

# NSW Arbovirus Surveillance & Mosquito Monitoring 2021-2022

Weekly Update: Week ending 2 April 2022

(Report Number 21)



# 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.

## Mosquito Abundance

- **Inland:** LOW at Albury, Forbes and Leeton, MEDIUM at Wagga Wagga, HIGH at Griffith.
- **Coast:** LOW at Merimbula and Wyong, MEDIUM at Kempsey and Lake Cathie, HIGH at Gosford and Port Macquarie.
- **Sydney:** LOW at Hills Shire and Sydney, MEDIUM at Bankstown, Georges River and Parramatta, HIGH at Liverpool City, Matraville, Northern Beaches, Hawkesbury, Sydney Olympic Park and Penrith.

## Environmental Conditions

- **Climate:** In the week ending 2 April 2022, there was moderate rainfall in the Eastern NSW, with very high totals in the North and Mid-North coasts. Higher rainfall than usual is expected in NSW during April 2022. Higher than usual minimum temperatures are expected across NSW in April and maximum temperatures are likely to be below average.
- **Tides:** High tides over 1.8 metres are predicted for 30 March and 17-22 April 2022 which could trigger hatching of *Aedes vigilax*.

## Human Arboviral Disease Notifications

- **Ross River Virus:** 31 cases were notified in the week ending 26 February 2022.
- **Barmah Forest Virus:** 0 cases were notified in the week ending 26 February 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. 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 ten 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](http://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](mailto: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.

SPHN (HP NSW) 211005

Cover photos: **Bottom left** - Common banded mosquito, *Culex annulirostris*  
**Top and bottom right** - Saltmarsh mosquito, *Aedes vigilax*  
(Copyright 2020)

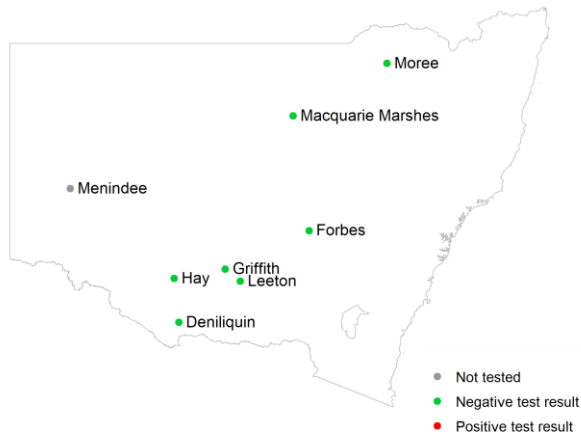
## Arbovirus Detections

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

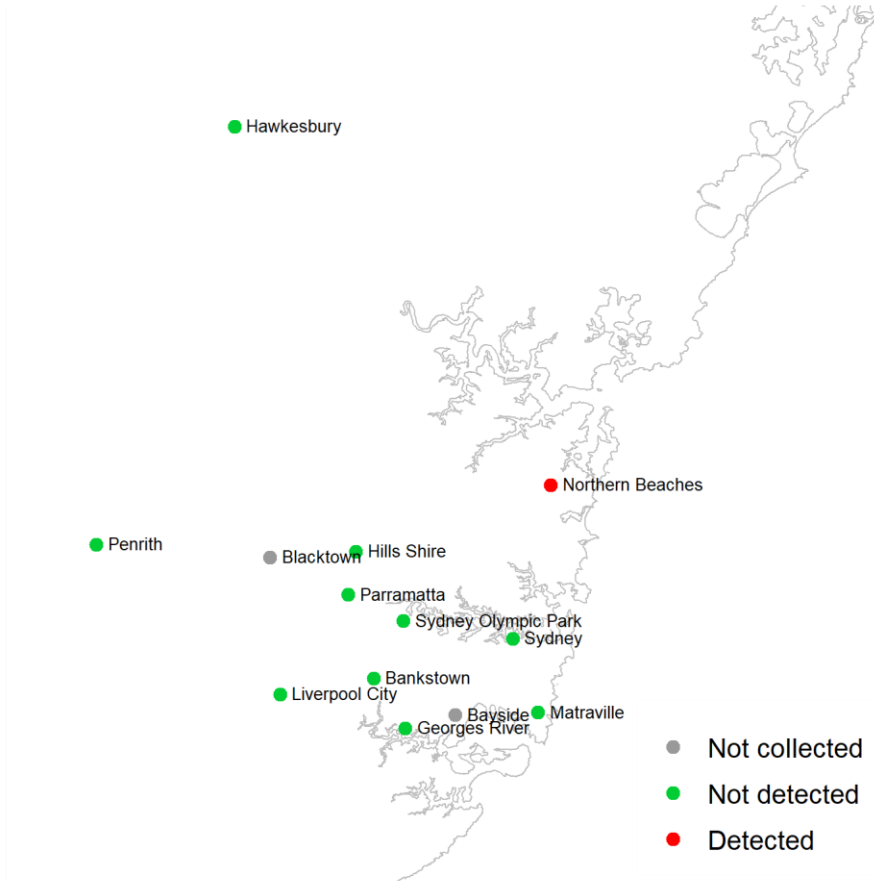
Whole grinds of mosquitoes are tested for arbovirus nucleic acids (including Ross River virus and Barmah Forest virus). Barmah Forest virus was detected in mosquitoes collected this reporting week from Liverpool City (details below).

