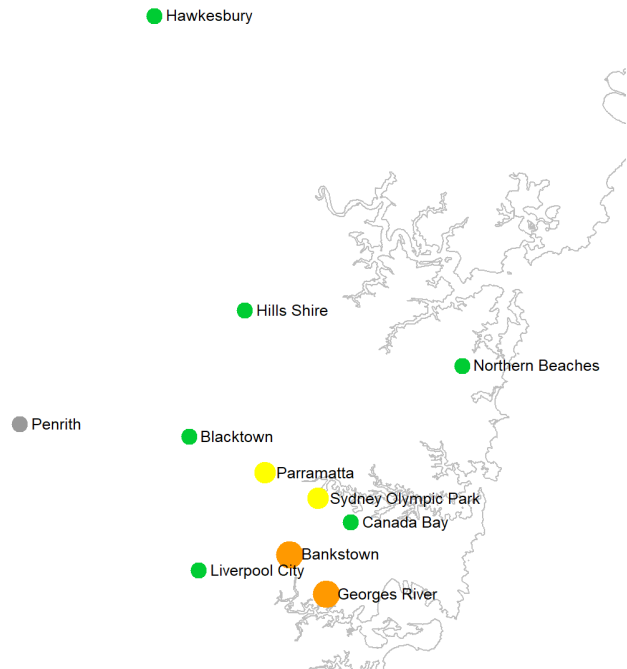
Key:

- No collection
- Low (<50)
- Medium (50-100)
- High (101-1,000)
- Very high (1,001-10,000)
- Extreme (>10,000)

Culex annulirostris counts



Aedes vigilax counts



Mosquito abundance data for 2020-21 season to date

Key:

| | |
|--|--------------------------|
| | No collection |
| | Low (<50) |
| | Medium (50-100) |
| | High (101-1,000) |
| | Very high (1,001-10,000) |
| | Extreme (>10,000) |

Data in the below tables represent the average for all trapping sites at that location. “*Cx. annul*” refers to *Culex annulirostris* and “*Ae.vigilax*” refers to *Aedes vigilax*.

Inland

| Location | | WEEK ENDING | | | | | | | | | | | | | | | | | | | |
|-------------------|------------------|-------------|----|----|----|--------|----|----|----|--------|---|----|----|--------|---|----|----|--------|---|----|----|
| | | Nov-20 | | | | Dec-20 | | | | Jan-21 | | | | Feb-21 | | | | Mar-21 | | | |
| | | 7 | 14 | 21 | 28 | 5 | 12 | 19 | 26 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 | 6 | 13 | 20 |
| Albury | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Bourke | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Forbes | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Griffith | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Leeton | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Macquarie Marshes | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Wagga Wagga | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |

Coastal

| Location | Mosquito | WEEK ENDING | | | | | | | | | | | | | | | | | | | |
|-----------------|--------------------|-------------|----|----|----|--------|----|----|----|--------|---|----|----|--------|---|----|----|--------|---|----|----|
| | | Nov-20 | | | | Dec-20 | | | | Jan-21 | | | | Feb-21 | | | | Mar-21 | | | |
| | | 7 | 14 | 21 | 28 | 5 | 12 | 19 | 26 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 | 6 | 13 | 20 |
| Ballina | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Batemans Bay | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Bega | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Bellingen | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Byron | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Clarence Valley | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Coffs Harbour | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Evans Head | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Gosford | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Kempsey | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Mullumbimby | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Nambucca Shire | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Port Macquarie | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Tweed | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Wyong | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |
| Yamba | <i>Cx. annul</i> | | | | | | | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | |

