

# NSW Arbovirus Surveillance & Mosquito Monitoring 2022-2023

Weekly Update: Week ending 12 November 2022

(Report Number 5)



# 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:** LOW at Bourke, HIGH at Albury and Cootamundra, VERY HIGH at Corowa, Forbes, Griffith, Grong Grong, Leeton, Mathoura, Moama, Temora and Wagga Wagga.
- **Coast:** LOW at Coffs Harbour, Lismore, Millbank, Mullumbimby, Port Macquarie and Tweed Heads, MEDIUM at Gosford, Kempsey and Lake Cathie, HIGH at Ballina and Byron Bay.
- **Sydney:** LOW at Bankstown, Georges River and Liverpool, MEDIUM at Blacktown, Hawkesbury, Northern Beaches and Sydney Olympic Park, HIGH at Parramatta and Penrith.

## Environmental Conditions

- **Climate:** In the week ending 12 November 2022, there was low to moderate rainfall across NSW. Above average rainfall is predicted for NSW in December. Minimum temperatures are predicted to be above average for December in southern and western NSW and about average elsewhere. Maximum temperatures are likely to be lower than usual throughout NSW.
- **Tides:** High tides over 1.8 metres are predicted for 23-28 November and 22-28 December, which could trigger hatching of *Aedes vigilax*.

## Human Arboviral Disease Notifications

- **Ross River Virus:** 3 cases were notified in the week ending 29 October 2022.
- **Barmah Forest Virus:** 0 cases were notified in the week ending 29 October 2022.

## Comments and other findings of note

Flood warnings are in place for many catchments across inland NSW and are expected to persist as flood waters move through river systems over the coming weeks. Extensive surface water has likely contributed to the high numbers of mosquitoes collected inland in recent weeks. However, the vector for Japanese Encephalitis virus, *Culex annulirostris*, continues to be a small proportion of total collected mosquitoes.

### Weekly reports are available at:

[www.health.nsw.gov.au/Infectious/mosquito-borne/Pages/surveillance.aspx](http://www.health.nsw.gov.au/Infectious/mosquito-borne/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](mailto: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 & 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.

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Cover photos: **Bottom left** - Common banded mosquito, *Culex annulirostris*  
**Top and bottom right** - Saltmarsh mosquito, *Aedes vigilax*  
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## Arbovirus Detections

