NSW Arbovirus Surveillance & Mosquito Monitoring 2022-2023

Weekly Update: Week ending 5 November 2022

(Report Number 4)

NSW GOVERNMENT

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:** HIGH at Albury and Wilcannia, VERY HIGH at Grong Grong, Leeton and Wagga Wagga, EXTREME at Griffith.
- **Coast:** LOW at Byron Bay, Coffs Harbour, Lismore, Murwillumbah, Port Macquarie, Tweed Heads and Wauchope, HIGH at Ballina and Lake Cathie. Mosquito trapping at coastal sites south of the mid north coast is to begin the week of 6-12 November 2022.
- **Sydney:** Mosquito trapping at Sydney sites is to begin the week of 6-12 Novmeber 2022.

Environmental Conditions

- **Climate:** In the week ending 5 November 2022, there was moderate to high rainfall across NSW. Above average rainfall is predicted for NSW in November. Minimum temperatures are predicted to be about average for November in southern NSW and lower than usual in areas from Sydney to the Queensland border. Maximum temperatures are likely to be lower than usual throughout NSW**.**
- **Tides:** High tides over 1.8 metres are predicted for 23-28 November, which could trigger hatching of *Aedes vigilax.*

Human Arboviral Disease Notifications

- **Ross River Virus:** 6 cases were notified in the week ending 22 October 2022.
- **Barmah Forest Virus:** 6 cases was notified in the week ending 22 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. Mosquito collections were especially large in the Riverina region of NSW and although increasing, the vector for Japanese Encephalitis virus, *Culex annulirostris*, was a small proportion of total collected mosquitoes.

Climate models indicate the La Niña (which increases the likelihood of above-average rainfall for eastern Australia) is likely to conclude early in 2023.

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 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.

SPHN (EH) 220867

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

Arbovirus Detections

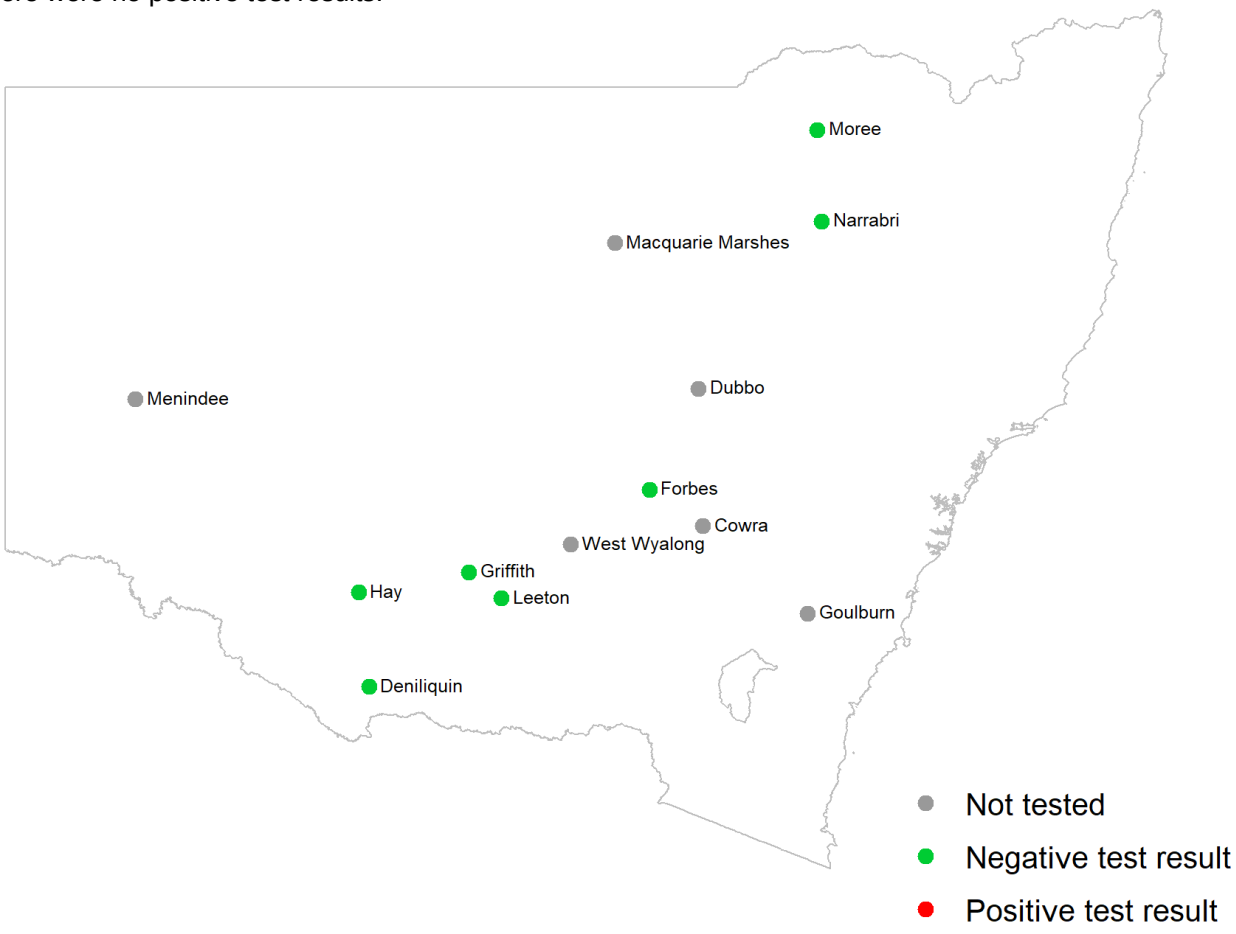
This section details detections of Murray Valley encephalitis virus, Kunjin virus, Ross River virus, Barmah Forest virus and Japanese encephalitis virus in the NSW Arbovirus Surveillance and Mosquito Monitoring Program.

