

NSW Arbovirus Surveillance & Mosquito Monitoring 2022-2023

Weekly Update: Week ending 29 October 2022

(Report Number 3)



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 Albury, Deniliquin, and Wagga Wagga, HIGH at Cootamundra, Corowa, Forbes, Grong Grong and Leeton, VERY HIGH at Griffith and Wilcannia.
- **Coast:** LOW at Byron Bay, Coffs Harbour, Kempsey, Lismore, Millbank, Mullumbimby, Murwillumbah, Port Macquarie and Wauchope, MEDIUM at Tweed Heads, 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 November 2022.

Environmental Conditions

- **Climate:** In the week ending 29 October 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 15 October 2022.
- **Barmah Forest Virus:** 3 cases were notified in the week ending 15 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. Unseasonably cold conditions are forecast for several days from 1 November 2022, with overnight minima in inland areas to be less than 6°C which may help to decrease mosquito populations in the short-term. 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: 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.

SPHN (EH) 220867

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

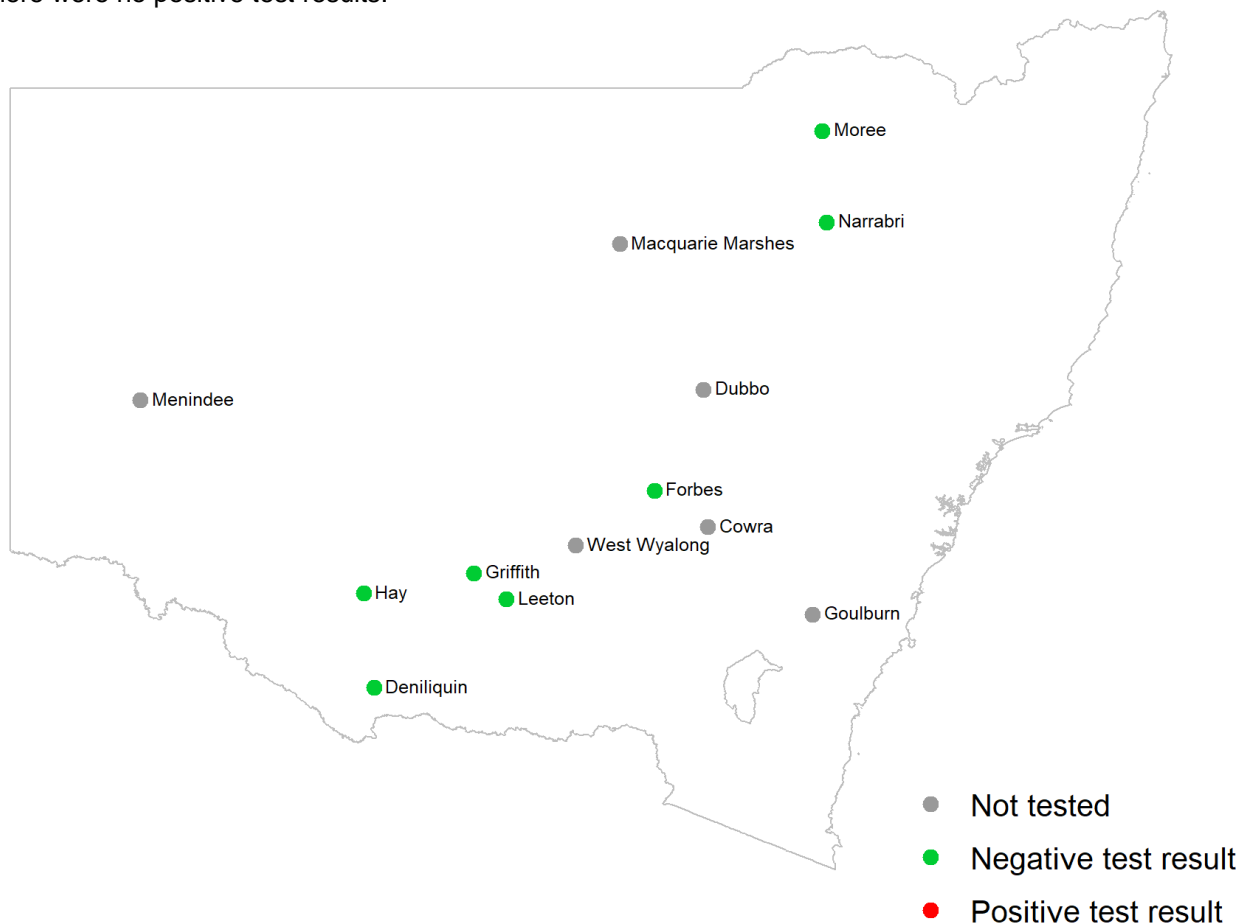
This section details detections of Murray Valley encephalitis virus, Kunjin virus, Ross River virus, Barmah Forest virus and Japanese encephalitis virus in the NSW Arbovirus Surveillance and Mosquito Monitoring Program.