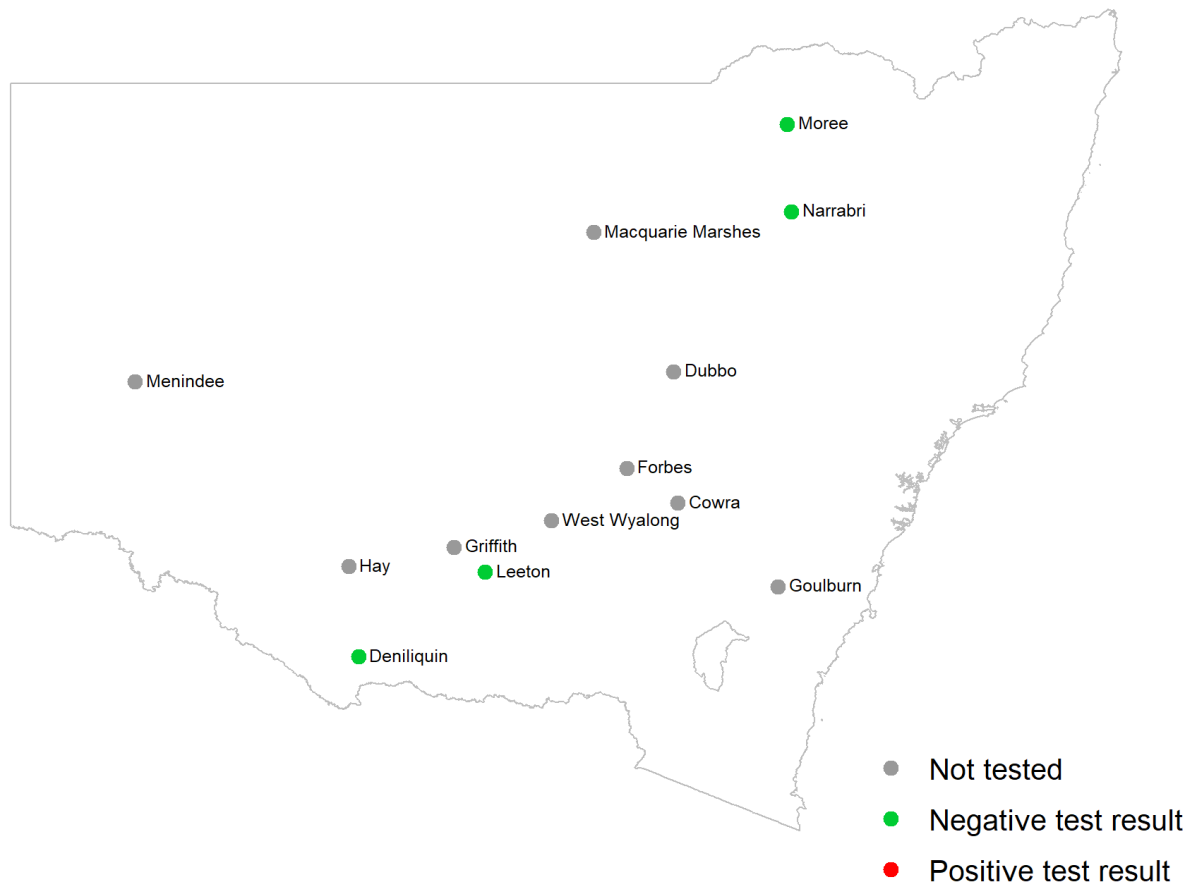
This section details detections of Murray Valley encephalitis virus, Kunjin virus, Ross River virus, Barmah Forest virus and Japanese encephalitis virus in the NSW Arbovirus Surveillance and Mosquito Monitoring Program.

### Sentinel chickens

Chickens are bled for detection of antibodies directed against Murray Valley encephalitis virus, Kunjin virus and Japanese encephalitis virus, indicating exposure to these viruses. Test results for the past two weeks are shown in the map below and all positive test results for the season are detailed in the table.

#### Sentinel chicken antibody test results for samples collected in the two weeks to 12 November 2022

There were no positive test results.



#### Positive test results in the 2022-2023 surveillance season

Date of sample collection	Location	Virus
There have been no detections in sentinel chickens in the 2022-2023 surveillance season		