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 5 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		

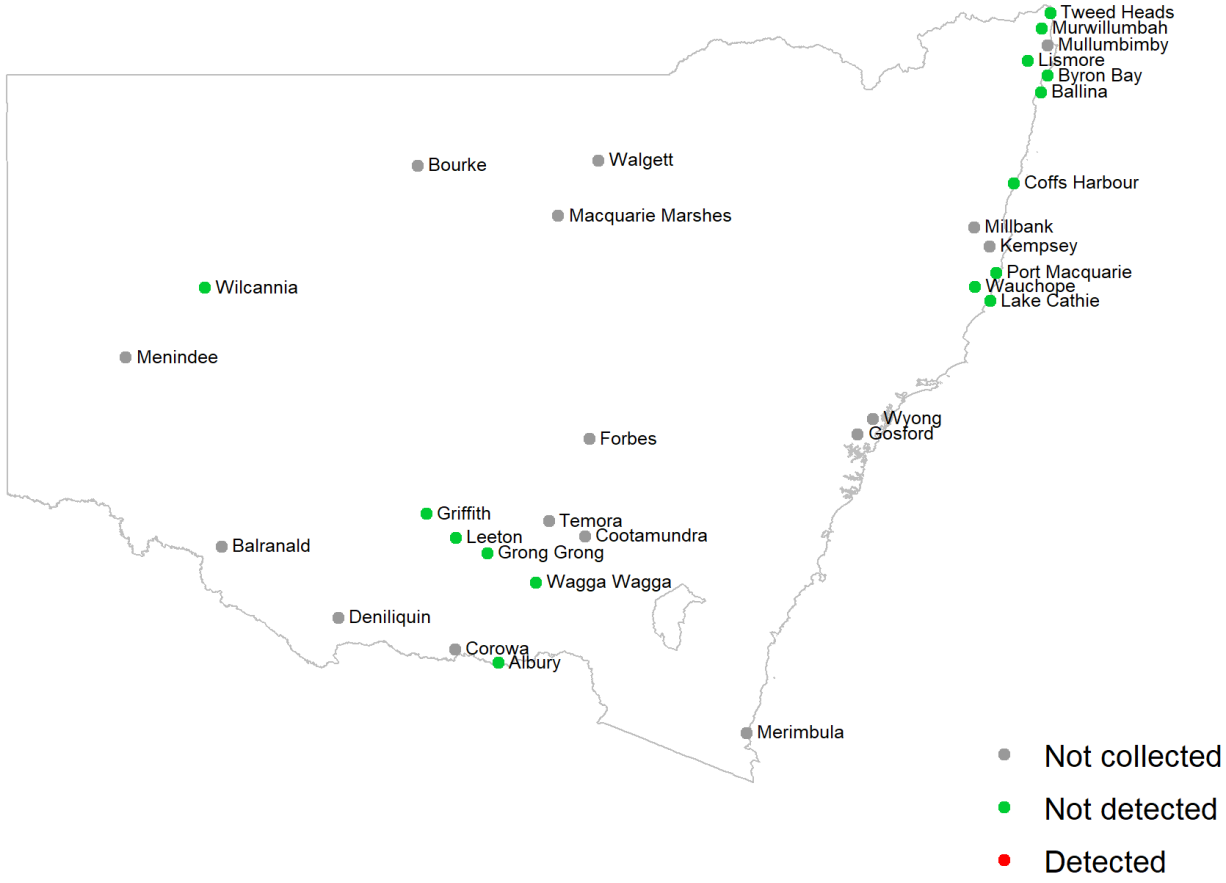
Mosquito isolates

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 29 October 2022

There were no detections of Ross River virus, Barmah Forest virus or Japanese encephalitis virus. Flooding has impacted the capacity to trap and courier samples at many inland sites.

Inland and Coastal sites



