NSW Arbovirus Surveillance & Mosquito Monitoring 2021-2022

Weekly Update: Week ending 9 April 2022

(Report Number 22)

NSW GOVERNMENT

Summary

Arbovirus Detections

- **Sentinel Chickens:** There were no arbovirus detections in sentinel chickens.

- **Mosquito Isolates:** Ross River virus was detected in mosquitoes collected in the Northern Beaches and Hawkesbury.

Mosquito Abundance

- **Inland:** LOW at Albury, Bourke, Forbes,Leeton and Wagga Wagga, MEDIUM at Griffith, HIGH at Macquarie Marshes.

- **Coast:** LOW at Coffs Harbour, Kempsey, Lake Cathie, Tweed and Wyong, MEDIUM at Port Macquarie, HIGH at Ballina and Gosford.

- **Sydney:** LOW at Hills Shire and Sydney, MEDIUM at Bankstown and Sydney Olympic Park, HIGH at Georges River, Hawkesbury, Liverpool City, Matraville, Northen Beaches and Penrith.

Environmental Conditions

- **Climate:** In the week ending 7 April 2022 (the latest data available at time of reporting), there was moderate rainfall in the Eastern NSW, with very high totals in Sydney and the South Coast of NSW. About average rainfall is expected in NSW during May 2022. Higher than usual minimum temperatures are expected across NSW in May and maximum temperatures are likely to be above average inland and average along the coast**.**

- **Tides:** High tides over 1.8 metres are predicted for 17-22 April 2022 which could trigger hatching of *Aedes vigilax.*

Human Arboviral Disease Notifications

- **Ross River Virus:** 14 cases were notified in the week ending 19 March 2022.
- **Barmah Forest Virus:** 1 cases were notified in the week ending 19 March 2022.

Comments and other findings of note

Stratford virus was also detected in mosquitoes trapped in the Northern Beaches in the past week. Human cases of Stratford virus are very rarely reported in Australia and may present as a mild self-limiting febrile illness with body aches.

Japanese encephalitis virus (JEV) has been detected in a number of piggeries in NSW indicating the virus is likely circulating in the mosquito population. NSW Health has expanded arboviral surveillance and mosquito monitoring in response to these recent detections, including retrospective testing of samples collected earlier in the 2021-2022 season. To date, the only samples in which JEV has been detected are in mosquitoes collected at Forbes on 17 and 24 January 2022 and Wagga Wagga on 10 January 2022. A sample collected from the Deniliquin sentinel chicken flock has tested positive for JEV. It is assumed that this sentinel animal may have seroconverted between 20 February and 28 February 2022, based on serology evidence. In Australia JEV is usually confined to seasonal incursions in far north Queensland, with occasional outbreaks in the Torres Strait Islands. JEV can cause permanent neurological complications or death, however less than 1% of people infected with JEV experience any symptoms, which typically include fever and headache. There have been 10 confirmed cases of JEV in NSW residents. For more information visit the NSW Health Japanese encephalitis (JE) webpage.

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.

SPHN (HP NSW) 211005

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

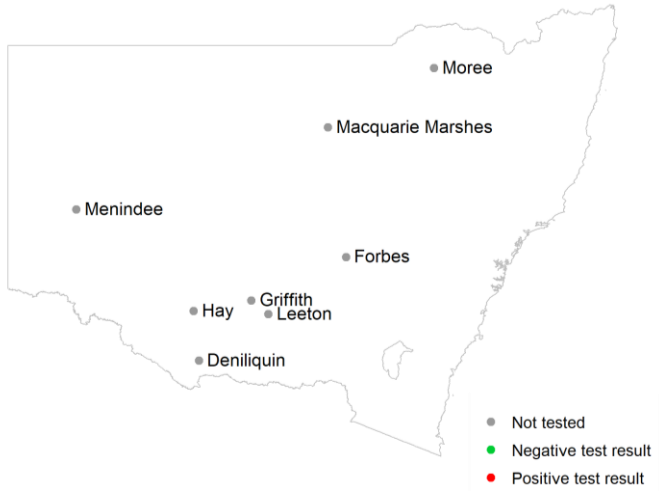
Arbovirus Detections

This section details detections of Murray Valley encephalitis virus, Kunjin virus, Ross River virus 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.

