

NSW Arbovirus Surveillance & Mosquito Monitoring 2021-2022

Weekly Update: Week ending 4 December 2021

(Report Number 5)



Summary

Arbovirus Detections

- **Sentinel Chickens:** Data are not yet available.
- **Mosquito Isolates:** There were no arbovirus detections in mosquito isolates.

Mosquito Abundance

- **Inland:** LOW at Leeton and Wagga Wagga, MEDIUM at Griffith and Albury
- **Coast:** LOW at Coffs Harbour and Wyong, MEDIUM at Kempsey, HIGH at Tweed, Ballina, and Gosford.
- **Sydney:** LOW at Hawkesbury and Blacktown, MEDIUM at Sydney Olympic Park and Bankstown, HIGH at Penrith, Parramatta, and Northern Beaches.

Environmental Conditions

- **Climate:** In the week ending 4 December 2021, there was low rainfall across most of NSW and moderate to high rainfall in North Eastern NSW. Higher rainfall is expected across NSW for the remainder of December and January with higher minimum temperatures than usual expected across NSW in December.
- **Tides:** High tides over 1.8 metres predicted for 3-9 December, 1-6 and 19-20 January 2022, which could trigger hatching of *Aedes vigilax*.

Human Arboviral Disease Notifications

- **Ross River Virus:** 4 cases were notified in the week ending 6 November 2021.
- **Barmah Forest Virus:** 3 cases were notified in the week ending 6 November 2021.

Comments and other findings of note

The Bureau of Meteorology has declared that the tropical Pacific is in a La Niña phase, which typically means higher rainfall across eastern Australia which could increase arbovirus risk in the coming months. The previous weekly report was missing mosquito abundance data from Forbes and Bourke. These data for week ending 27 November 2021 have been added to the Inland mosquito abundance table in this report.

Sentinel chicken surveillance commenced in December for the 2021-22 season, but results were not available at the time of reporting.

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.

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*
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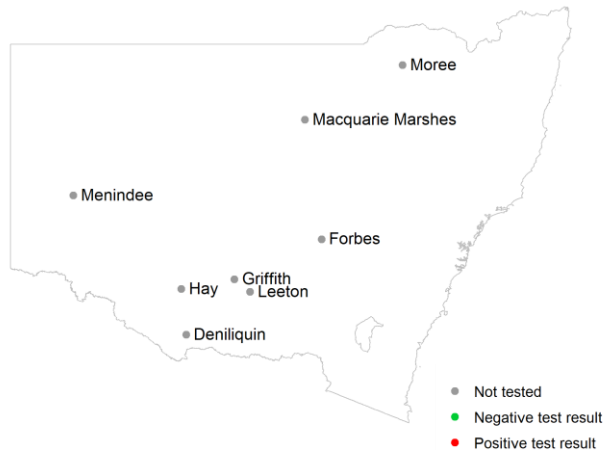
Arbovirus Detections

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. Data were not available at the time of reporting.

Chicken surveillance sites, 2021-2022 season



Mosquito isolates

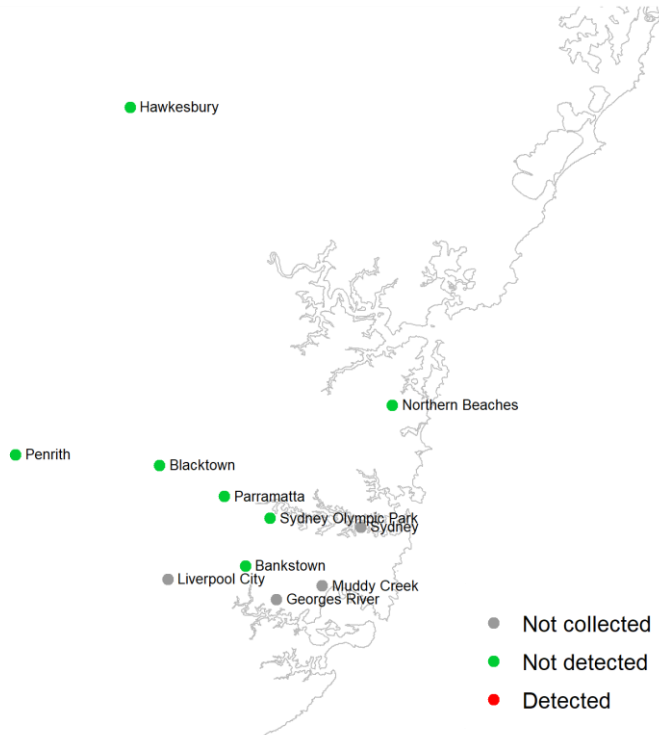
Whole grinds of mosquitoes are tested for arbovirus nucleic acids (including Ross River virus and Barmah Forest virus). There were no detections of Ross River virus and Barmah Forest virus among sites that had collected mosquitoes in this reporting period.