Sydney

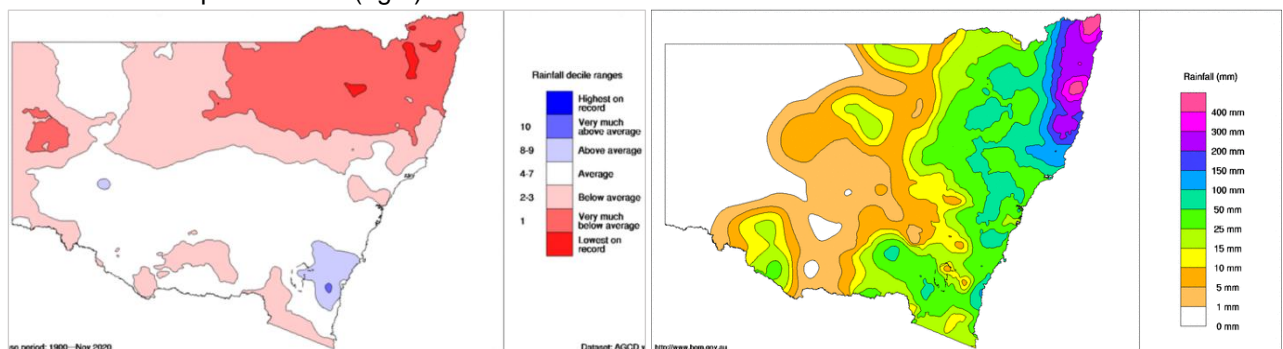
| | | WEEK ENDING | | | | | | | | | | | | | | | | | | | | |
|---------------------|--------------------|-------------|----|----|----|--------|----|----|----|--------|---|----|----|--------|---|----|----|--------|---|----|----|----|
| | | Nov-20 | | | | Dec-20 | | | | Jan-21 | | | | Feb-21 | | | | Mar-21 | | | | |
| Location | Mosquito | 7 | 14 | 21 | 28 | 5 | 12 | 19 | 26 | 2 | 9 | 16 | 23 | 30 | 6 | 13 | 20 | 27 | 6 | 13 | 20 | 27 |
| Bankstown | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Blacktown | <i>Cx. annul</i> | | | | | | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | | 12 | 19 | | | | | | | | | | | | | | |
| Canada Bay | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Georges River | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Hawkesbury | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Hills Shire | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Liverpool City | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Northern Beaches | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Parramatta | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Penrith | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| Sydney Olympic Park | <i>Cx. annul</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | <i>Ae. vigilax</i> | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |
| | Total | | | | | 5 | 12 | 19 | | | | | | | | | | | | | | |

Environmental Conditions

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

Rainfall

In November, rainfall was average or below average across most of NSW. Rainfall was very much below average in the northeast part of NSW and in the west near Broken Hill. Parts of the South Coast (near the ACT) experienced above average rainfall (left). In the week ending 19 December 2020, there was low to moderate rainfall throughout most of NSW with higher rainfall along the Mid North Coast. No rain was recorded in the northwest part of NSW (right).



Source: Australian Government, Bureau of Meteorology:
<http://www.bom.gov.au/climate/maps/rainfall>

Next month's rainfall and temperature outlook

The Bureau of Meteorology's rainfall outlook map predicts more rainfall than usual for the remainder of December and into January in the eastern half of NSW, particularly along the coastal areas.

www.bom.gov.au/climate/outlooks/#/rainfall/median/monthly/0

The Bureau of Meteorology's temperature outlook maps predict that maximum temperatures are likely to be below usual across most of NSW, but higher along the coastal fringe of NSW, for the remainder of December and into January. Maximum temperatures are predicted to be close to usual in the Far West. Minimum temperatures are predicted to be higher than usual along the coast and in parts of Northern and Southern NSW during this time, and around usual in other areas of NSW.

www.bom.gov.au/climate/outlooks/#/temperature/maximum/median/monthly/0

www.bom.gov.au/climate/outlooks/#/temperature/minimum/median/monthly/0

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) for the next month

- 30 December 2020 - 3 January 2021
- 11-16 January 2021
- 28-31 January 2021

Source: Australian Government, Bureau of Meteorology: <http://www.bom.gov.au/australia/tides/#/nsw-sydney-fort-denison>

Note: Measured tides at Sydney Port Jackson for the current week are available from the NSW Government, Manly Hydraulics Laboratory: <https://mhl.nsw.gov.au/Data-OceanTide>.