Chicken surveillance sites, 2021-2022 season



Positive test results in the 2021-2022 surveillance season

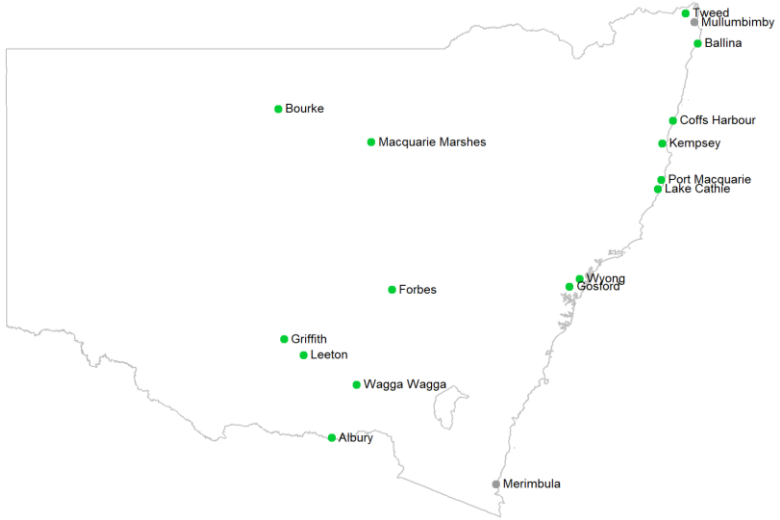
Date of sample collection	Location	Virus
There have been no detections in sentinel chickens in the 2021-2022 surveillance season		

Mosquito isolates

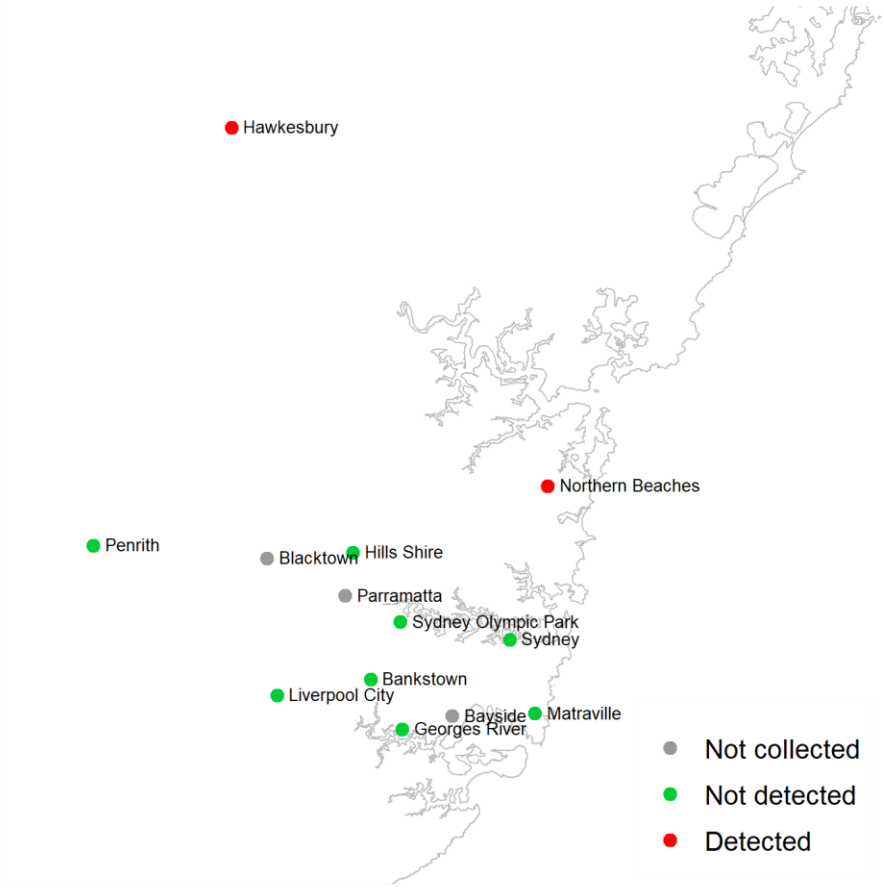
Whole grinds of mosquitoes are tested for arbovirus nucleic acids (including Ross River virus and Barmah Forest virus). Ross River virus was detected in mosquitoes this reporting week from Hawkesbury and North Beaches (details below).