#### Test results for mosquito trapping sites in the latest week to 2 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
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.

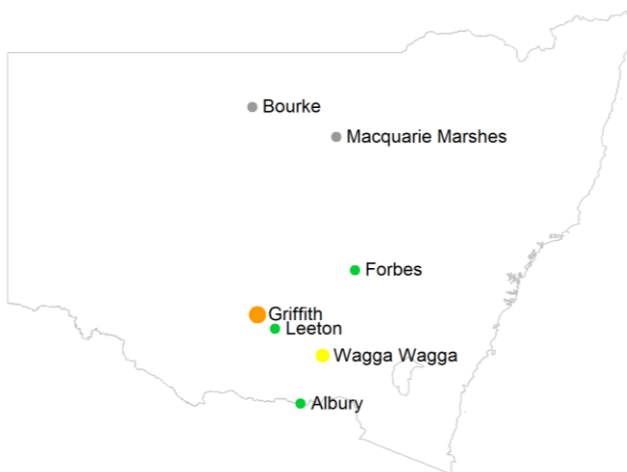
### Mosquito counts (Average per trap per location) in the latest week to 2 April 2022 (by date of report)

Key:

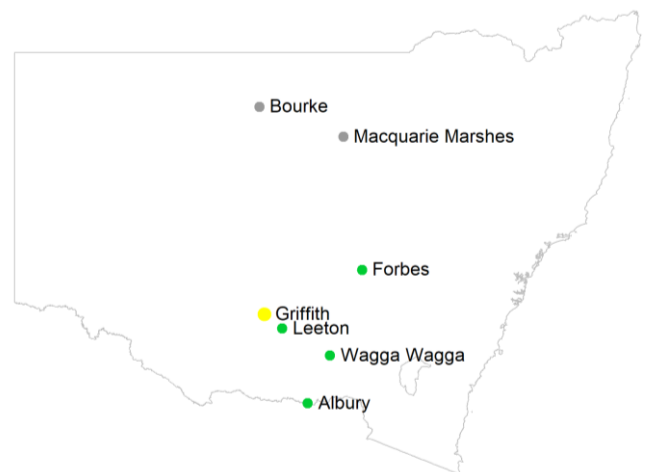
- No collection
- Low (<50)
- Medium (50-100)
- High (101-1,000)
- Very high (1,001-10,000)
- Extreme (>10,000)