Human Arboviral Disease Notifications

Under the *NSW Public Health Act 2010*, all arboviral infections are notifiable in NSW. The NSW Health Communicable Diseases Weekly Report (CDWR) (www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx) details cases by the week that they are received by NSW Public Health Units.

The data for Ross River virus and Barmah Forest virus from the CDWR for the latest reported 3 weeks are in the following table.

Recent notifications of Ross River virus and Barmah Forest virus in humans

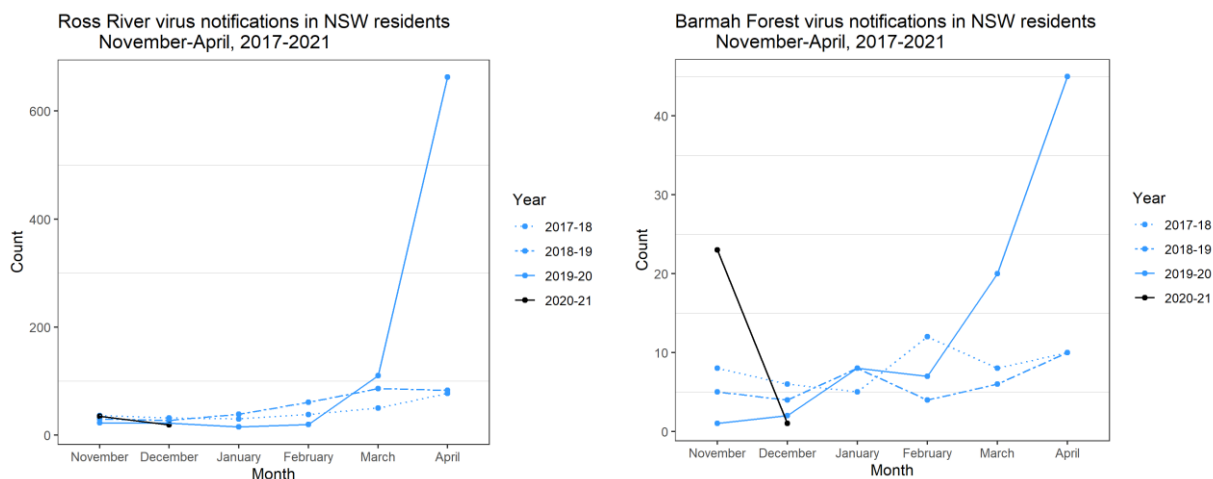
(by date of case report received)

| | Week | | |
|----------------------------|--------------------------------|-------------------------------------|-----------------------------------|
| | Latest week (6-12 Dec 2020) | 1-week prior (29 Nov-5 Dec 2020) | 2-weeks prior (22-28 Nov 2020) |
| Ross River virus | 3 | 10 | 12 |
| Barmah Forest virus | 2 | 0 | 6 |

Source: CDWR, Communicable Diseases Branch, Health Protection NSW, NSW Health
Notifications are for NSW residents - infection may have been acquired outside NSW.

Monthly Ross River virus and Barmah Forest virus notifications, by month of disease onset (the earlier of patient-reported onset, specimen, or notification date), are available at the following NSW Health website: <https://www1.health.nsw.gov.au/IDD/pages/data.aspx>

The following figures show the monthly number of notifications of Ross River virus and Barmah Forest virus for the current NSW Arbovirus and Mosquito Monitoring season (November 2020 to April 2021), and the same period in the previous three years.



Source: NSW Health Notifiable Conditions Information Management System (NCIMS), Communicable Diseases Branch and Centre for Epidemiology and Evidence, NSW Health

Note: The data for the current month are the notifications to date (data extracted on 21 December 2020).