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 29 October 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		

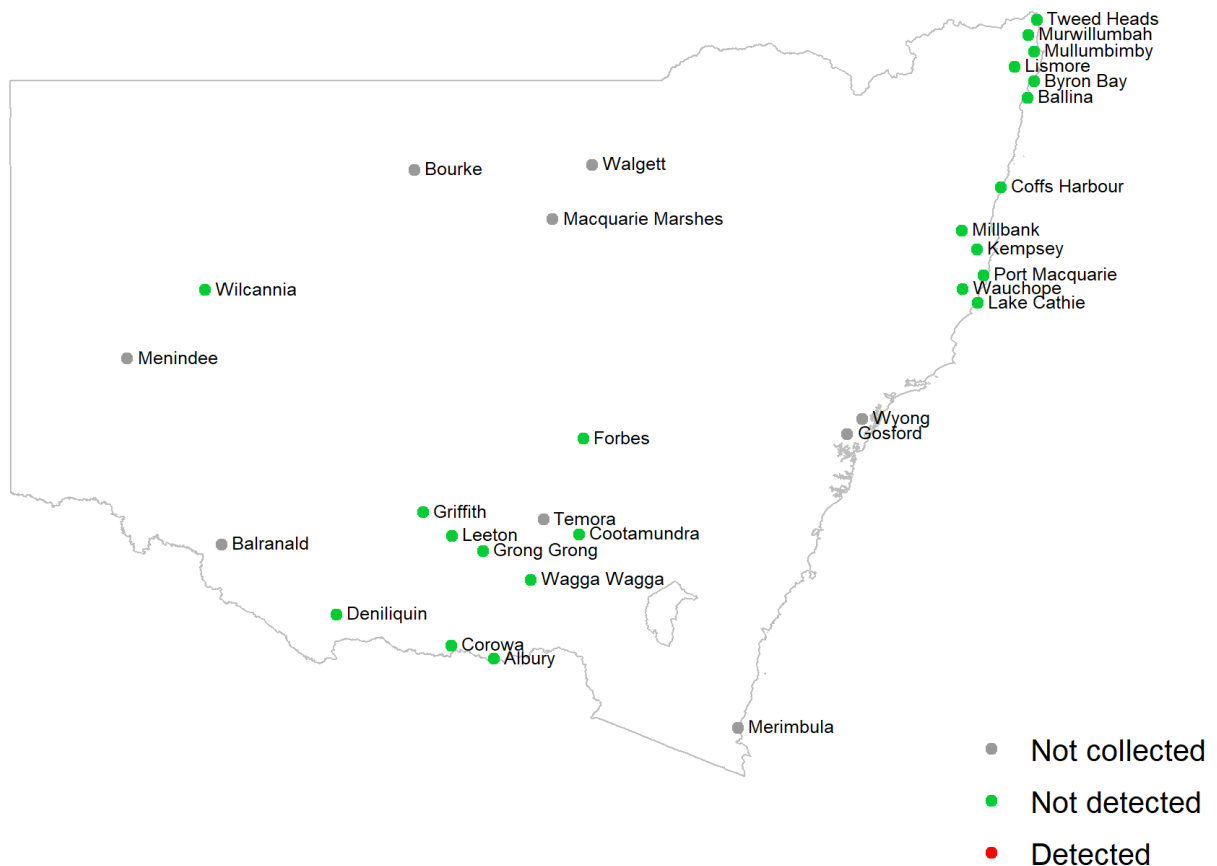
Mosquito isolates

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.