Test results for mosquito trapping sites in the latest week to 4 December 2021 (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
There have been no detections in mosquitoes in the 2021-2022 surveillance 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.

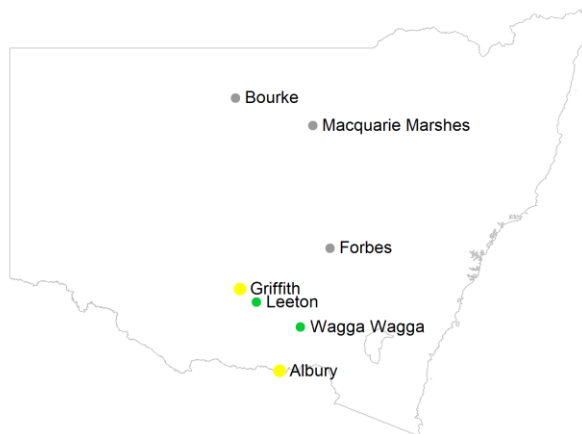
Mosquito counts (Average per trap per location) in the latest week to 4 December 2021 (by date of report)

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

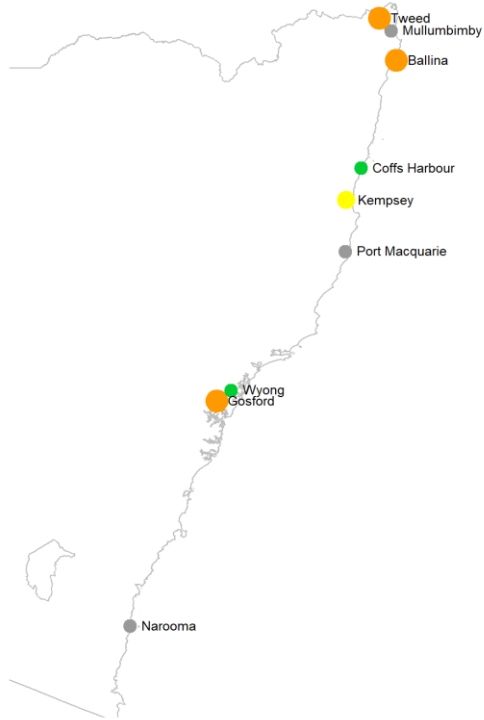


Culex annulirostris counts



Coastal sites

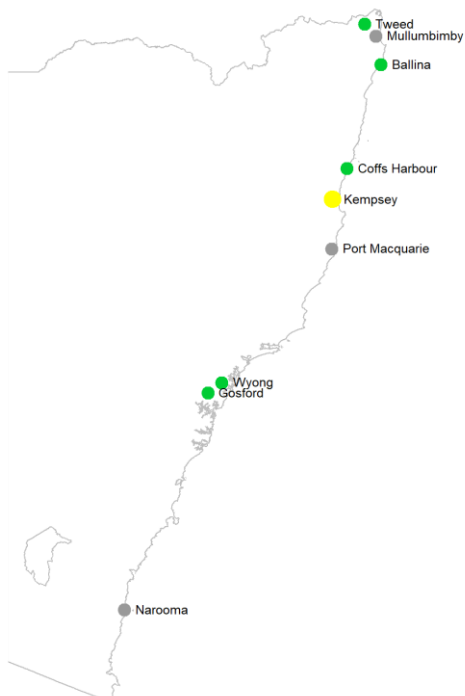
Total mosquito counts



Key:

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

Culex annulirostris counts

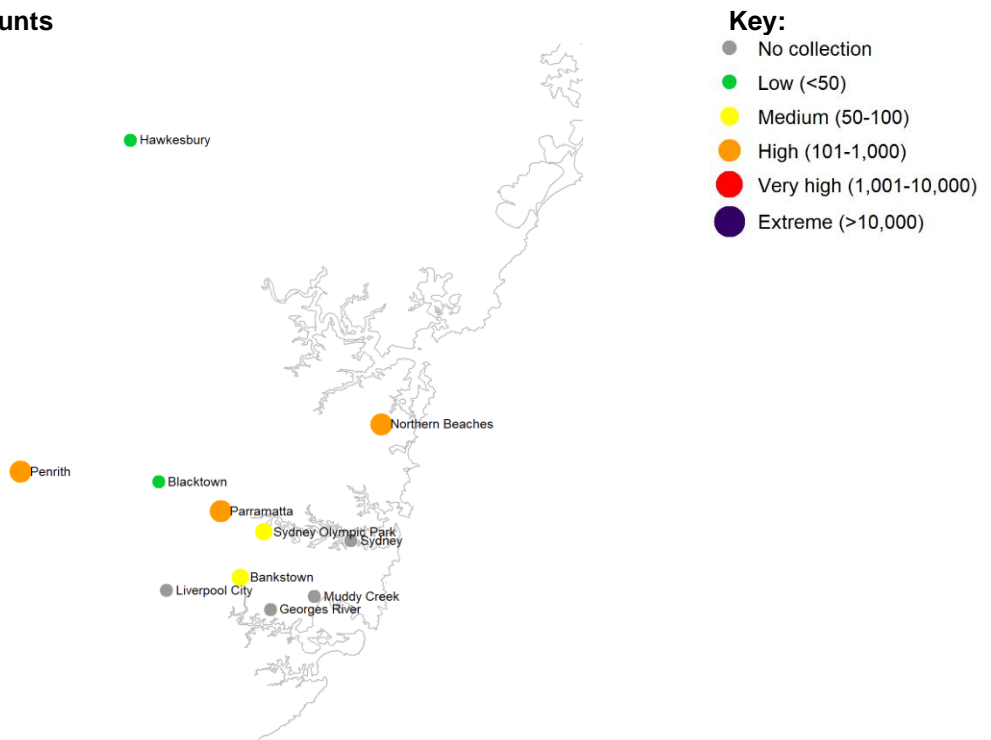


Aedes vigilax counts



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>	Green	Green	Green	Green	Yellow																									
	Total	Green	Green	Green	Yellow	Yellow																									
Bourke	<i>Cx. annul</i>				Green																										
	Total				Green																										
Forbes	<i>Cx. annul</i>	Yellow	Yellow	Green	Yellow																										
	Total	Yellow	Yellow	Green	Yellow																										
Griffith	<i>Cx. annul</i>			Green	Yellow	Green																									
	Total			Green	Yellow	Yellow																									
Leeton	<i>Cx. annul</i>		Green	Green	Green																										
	Total		Yellow	Green	Green																										
Macquarie Marshes	<i>Cx. annul</i>																														
	Total																														
Wagga Wagga	<i>Cx. annul</i>	Green	Green	Green	Green																										
	Total	Green	Green	Green	Green																										

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																														
Narooma	<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																														
Liverpool City	<i>Cx. annul</i>																														
	<i>Ae. vigilax</i>																														
	Total																														
Muddy Creek	<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																														