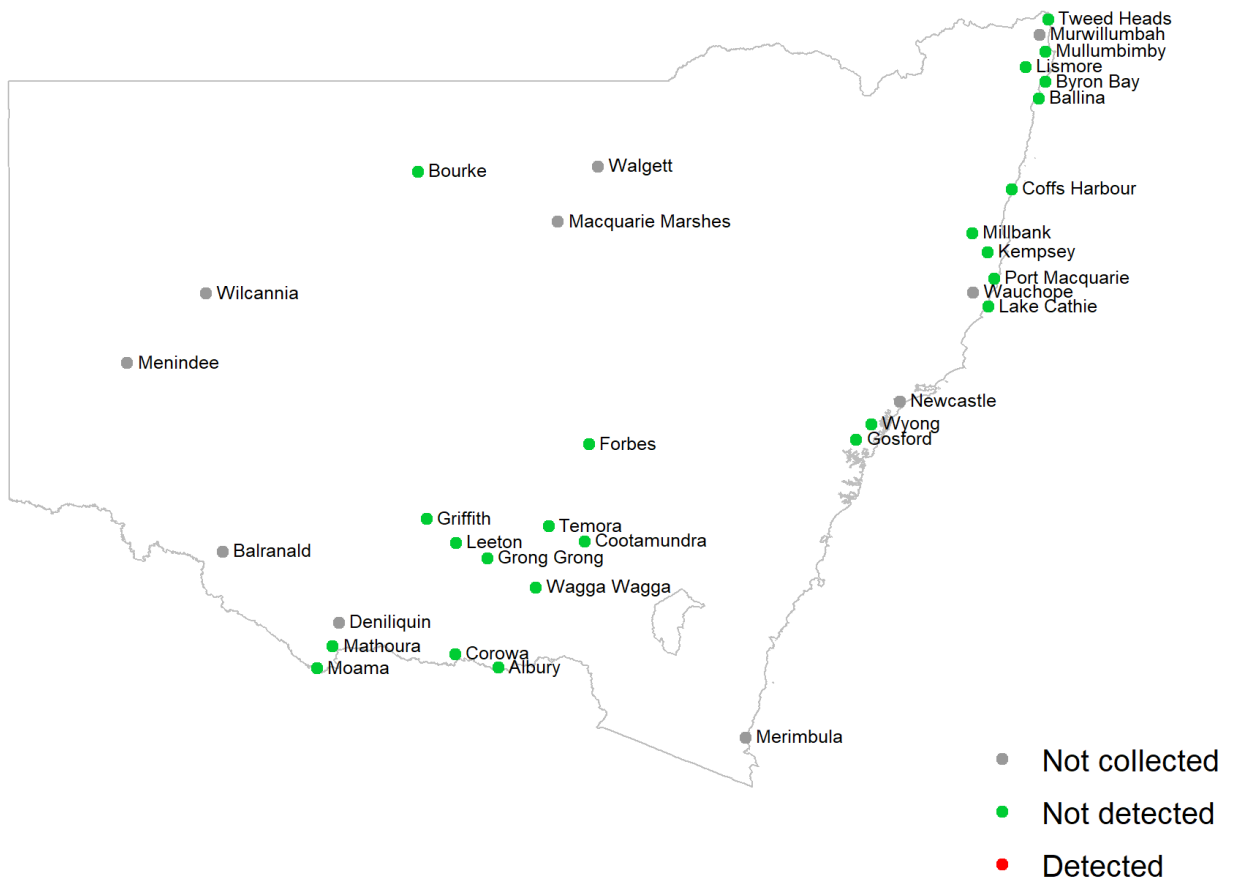
## Mosquito isolates

Whole grinds of collected mosquitoes are tested for arbovirus nucleic acids to determine the presence of arboviruses in mosquitoes, including Ross River virus, Barmah Forest virus and Japanese encephalitis virus. Test results for detections of Ross River virus, Barmah Forest virus and Japanese encephalitis virus for the past week are shown in the map below. All detections of arboviruses for the season are detailed in the table.

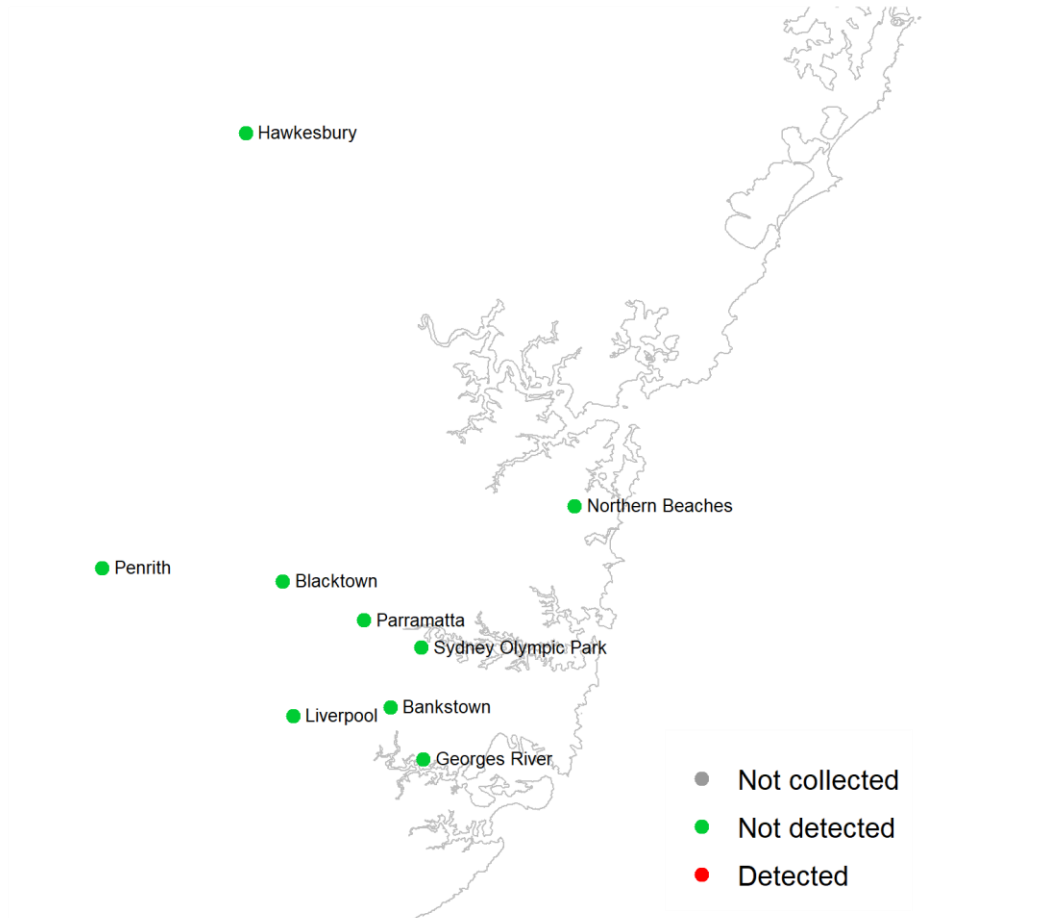
### Test results for mosquito trapping sites reported in the week ending 12 November 2022