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

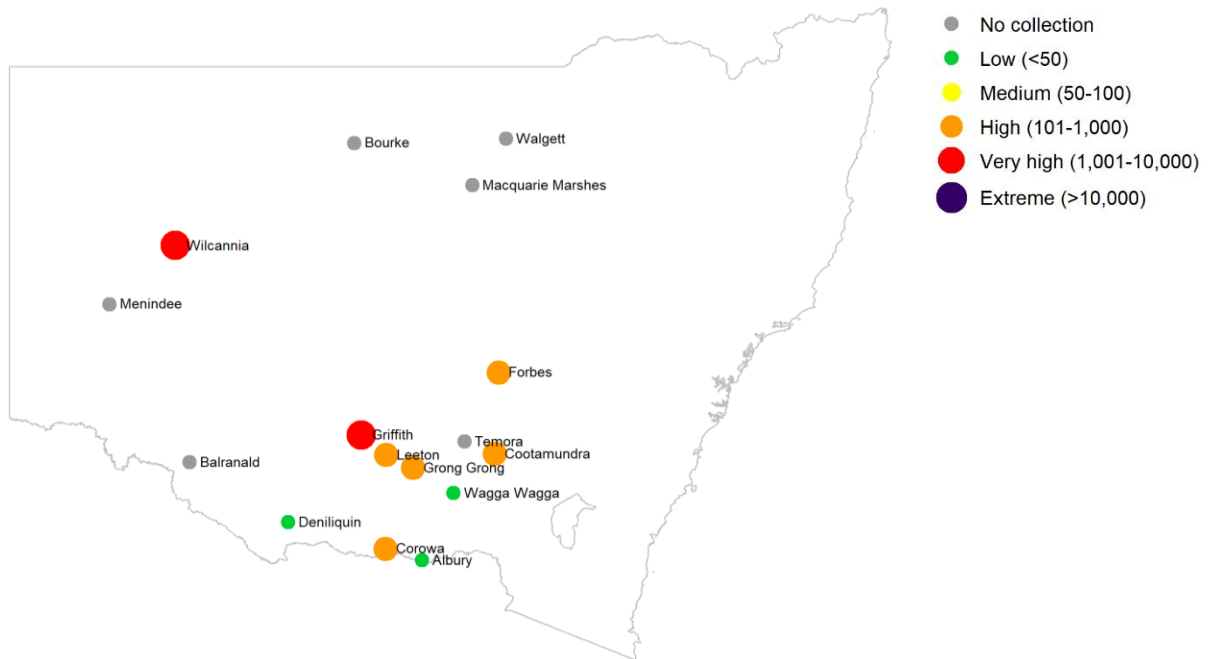
This section details counts of mosquitoes in the NSW Arbovirus Surveillance and Mosquito Monitoring Program. Each location represents the count average for all trapping sites at that location for the most recent week that collections were provided prior to preparation of this report.

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.