#### Inland sites

##### Total mosquito counts

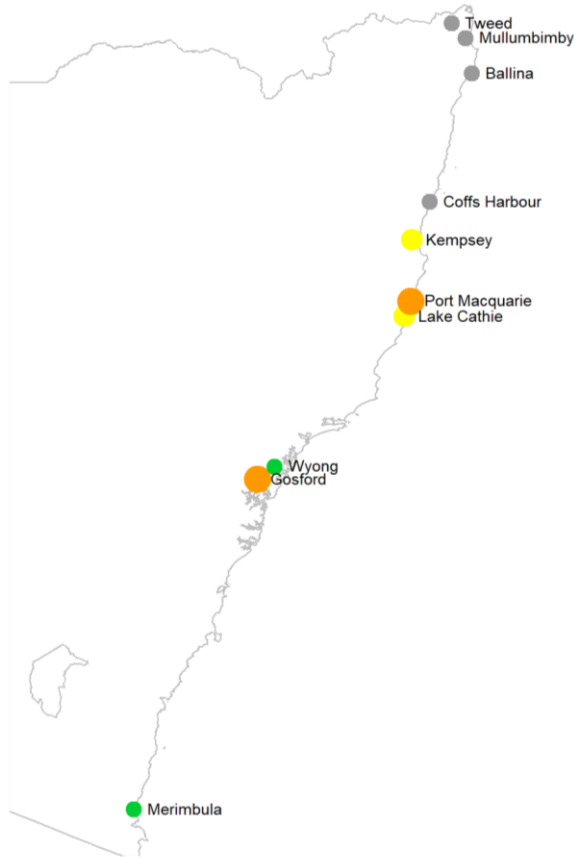


##### *Culex annulirostris* counts



## Coastal sites

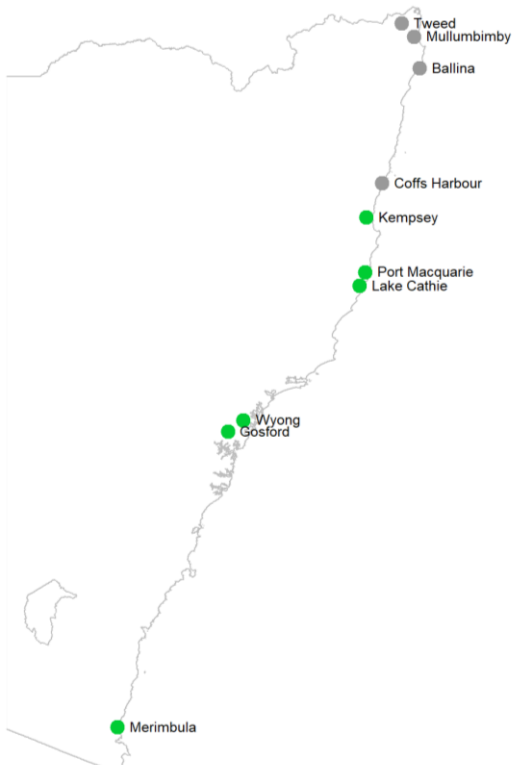
### Total mosquito counts



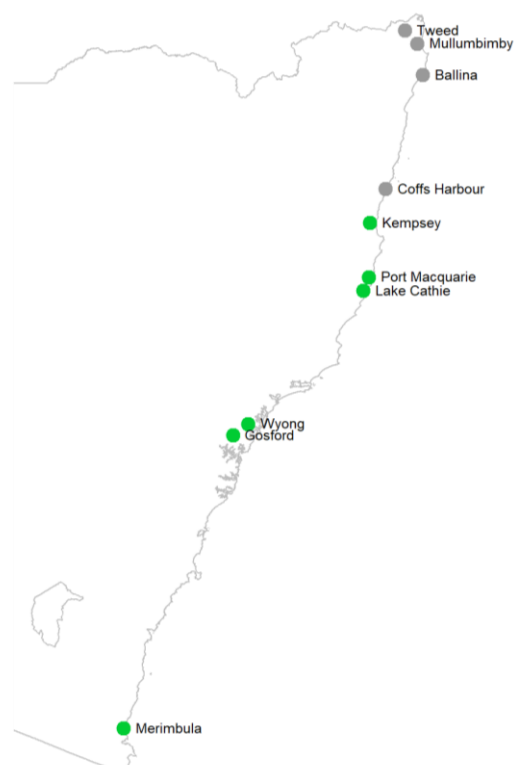
### Key:

- 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



### *Culex annulirostris* counts



### *Aedes vigilax* counts



## Mosquito abundance data for 2021-22 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 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	<i>Cx. annul</i>	Low	Low	Low	Low	Medium	Low	Medium	No collection	No collection	No collection	High	High	No collection	High	High	High	High	Low	Low	Medium	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
	Total	Low	Low	Low	Medium	Medium	High	High	No collection	No collection	No collection	High	High	No collection	High	High	High	High	Low	Low	Medium	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
Bourke	<i>Cx. annul</i>	No collection	No collection	No collection	Low	No collection	No collection	Low	Low	No collection	High	No collection	Low	Low	Low	Low	No collection	Low	Low	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
	Total	No collection	No collection	No collection	Low	No collection	No collection	Medium	Medium	No collection	High	No collection	Low	Low	Low	Low	No collection	Low	Low	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
Forbes	<i>Cx. annul</i>	High	High	Low	High	High	High	Very high	No collection	No collection	High	Very high	Very high	High	Low	High	High	High	Medium	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
	Total	High	High	Low	High	High	High	Very high	No collection	No collection	High	Very high	Very high	High	Low	High	High	High	Medium	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
Griffith	<i>Cx. annul</i>	No collection	No collection	Low	High	Low	Medium	Very high	No collection	No collection	High	Very high	Very high	No collection	High	Very high	High	High	No collection	High	High	No collection	High	High	No collection	No collection	No collection	No collection	No collection	No collection	No collection
	Total	No collection	No collection	Low	High	Low	Medium	Very high	No collection	No collection	High	Very high	Very high	No collection	High	Very high	High	High	No collection	High	High	No collection	High	High	No collection	No collection	No collection	No collection	No collection	No collection	No collection
Leeton	<i>Cx. annul</i>	No collection	Low	Low	Low	Low	Low	Medium	No collection	No collection	Low	High	High	High	Very high	High	High	High	Low	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
	Total	No collection	Low	Low	Low	Low	Low	Medium	No collection	No collection	Low	High	High	High	Very high	High	High	High	Low	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
Macquarie Marshes	<i>Cx. annul</i>	No collection	No collection	No collection	No collection	No collection	No collection	High	No collection	No collection	Low	No collection	No collection	No collection	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	
	Total	No collection	No collection	No collection	No collection	No collection	No collection	High	No collection	No collection	Low	No collection	No collection	No collection	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection	
Wagga Wagga	<i>Cx. annul</i>	Low	Low	Low	Low	Low	Low	Low	No collection	No collection	High	High	Medium	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection
	Total	Low	Low	Low	Low	Low	Low	Low	No collection	No collection	High	High	Medium	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	No collection	No collection	No collection	No collection	No collection	No collection	No collection	No collection



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	<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							█			█	█	█	█	█	█	█	█				█	█	█	█	█					
Merimbula	<i>Cx. annul</i>																					█	█	█	█	█					
	<i>Ae. vigilax</i>																					█	█	█	█	█					
	Total																					█	█	█	█	█					
Mullumbimby	<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					█	█	█			█	█	█	█	█	█	█	█				█	█	█	█	█					