Test results for mosquito trapping sites in the latest week to 9 April 2022 (by date of report)

Inland and Coastal sites



Sydney Sites



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

Date of sample collection	Location	Virus
04/04/2022	Northern Beaches	Ross River virus
29/03/2022	Hawkesbury	Ross River virus
28/03/2022	Northern Beaches	Ross River virus
22/03/2022	Liverpool City	Barmah Forest virus

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.

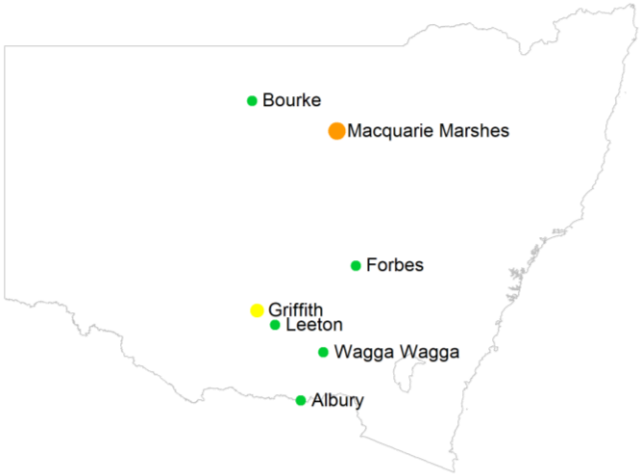
Mosquito counts (Average per trap per location) in the latest week to 9 April 2022 (by date of report)

Key:

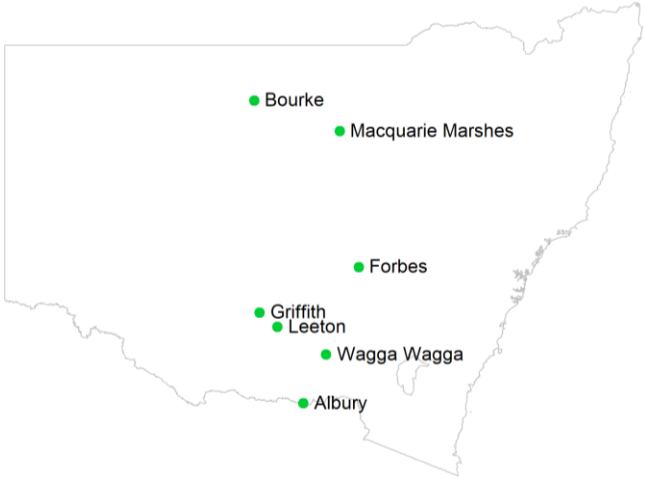
- No collection
- Low (<50)
- Medium (50-100)
- High (101-1,000)
- Very high (1,001-10,000)
- Extreme (>10,000)