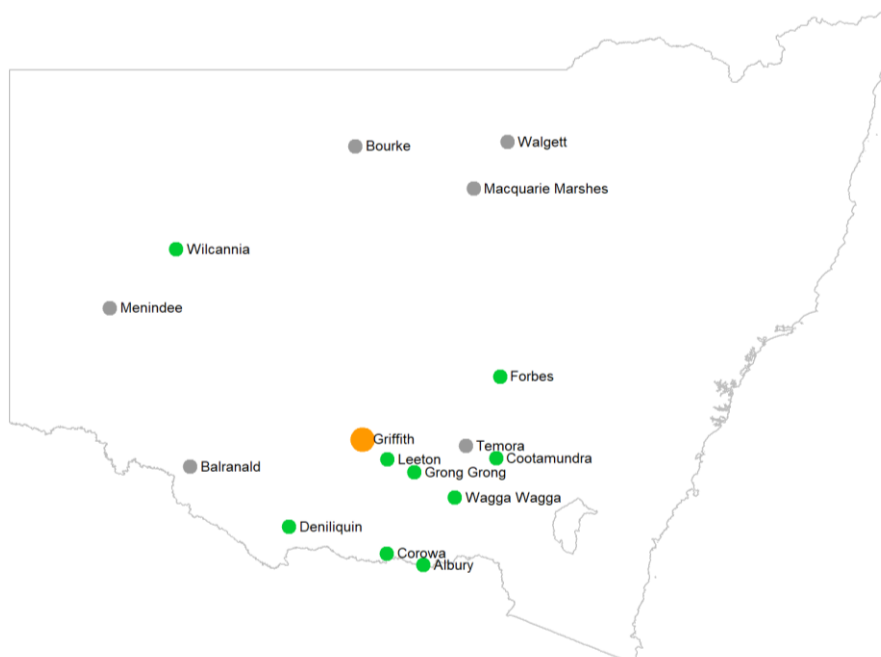
Mosquito counts (average per trap per location) for mosquito trapping sites reported in the week ending 29 October 2022