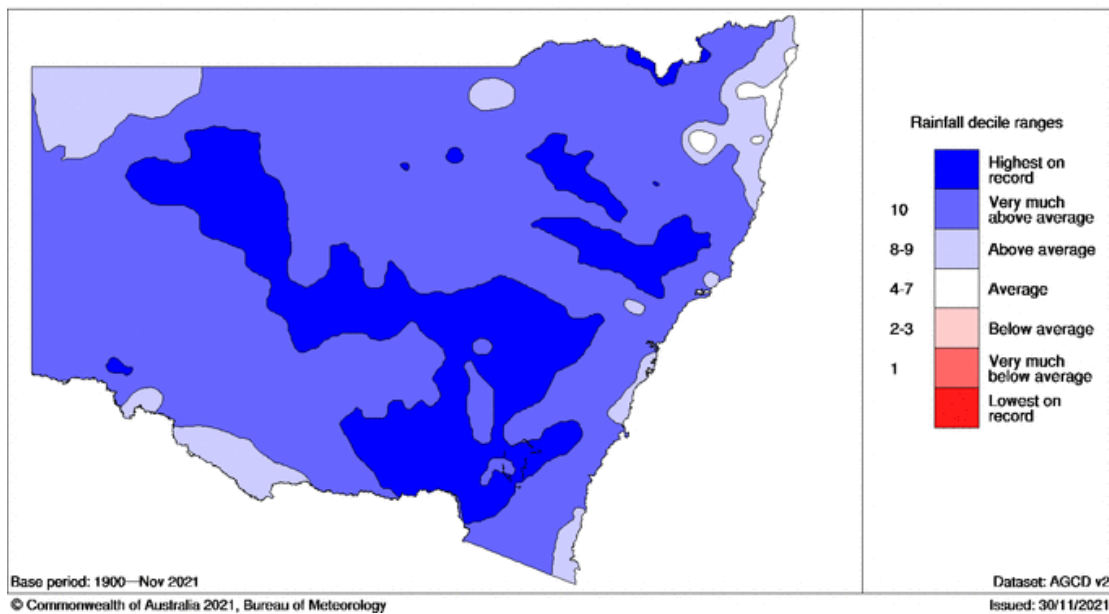
Environmental Conditions

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.

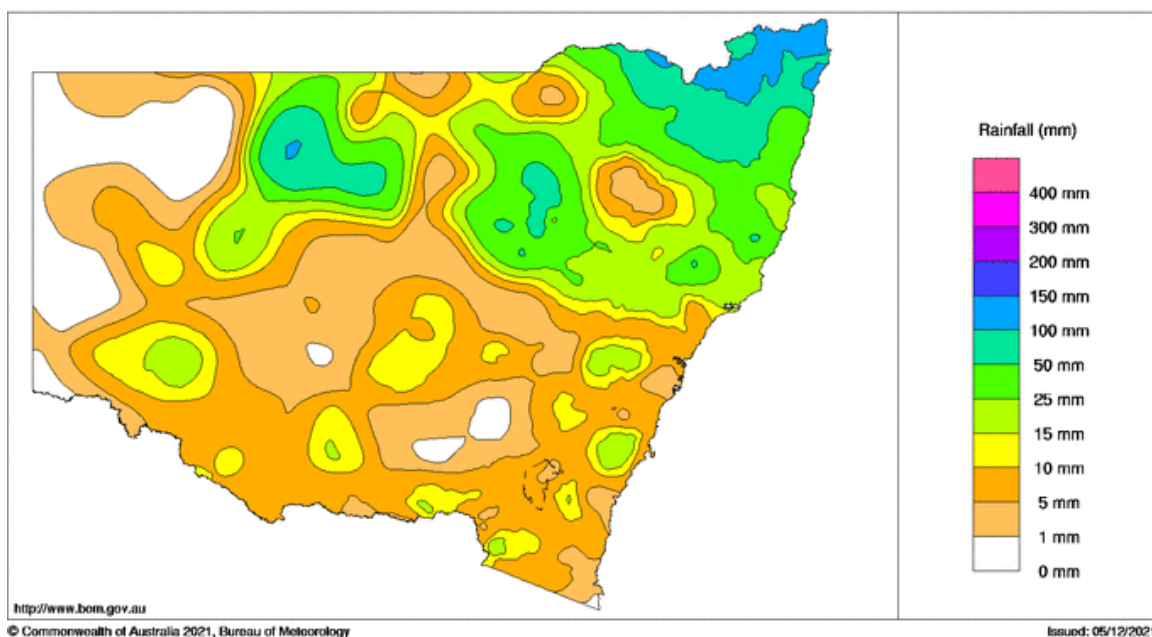
Rainfall

In November, rainfall was very much above average across most of NSW, and the highest on record in parts of inland NSW. In the week ending 4 December 2021, there was low rainfall across most of NSW and moderate to high rainfall in North Eastern NSW.