There were no detections of Ross River virus, Barmah Forest virus or Japanese encephalitis virus.

#### Inland and Coastal sites



## Sydney sites



## Arboviruses detected in the 2022-2023 surveillance season

Date of sample collection	Location	Virus
<b>There have been no detections in mosquitoes in the 2022-2023 season</b>		

## Mosquito Abundance

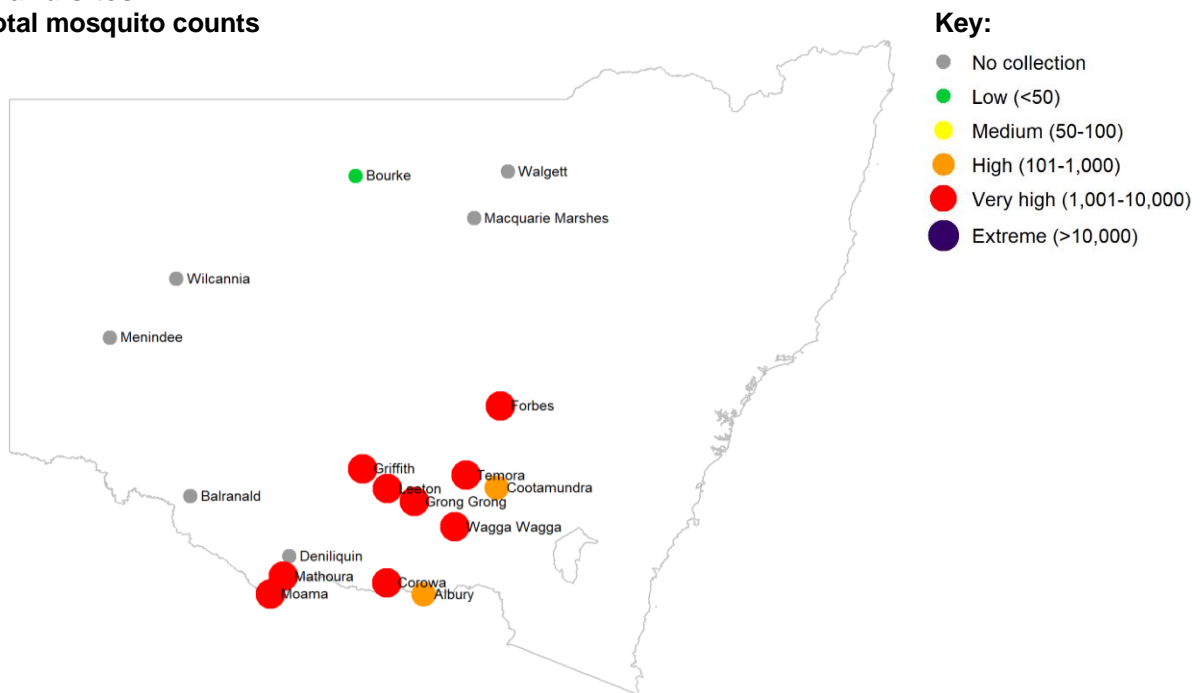
This section details counts of mosquitoes in the NSW Arbovirus Surveillance and Mosquito Monitoring Program. Each location represents the count average for all trapping sites at that location for the most recent week that collections were provided prior to preparation of this report.