Inland sites

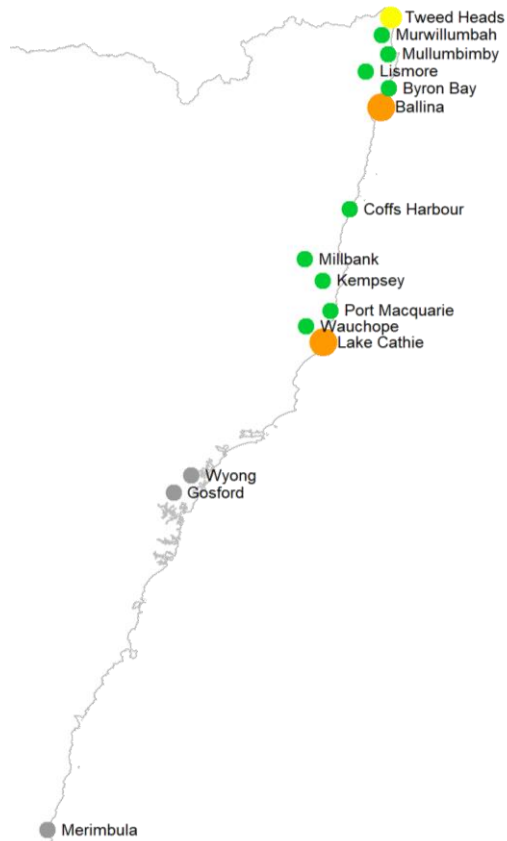
Total mosquito counts



Culex annulirostris counts



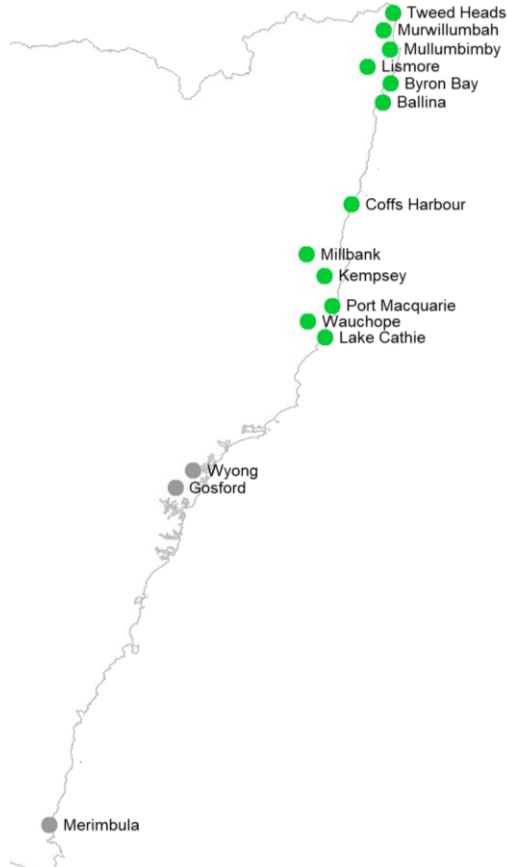
**Coastal sites
Total mosquito counts**



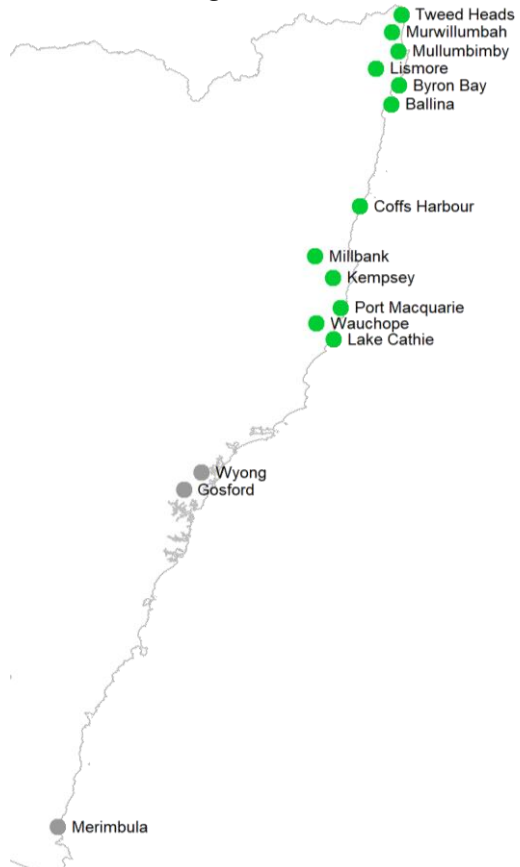
Key:

- 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
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)

		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	<i>Cx. annul</i>	Low	Low	Low																												
	Total	Low	Low	Low																												
Balranald	<i>Cx. annul</i>	No collection	No collection	No collection																												
	Total	No collection	No collection	No collection																												
Bourke	<i>Cx. annul</i>	No collection	No collection	No collection																												
	Total	No collection	No collection	No collection																												
Cootamundra	<i>Cx. annul</i>	Low	Low	Low																												
	Total	Low	Medium	High																												
Corowa	<i>Cx. annul</i>	No collection	Low	Low																												
	Total	No collection	High	High																												
Deniliquin	<i>Cx. annul</i>	Low	No collection	Low																												
	Total	Low	No collection	Low																												
Forbes	<i>Cx. annul</i>	Low	Low	Low																												
	Total	High	High	High																												
Griffith	<i>Cx. annul</i>	Low	Medium	High																												
	Total	High	High	Very high																												
Grong Grong	<i>Cx. annul</i>	Low	No collection	Low																												
	Total	Medium	No collection	High																												
Leeton	<i>Cx. annul</i>	Low	No collection	Low																												
	Total	Medium	No collection	High																												
Macquarie Marshes	<i>Cx. annul</i>	No collection	No collection	No collection																												
	Total	No collection	No collection	No collection																												
Menindee	<i>Cx. annul</i>	No collection	No collection	No collection																												
	Total	No collection	No collection	No collection																												
Temora	<i>Cx. annul</i>	No collection	Low	No collection																												
	Total	No collection	High	No collection																												
Wagga Wagga	<i>Cx. annul</i>	Low	Low	Low																												
	Total	Low	High	Low																												
Walgett	<i>Cx. annul</i>	No collection	No collection	No collection																												
	Total	No collection	No collection	No collection																												
Wilcannia	<i>Cx. annul</i>	No collection	No collection	Low																												
	Total	No collection	No collection	Very 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	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																																