Arboviruses detected in the 2022-2023 surveillance season

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

Mosquito Abundance

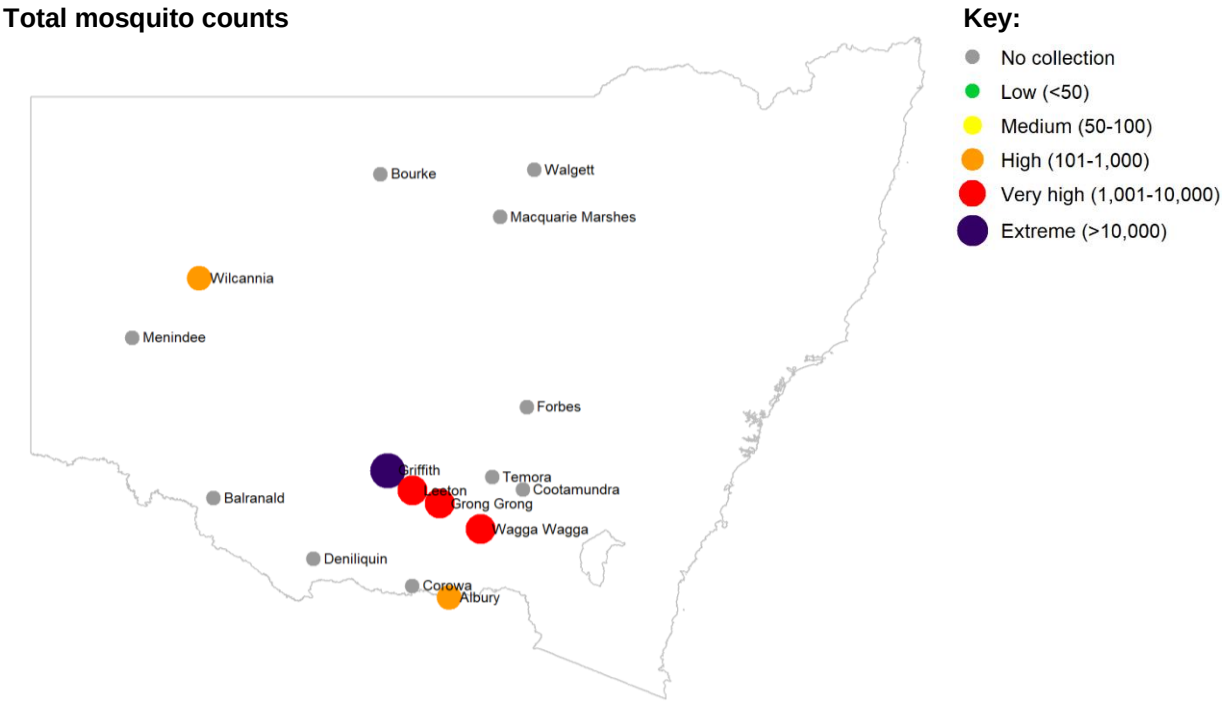
This section details counts of mosquitoes in the NSW Arbovirus Surveillance and Mosquito Monitoring Program. Each location represents the count average for all trapping sites at that location for the most recent week that collections were provided prior to preparation of this report.