Inland sites

Total mosquito counts

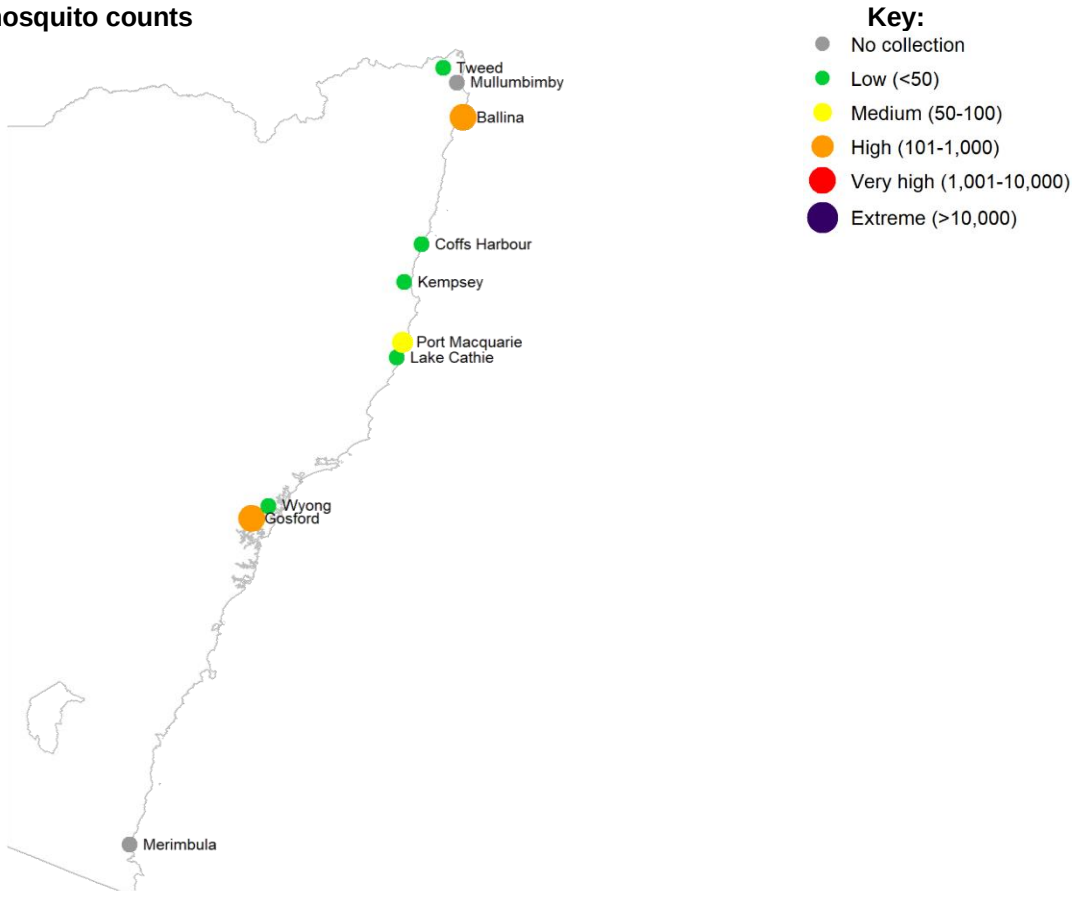


***Culex annulirostris* counts**

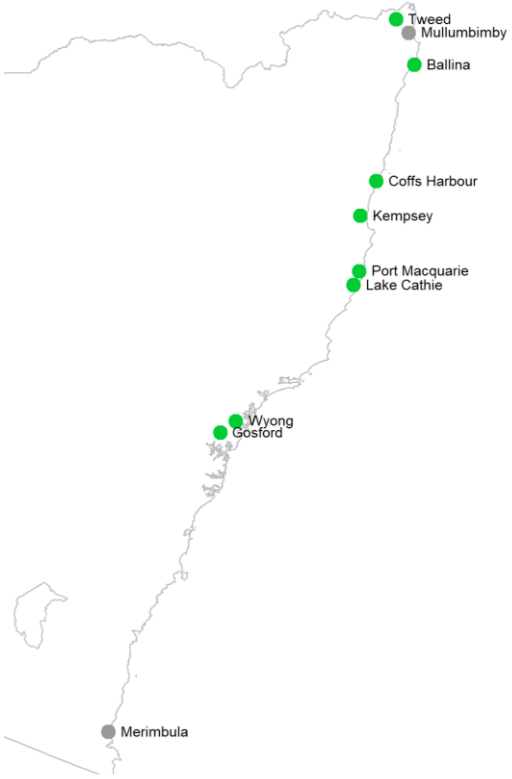


Coastal sites

Total mosquito counts



Culex annulirostris counts



Aedes vigilax counts

Sydney sites

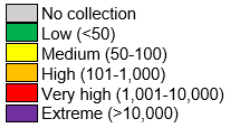
Total mosquito counts

Culex annulirostris counts

Aedes vigilax counts

Mosquito abundance data for 2021-22 season to date

Key:



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

Inland

		WEEK ENDING																												
		Nov-21				Dec-21				Jan-22					Feb-22				Mar-22				Apr-22					May-22			
Location	**Mosquito**	**6**	**13**	**20**	**27**	**4**	**11**	**18**	**25**	**1**	**8**	**15**	**22**	**29**	**5**	**12**	**19**	**26**	**5**	**12**	**19**	**26**	**2**	**9**	**16**	**23**	**20**	**7**	**14**	**21**	**28**
Albury	***Cx. annul***																														
	Total																														
Bourke	***Cx. annul***																														
	Total																														
Forbes	***Cx. annul***																														
	Total																														
Griffith	***Cx. annul***																														
	Total																														
Leeton	***Cx. annul***																														
	Total																														
Macquarie Marshes	***Cx. annul***																														
	Total																														
Wagga Wagga	***Cx. annul***																														
	Total																														

Coastal

		WEEK ENDING																												
		Nov-21				Dec-21				Jan-22					Feb-22				Mar-22				Apr-22					May-22			
Location	Mosquito	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	20	7	14	21	28