*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.

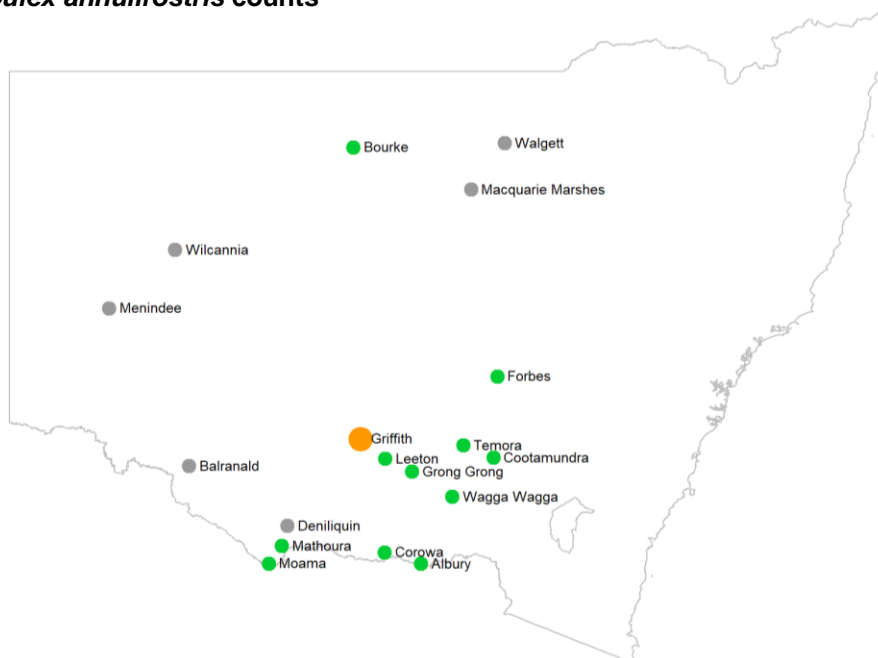
### Mosquito counts (average per trap per location) for mosquito trapping sites reported in the week ending 12 November 2022

#### Inland sites

##### Total mosquito counts



##### *Culex annulirostris* counts



**Coastal 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**



## 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 counts for the 2022-23 surveillance season Inland

"Cx. annul" refers to *Culex annulirostris* and "Ae. vigilax" refers to *Aedes vigilax*.

### Key:

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

Location	Mosquito	WEEK ENDING																														
		Oct-22			Nov-22			Dec-22					Jan-23				Feb-23				Mar-23				Apr-23			May-23				
		15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13
Albury	Cx. annul	Low	Low	Low	Low	Low																										
	Total	Low	Low	Low	High	High																										
Balranald	Cx. annul																															
	Total																															
Bourke	Cx. annul					Low																										
	Total					Low																										
Cootamundra	Cx. annul	Low	Low	Low																												
	Total	Low	Medium	High																												
Corowa	Cx. annul		Low	Low																												
	Total		High	High																												
Deniliquin	Cx. annul	Low		Low																												
	Total	Low		Low																												
Forbes	Cx. annul		Low	Low																												
	Total		High	High																												
Griffith	Cx. annul	Low	Medium	High	High																											
	Total	High	High	Very High	Extreme																											
Grong Grong	Cx. annul	Low		Low	High	High																										
	Total	Medium		High	Very High	Very High																										
Leeton	Cx. annul	Low		Low	High	High																										
	Total	Medium		High	Very High	Very High																										
Macquarie Marshes	Cx. annul																															
	Total																															
Mathoura	Cx. annul					Low																										
	Total					High																										
Menindee	Cx. annul																															
	Total																															
Moama	Cx. annul					Low																										
	Total					High																										
Temora	Cx. annul		Low																													
	Total		High																													
Wagga Wagga	Cx. annul	Low	Low	Low	Low	Low																										
	Total	Low	High	High	Very High	Very High																										
Walgett	Cx. annul																															
	Total																															
Wilcannia	Cx. annul			Low	Low																											
	Total			High	High																											