New South Wales rainfall deciles November 2021
Australian Gridded Climate Data



New South Wales Rainfall Totals (mm) Week Ending 4th December 2021
Australian Bureau of Meteorology



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 most of NSW is likely to receive more rainfall than usual for the remainder of December and in January.

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 December and January. Maximum temperatures are unlikely to exceed the average maximum temperature for the remainder of December and January.

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 the next month

- 3-9 December 2022
- 11-6 and 19-20 January 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.

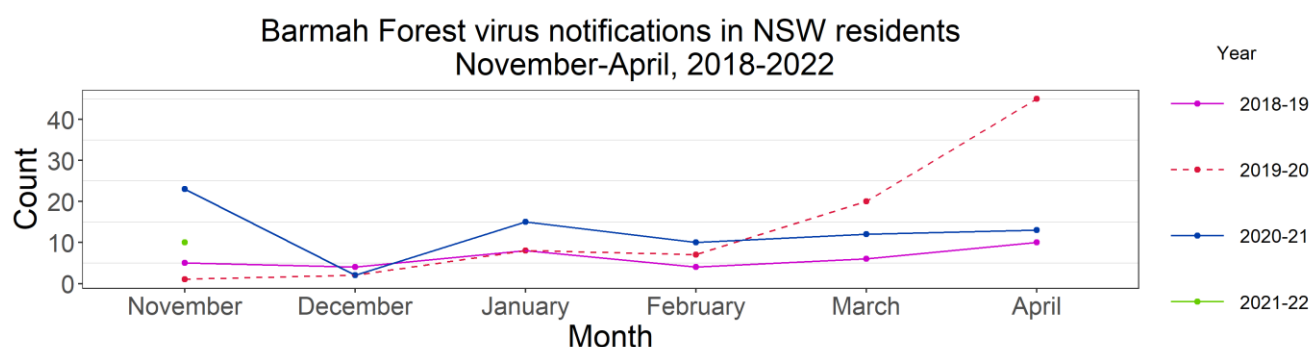
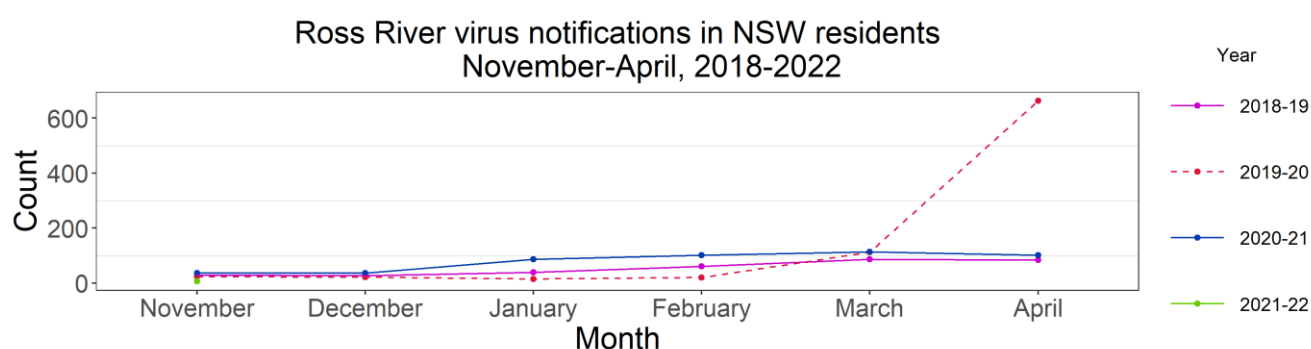
Recent notifications of Ross River virus and Barmah Forest virus infections in humans

(by date of case report received)

	Week		
	Latest week (31 Oct – 6 Nov 2021)	1-week prior (24 - 30 Oct 2021)	2-weeks prior (17 - 23 Oct 2021)
Ross River virus	4	3	5
Barmah Forest virus	3	0	2

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: <https://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 6 December 2021). 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.