Ballina	*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																														
Merimbula	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Mullumbimby	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Port Macquarie	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Tweed	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Wyong	*Cx. annul*																														
	Ae. vigilax																														
	Total																														

Sydney

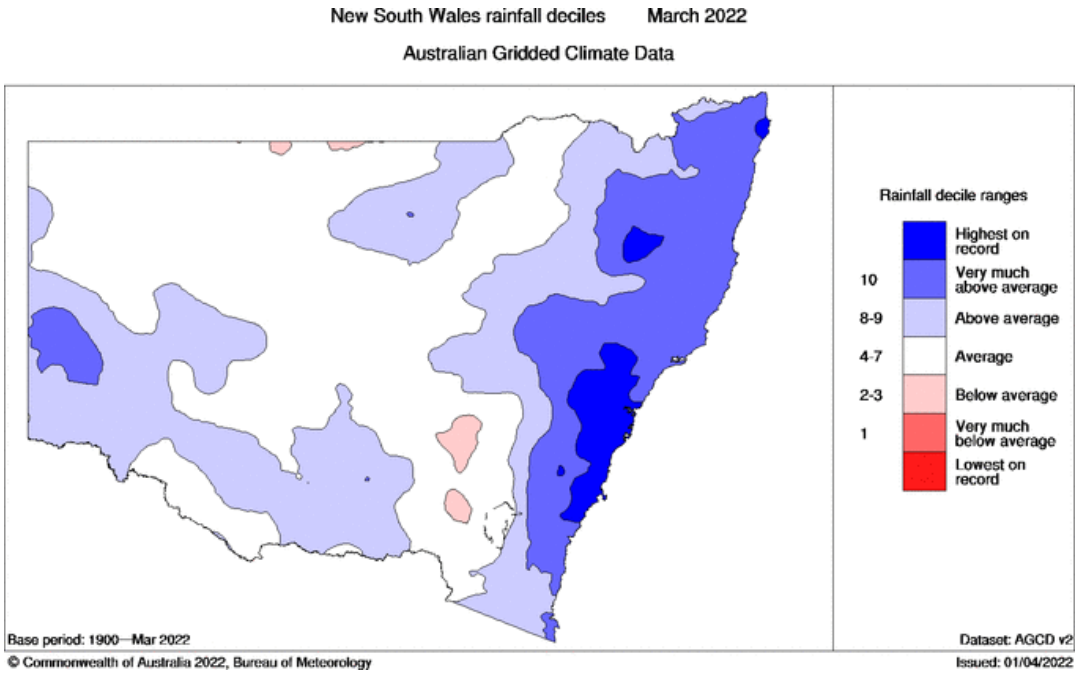
		WEEK ENDING																														
		Nov-21				Dec-21				Jan-22					Feb-22				Mar-22				Apr-22					May-22				
Location	Mosquito	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	20	7	14	21	28
Bankstown	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Blacktown	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Georges River	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Hawkesbury	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Hills Shire																															
Liverpool City	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Bayside	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Matraville	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Northern Beaches	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Parramatta	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Penrith	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Sydney Olympic Park	*Cx. annul*																														
	Ae. vigilax																														
	Total																														
Sydney	*Cx. annul*																														
	Ae. vigilax																														
	Total																														