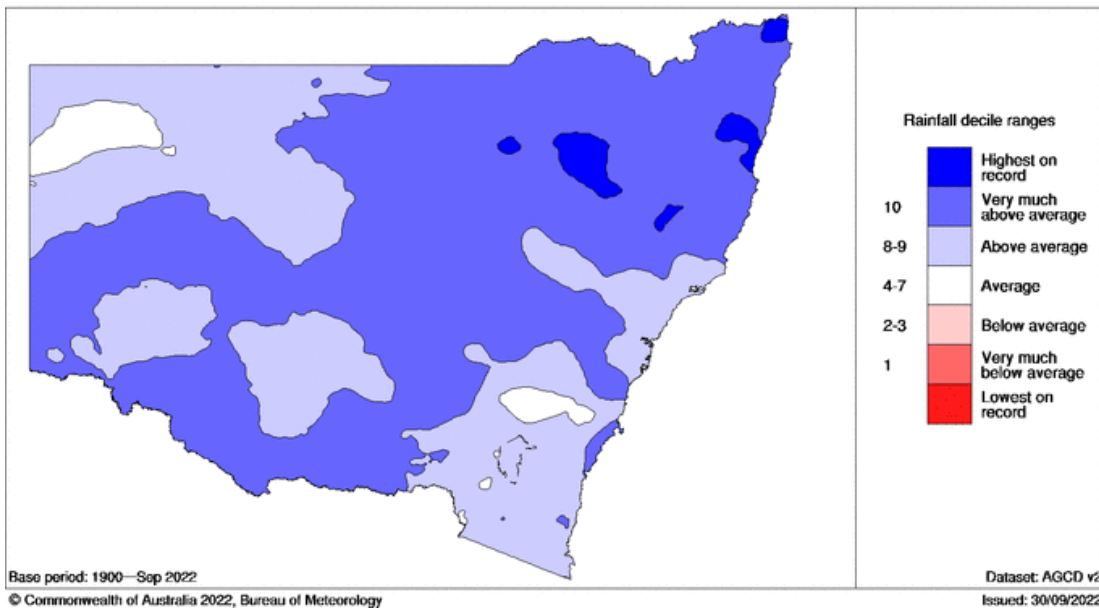
Environmental Conditions

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.

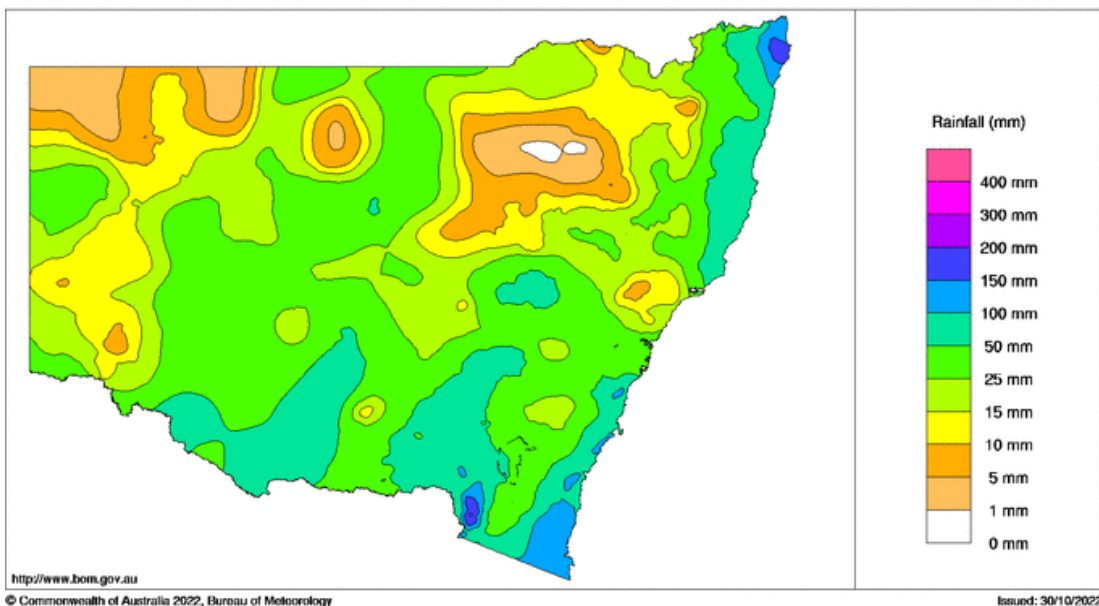
Rainfall

In September, rainfall was very much above average across much of NSW. In the week ending 29 October 2022, there was moderate to high rainfall across NSW.