## Coastal

		WEEK ENDING																														
		Oct-22			Nov-22			Dec-22					Jan-23				Feb-23			Mar-23				Apr-23			May-23					
Location	Mosquito	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13
Ballina	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Byron Bay	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Coffs Harbour	<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																															
Lake Cathie	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Lismore	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Merimbula	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Millbank	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Mullumbimby	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Murwillumbah	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Newcastle	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Port Macquarie	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Tweed Heads	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Wauchope	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															
Wyong	<i>Cx. annul</i>																															
	<i>Ae. vigilax</i>																															
	Total																															

# Sydney

		WEEK ENDING																																			
		Oct-22			Nov-22			Dec-22					Jan-23				Feb-23				Mar-23				Apr-23			May-23									
Location	Mosquito	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13					
Bankstown	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Blacktown	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Georges River	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Hawkesbury	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Liverpool	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Northern Beaches	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Parramatta	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Penrith	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				
Sydney Olympic Park	<i>Cx. annul</i>																																				
	<i>Ae. vigilax</i>																																				
	Total																																				

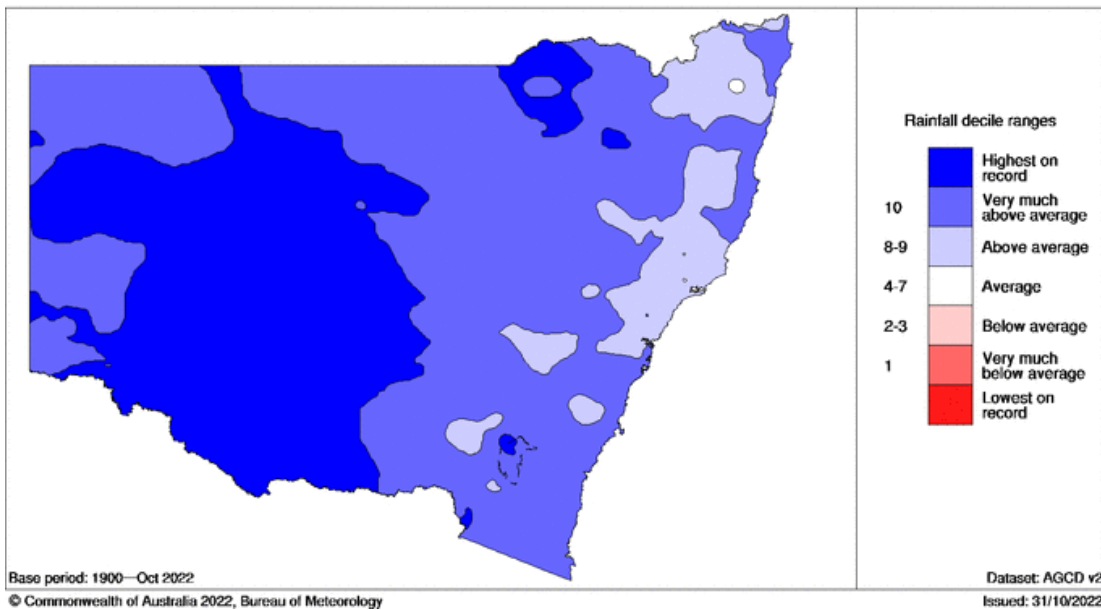
## Environmental Conditions

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.