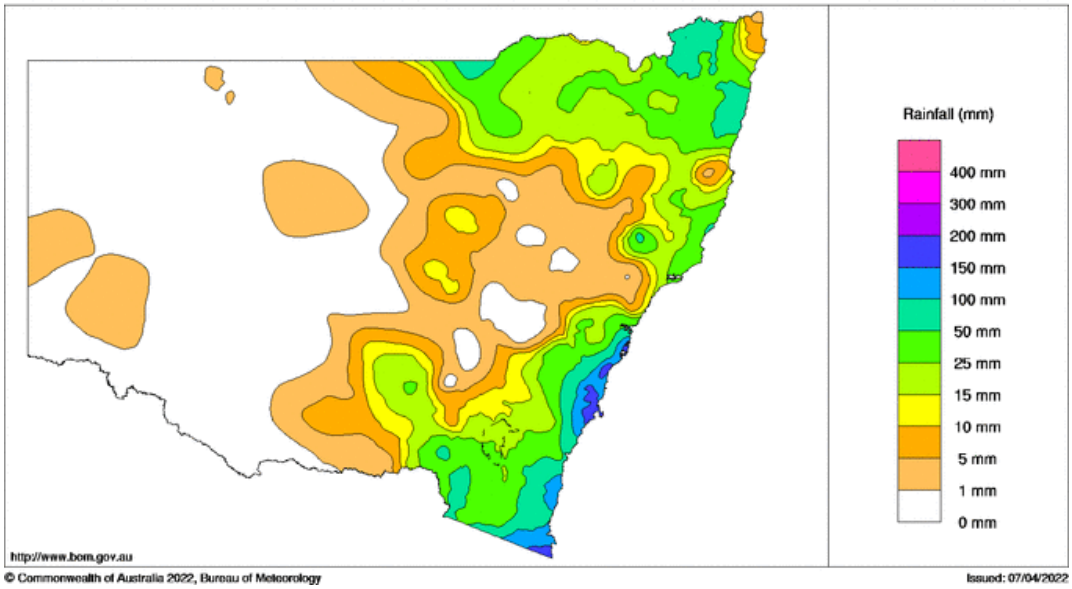
Environmental Conditions

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 March, rainfall was very much above average along the coast and Great Dividing Range. Sydney had the highest March rainfall on record. In the week ending 7 April 2022 (the latest data available at time of reporting), there was moderate rainfall in the Eastern NSW, with very high totals in Sydney and the South Coast of NSW.





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 that NSW is likely to receive about average rainfall for May.
www.bom.gov.au/climate/outlooks/#/rainfall/median/monthly/0

The Bureau of Meteorology's temperature outlook maps predict that minimum temperatures are likely to be higher than usual across NSW in May. Maximum temperatures are likely to be above average inland and average along the NSW coast.
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 April

- 17-22 April 2022

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*, 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.