New South Wales rainfall deciles September 2022
Australian Gridded Climate Data



New South Wales Rainfall Totals (mm) Week Ending 29th October 2022
Australian Bureau of Meteorology



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.

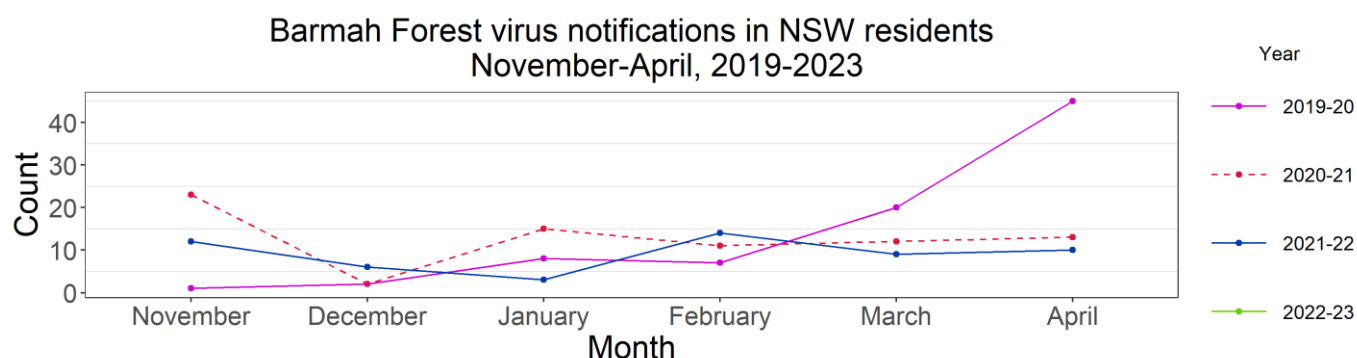
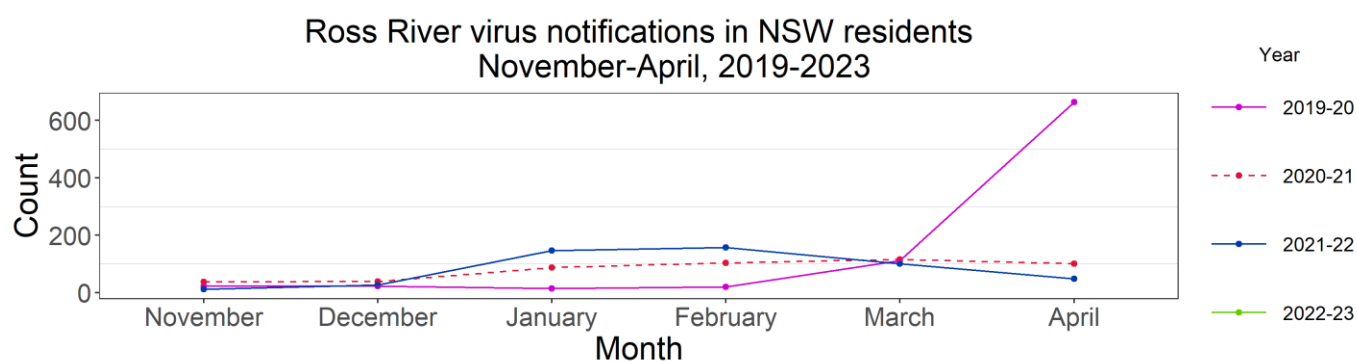
Recent notifications of Ross River virus and Barmah Forest virus infections in humans

(by date of case report received)

	Week		
	Latest week (9 – 15 Oct 2022)	1-week prior (2 – 8 Oct 2022)	2-weeks prior (25 Sep – 1 Oct 2022)
Ross River virus	6	7	2
Barmah Forest virus	3	1	3

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 31 October 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.