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 5 November 2022

Inland sites

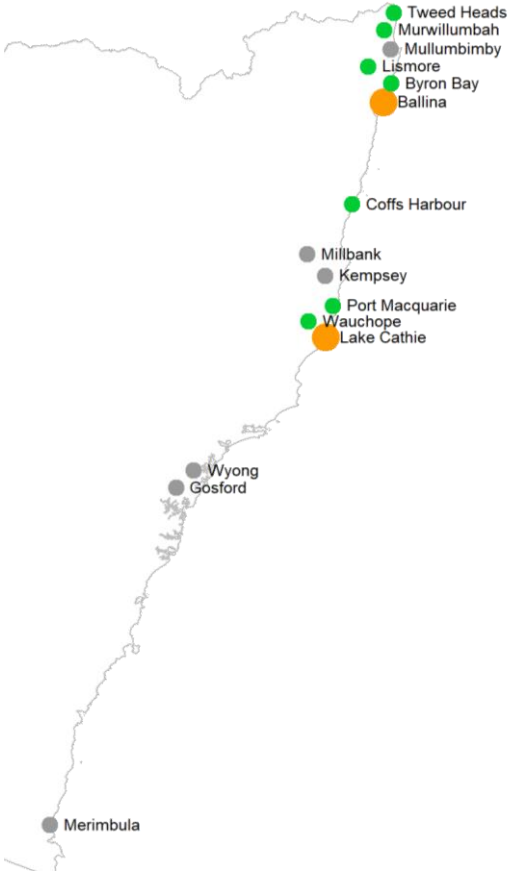
Total mosquito counts



***Culex annulirostris* counts**

Coastal sites

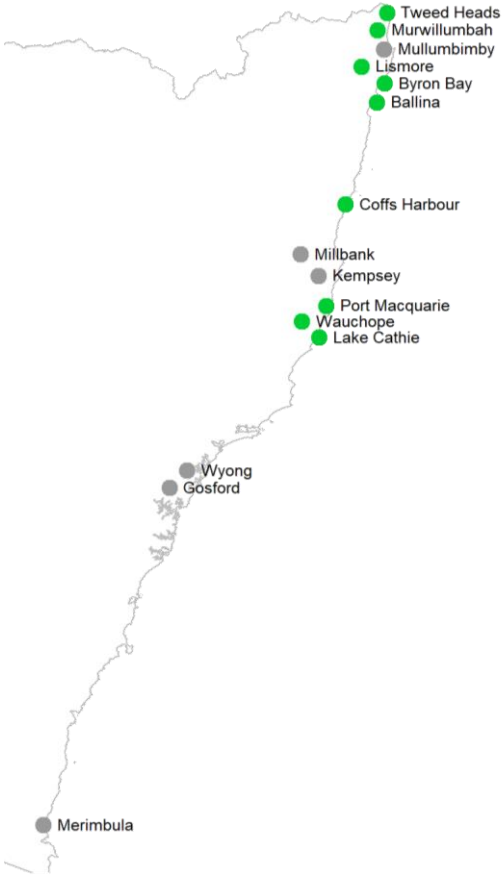
Total mosquito counts



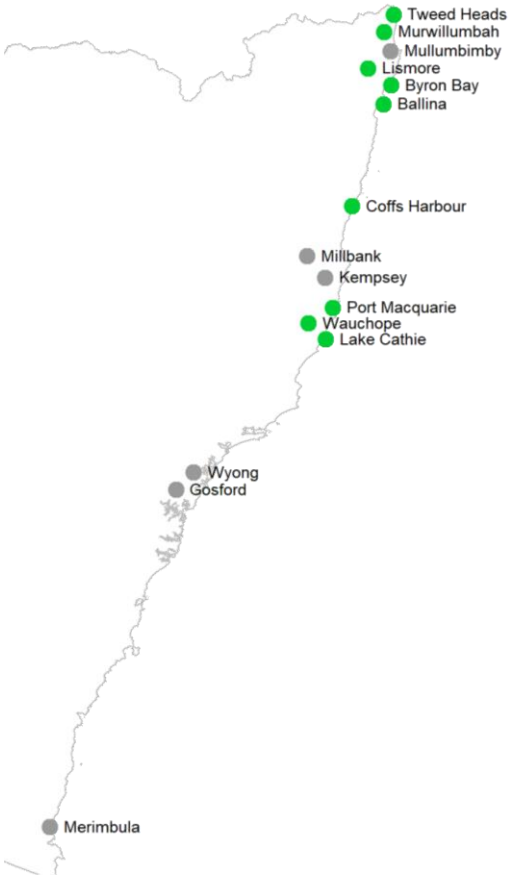
Key:

- 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



Mosquito counts for the 2022-23 surveillance season

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

Inland

		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
Albury	*Cx. annul*																															
	Total																															
Balranald	*Cx. annul*																															
	Total																															
Bourke	*Cx. annul*																															
	Total																															
Cootamundra	*Cx. annul*																															
	Total																															
Corowa	*Cx. annul*																															
	Total																															
Deniliquin	*Cx. annul*																															
	Total																															
Forbes	*Cx. annul*																															
	Total																															
Griffith	*Cx. annul*																															