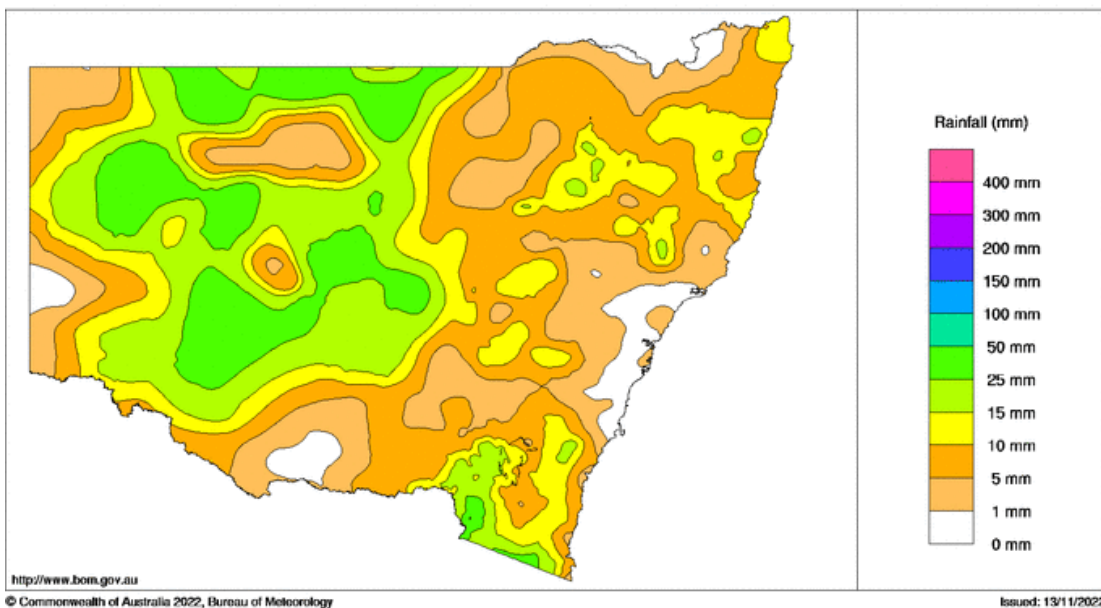
### Rainfall

In October, rainfall was very much above average across NSW, with much of western NSW having the highest rainfall on record. In the week ending 12 November 2022, there was low to moderate rainfall across NSW.

New South Wales rainfall deciles October 2022  
Australian Gridded Climate Data



New South Wales Rainfall Totals (mm) Week Ending 12th November 2022  
Australian Bureau of Meteorology



Source: Australian Government, Bureau of Meteorology: [www.bom.gov.au/climate/maps/rainfall](http://www.bom.gov.au/climate/maps/rainfall)

## Next month's rainfall and temperature outlook

The Bureau of Meteorology's rainfall outlook predicts that NSW is likely to receive above average rainfall for December.

[www.bom.gov.au/climate/outlooks/#/rainfall/median/monthly/0](http://www.bom.gov.au/climate/outlooks/#/rainfall/median/monthly/0)

The Bureau of Meteorology's temperature outlook predicts that minimum temperatures are likely to be above average for December in Southern and Western NSW and about average elsewhere. Maximum temperatures are likely to be lower than usual throughout NSW.

[www.bom.gov.au/climate/outlooks/#/temperature/maximum/median/monthly/0](http://www.bom.gov.au/climate/outlooks/#/temperature/maximum/median/monthly/0)

[www.bom.gov.au/climate/outlooks/#/temperature/minimum/median/monthly/0](http://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 November and December

- 23-28 November 2022
- 22-28 December 2022

Source: Australian Government, Bureau of Meteorology: [www.bom.gov.au/australia/tides/#/nsw-sydney-fort-denison](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*, human arboviral infections are notifiable in NSW. The NSW Health Communicable Diseases Weekly Report (CDWR) reports confirmed and probable case numbers by the week they are received by the NSW notifiable diseases surveillance system, and is available at: [www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx](http://www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx).