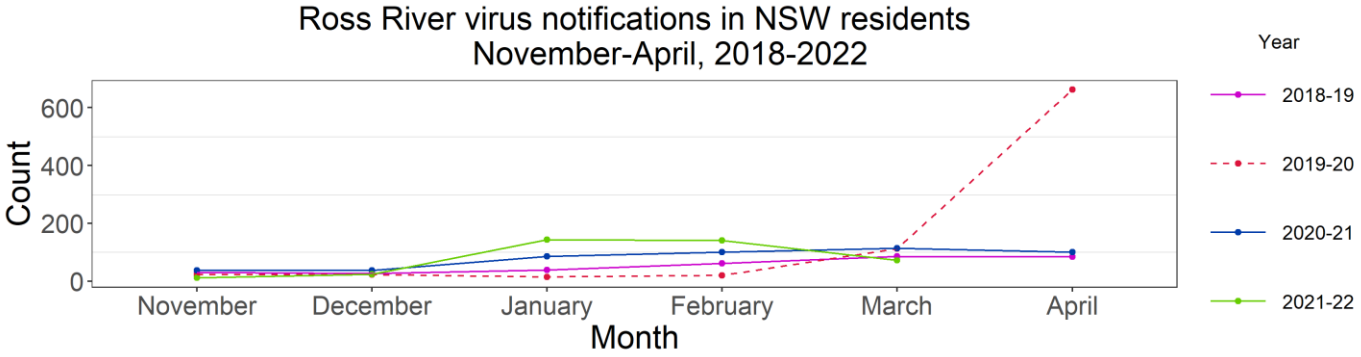
The data for Ross River virus and Barmah Forest virus from the CDWR for the latest reported 3 weeks are in the following table.

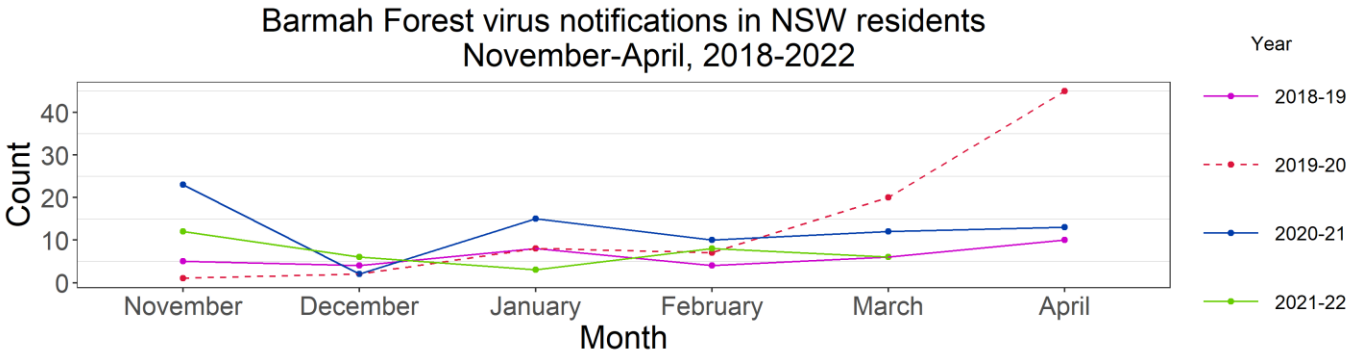
Recent notifications of Ross River virus and Barmah Forest virus infections in humans
(by date of case report received)

	Week		
	Latest week (13 – 19 Mar 2022)	**1-week prior (6 - 12 Mar 2022)**	**2-weeks prior (27 Feb – 5 Mar 2022)**
Ross River virus	14	8	42
Barmah Forest virus	1	0	3

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

Notifications of Ross River 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 the current NSW Arbovirus and Mosquito Monitoring season (November 2021 to April 2022), 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 8 April 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.