	Total																															
Grong Grong	*Cx. annul*																															
	Total																															
Leeton	*Cx. annul*																															
	Total																															
Macquarie Marshes	*Cx. annul*																															
	Total																															
Menindee	*Cx. annul*																															
	Total																															
Temora	*Cx. annul*																															
	Total																															
Wagga Wagga	*Cx. annul*																															
	Total																															
Walgett	*Cx. annul*																															
	Total																															
Wilcannia	*Cx. annul*																															
	Total																															

Key:

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

Coastal

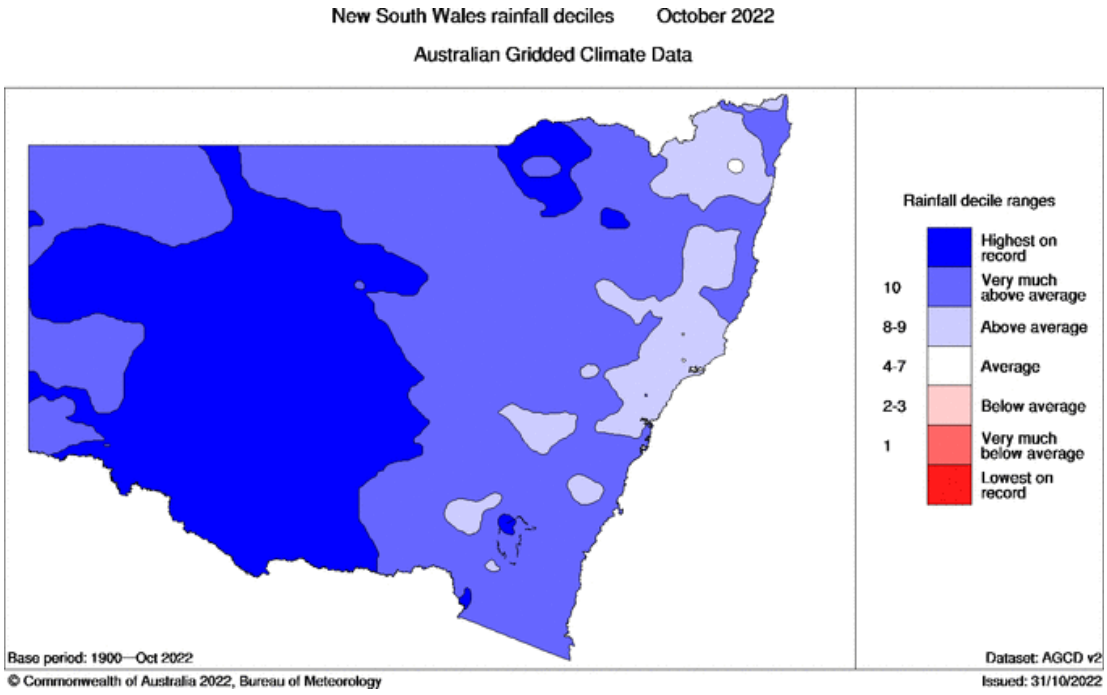
		WEEK ENDING																																
		Oct-22			Nov-22				Dec-22					Jan-23				Feb-23				Mar-23				Apr-23					May-23			
Location	Mosquito	15	22	29	5	12	19	26	3	10	17	24	31	7	14	21	28	4	11	18	25	4	11	18	25	1	8	15	22	29	6	13		
Ballina	*Cx. annul*																																	
	Ae. vigilax			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