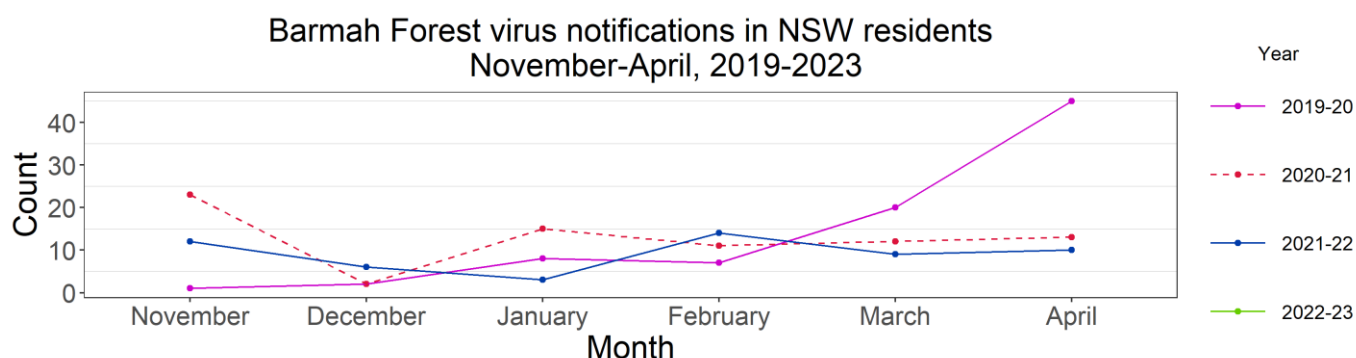
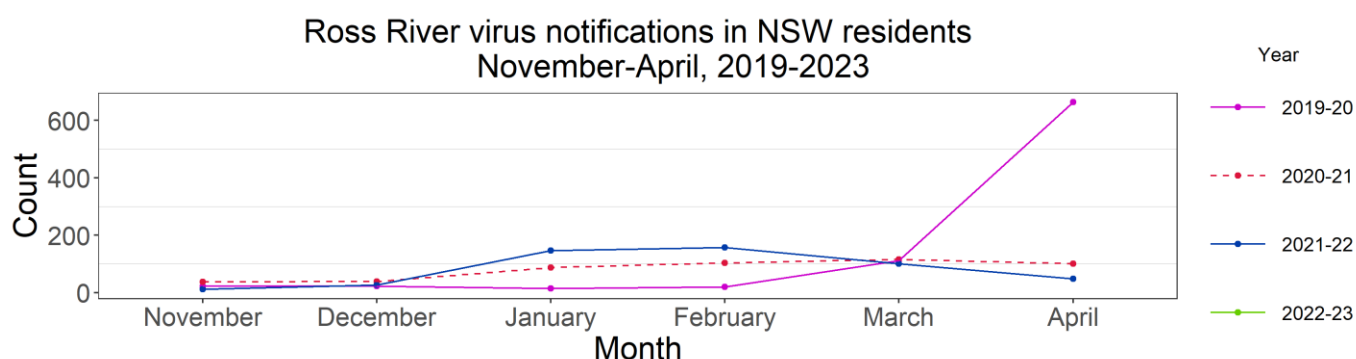
The data for Ross River virus and Barmah Forest virus from the CDWR for the latest reported 3 weeks are below.

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

	Week		
	Latest week (23 – 29 Oct 2022)	1-week prior (16 – 22 Oct 2022)	2-weeks prior (9 – 15 Oct 2022)
<b>Ross River virus</b>	3	7	6
<b>Barmah Forest virus</b>	0	6	4

Source: CDWR, Communicable Diseases Branch, Health Protection NSW, NSW Health

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: [www1.health.nsw.gov.au/IDD/pages/data.aspx](http://www1.health.nsw.gov.au/IDD/pages/data.aspx). The following figures show this data for November to April of the current NSW Arbovirus Surveillance and Mosquito Monitoring season (2022-2023), 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

Notes: The data for the previous month are the notifications to date (data extracted on 14 November 2022). Notifications are for NSW residents, regardless of whether the infection was acquired or diagnosed in NSW. Notifications of Ross River virus and Barmah Forest virus infection lag the date of acquiring the infection due to the time taken for symptom development, diagnosis, notification, and other factors. The weekly numbers by date of notification are useful for monitoring recent short-term trends but represent infections that were acquired some time ago. The monthly numbers by date of onset are more timely but less exact because they represent the earlier of patient-reported onset or specimen collection date and are therefore useful for monitoring general trends in human arboviral disease over the course of a season.