# Sydney

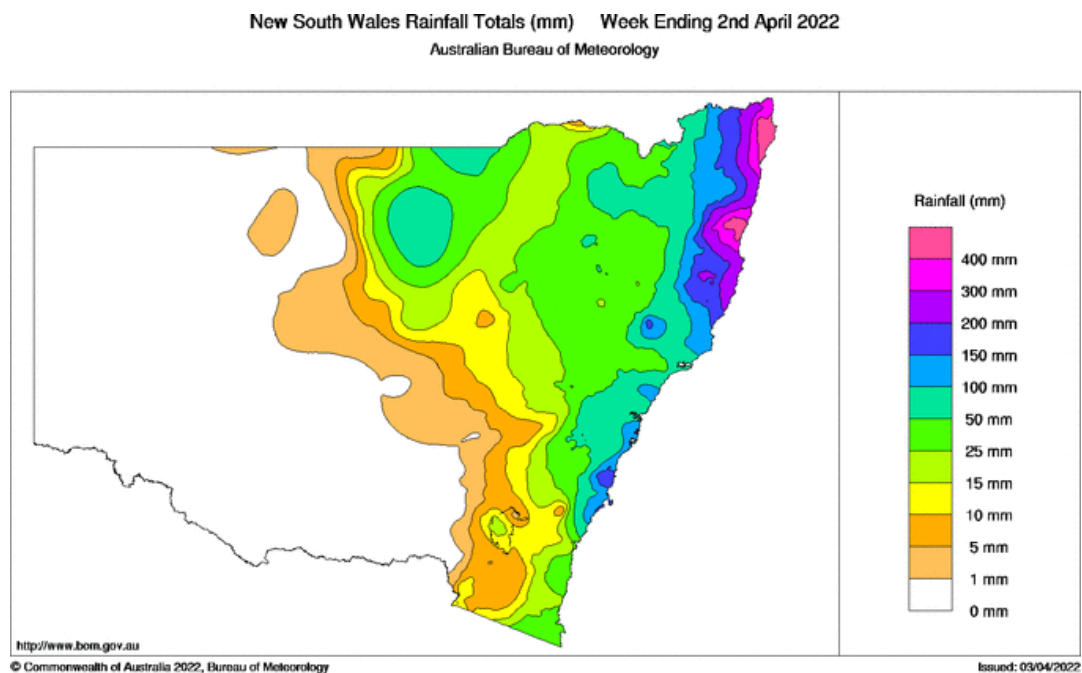
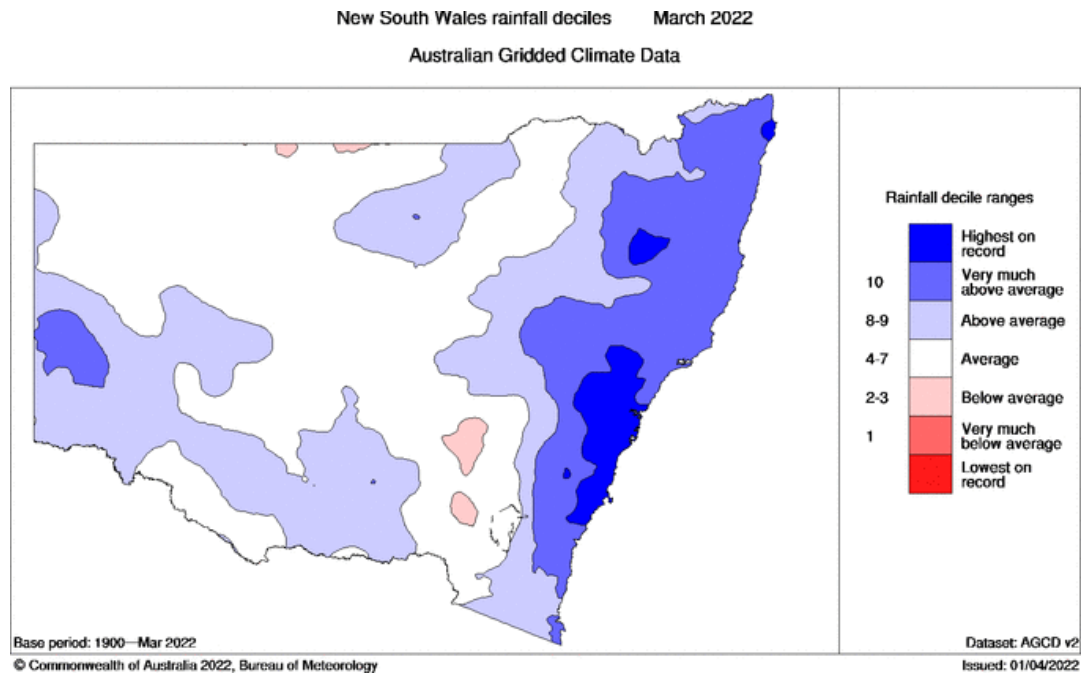
		WEEK ENDING																													
		Nov-21				Dec-21				Jan-22				Feb-22				Mar-22				Apr-22				May-22					
Location	Mosquito	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26	2	9	16	23	20	7	14	21	28
Bankstown	<i>Cx. annul</i>																														
	<i>Ae. vigilax</i>																														
	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																														
Hills Shire	<i>Cx. annul</i>																														
	<i>Ae. vigilax</i>																														
	Total																														
Liverpool City	<i>Cx. annul</i>																														
	<i>Ae. vigilax</i>																														
	Total																														
Bayside	<i>Cx. annul</i>																														
	<i>Ae. vigilax</i>																														
	Total																														
Matraville	<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																														
Sydney	<i>Cx. annul</i>																														
	<i>Ae. vigilax</i>																														
	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 2 April 2022, there was moderate rainfall in the Eastern NSW, with very high totals in the North and Mid-North coasts.