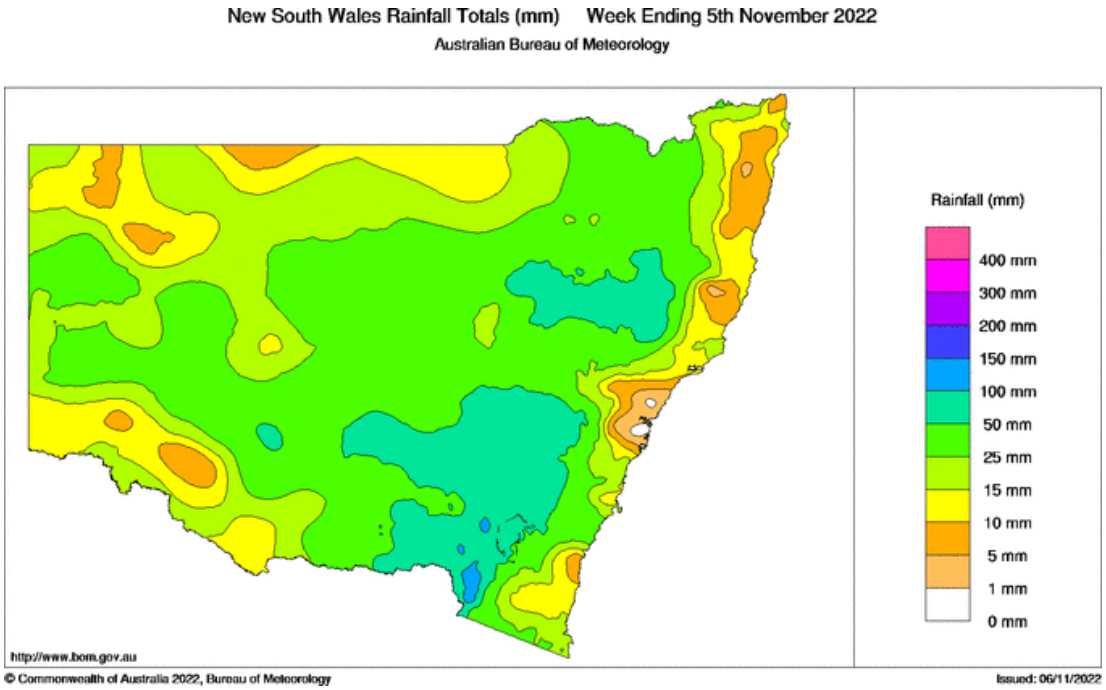
Environmental Conditions

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 October, rainfall was very much above average across NSW, with much of western NSW having the highest rainfall on record. In the week ending 5 November 2022, there was moderate to high rainfall across NSW.





Source: Australian Government, Bureau of Meteorology: 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 November.
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 about average for November in southern NSW and lower than usual in areas from Sydney to the Queensland border. Maximum temperatures are likely to be lower than usual throughout 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 November

- 23-28 November 2022

Source: Australian Government, Bureau of Meteorology: 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.

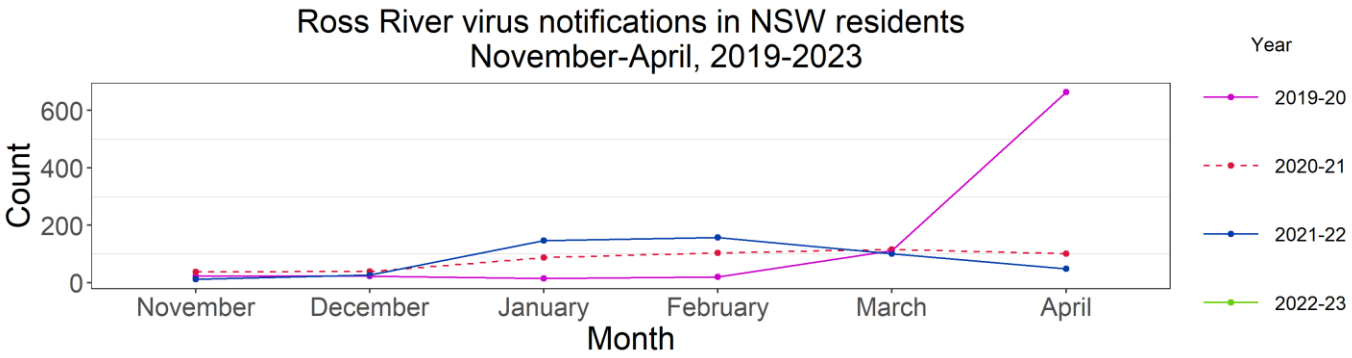
The data for Ross River virus and Barmah Forest virus from the CDWR for the latest reported 3 weeks are below.

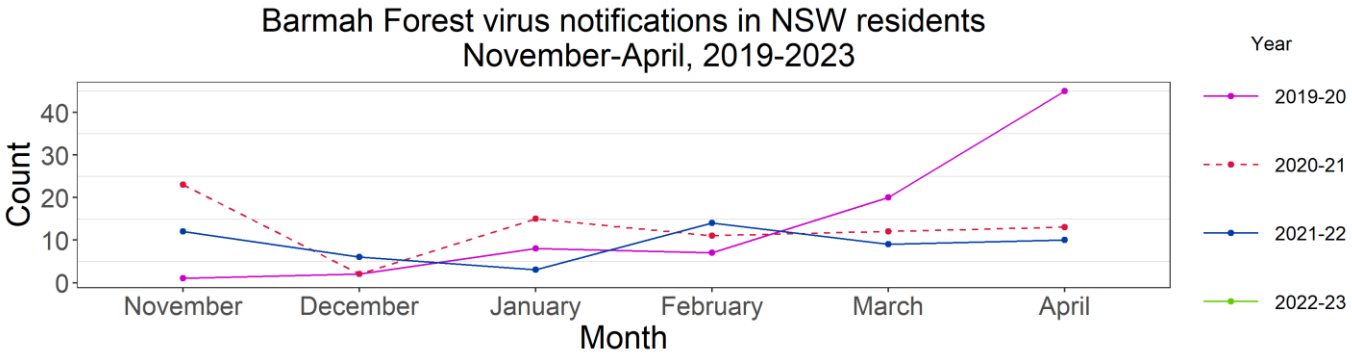
Recent notifications of Ross River virus and Barmah Forest virus infections in humans
(by date of case report received)

	Week		
	Latest week (16 – 22 Oct 2022)	**1-week prior (9 – 15 Oct 2022)**	**2-weeks prior (2 – 8 Oct 2022)**
Ross River virus	6	6	7
Barmah Forest virus	6	4	1

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. 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 7 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.