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 more rainfall than usual for April.

[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 maps predict that minimum temperatures are likely to be higher than usual across NSW in April. Maximum temperatures are likely to be below average in 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 the end of March and the coming month

- 30 March 2022
- 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](http://www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx).

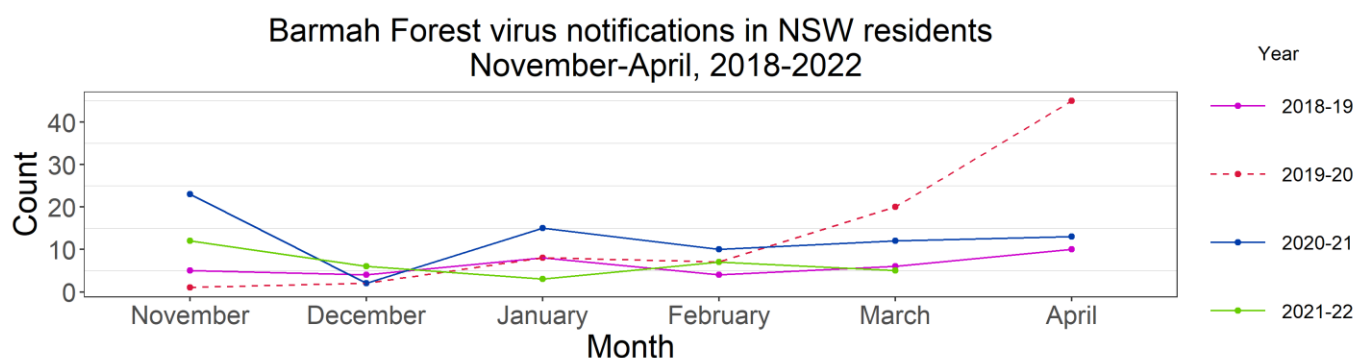
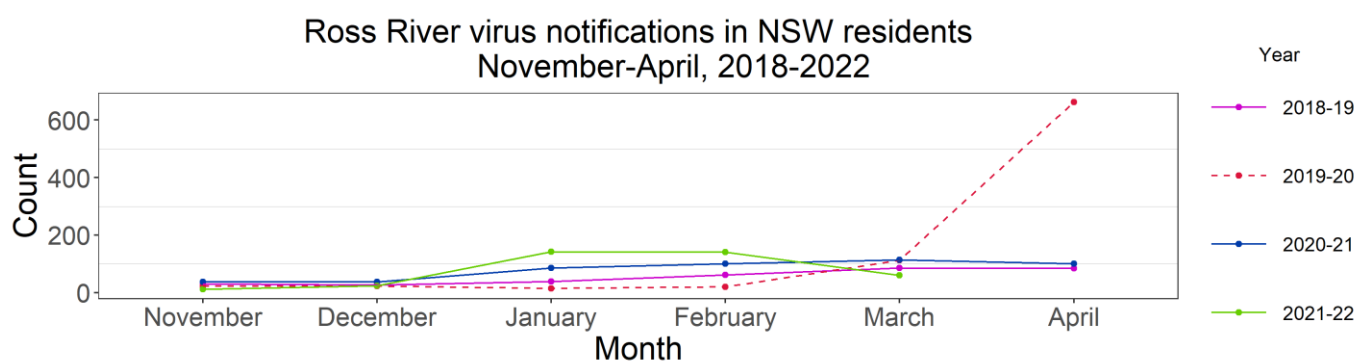
The data for Ross River virus and Barmah Forest virus from the CDWR for the latest reported 3 weeks are in the following table.

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

	Week		
	Latest week (20 – 26 Feb 2022)	1-week prior (13 - 19 Feb 2022)	2-weeks prior (6 - 12 Feb 2022)
<b>Ross River virus</b>	31	16	39
<b>Barmah Forest virus</b>	0	0	1

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](http://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 4 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.