NSW Arbovirus Surveillance & Mosquito Monitoring 2020-2021

Weekly Update: Week ending 6 March 2021

(Report Number 17)

NSW GOVERNMENT

Summary

Arbovirus Detections

- **Sentinel Chickens:** There were no arbovirus detections in sentinel chickens.
- **Mosquito Isolates:** Barmah Forest virus was detected in the Northern Beaches on 24 February. Ross River virus was detected in Forbes on 23 February.

Mosquito Abundance

- **Inland:** MEDIUM at Albury and Forbes. LOW at Bourke, Leeton and Wagga Wagga.
- **Coast:** HIGH at Ballina, Gosford, Kempsey, South West Rocks and Tweed. MEDIUM at Port Macquarie. LOW at Byron, Coffs Harbour and Wyong.
- **Sydney:** HIGH at Bankstown, Parramatta and Penrith. MEDIUM at Hills Shire and Sydney Olympic Park. LOW at Blacktown, Canada Bay, Georges River, Hawkesbury, Liverpool and Northern Beaches.

Environmental Conditions

- **Climate:** In the past week there was little to no rainfall in central, western and southern NSW. There was moderate rainfall in areas along the north coast. Rainfall is expected to be higher than usual across most of NSW for the remainder of March, especially in some areas of central and southern NSW. Rainfall is expected to be around usual across most of NSW in April. Temperatures are likely to be in the usual range across most of NSW for the remainder of March and in April, with less variation than usual.
- **Tides:** High tides over 1.8 metres are predicted to occur between 27-31 March and 2 April, which could trigger hatching of *Aedes vigilax.*

Human Arboviral Disease Notifications

- **Ross River Virus:** 14 cases were notified in the week ending 20 February 2021.
- **Barmah Forest Virus:** 0 cases were notified in the week ending 20 February 2021.

Comments and other findings of note

In addition to the detections of Ross River virus in Forbes (23 February) and Barmah Forest virus on the Northern Beaches (24 February), Edge Hill virus was detected on the Central Coast on 2 March. The Sentinel Chicken Surveillance Program has lost its chicken flock at Forbes due to a fox attack. Surveillance will cease at this site for the rest of the season.

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.

SHPN (HP NSW) 200547

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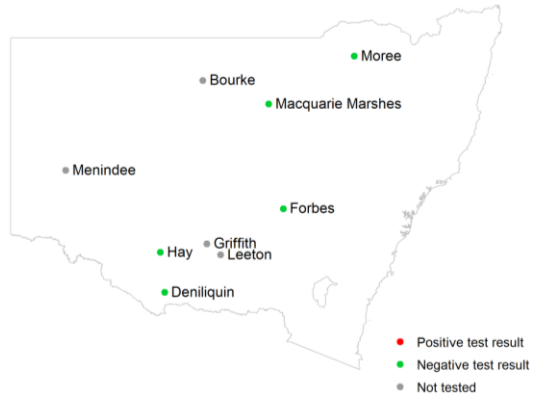
Arbovirus Detections

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.

Test results for sentinel chickens in the week ending 6 March 2021



Positive test results in the 2020-2021 surveillance season

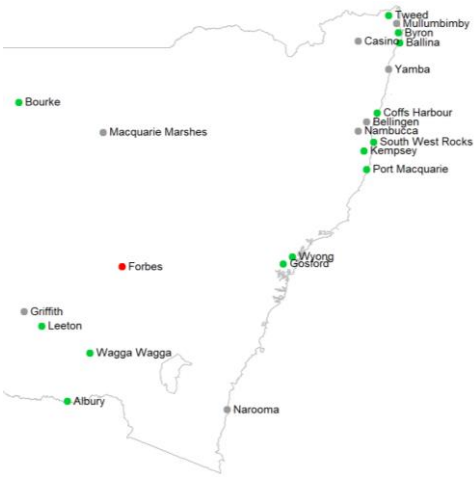
Date of sample collection	Location	Positive test results
There have been no detections in sentinel chickens in the 2020-2021 surveillance season		

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 the Northern Beaches on 24 February, and Ross River virus was detected in Forbes on 23 February (details below).

Test results for mosquito trapping sites in the week ending 6 March 2021

Inland and Coastal sites



Sydney sites

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

Date of sample collection	Location	Virus
23 February 2021	Forbes	Ross River virus
24 February 2021	Northern Beaches	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 specimens collected in the current reporting week.

Culex annulirostris and *Aedes vigilax* are vectors of interest for Ross River virus and Barmah Forest virus.

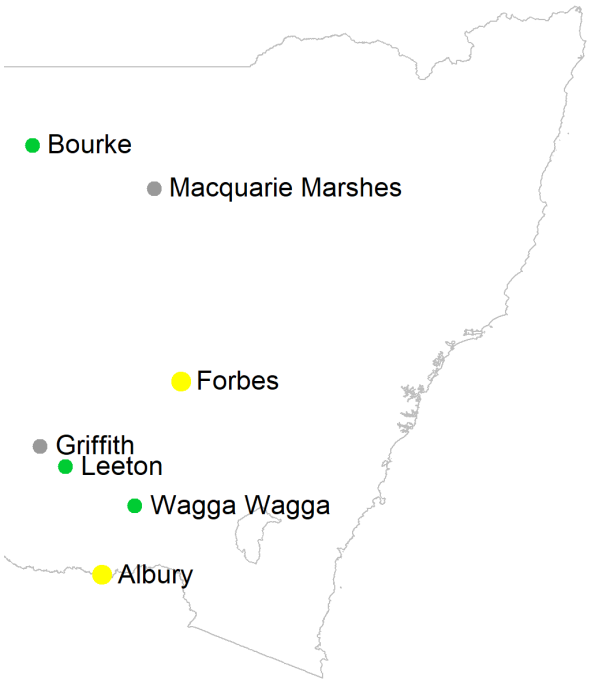
Mosquito counts in the week ending 6 March 2021

Key:

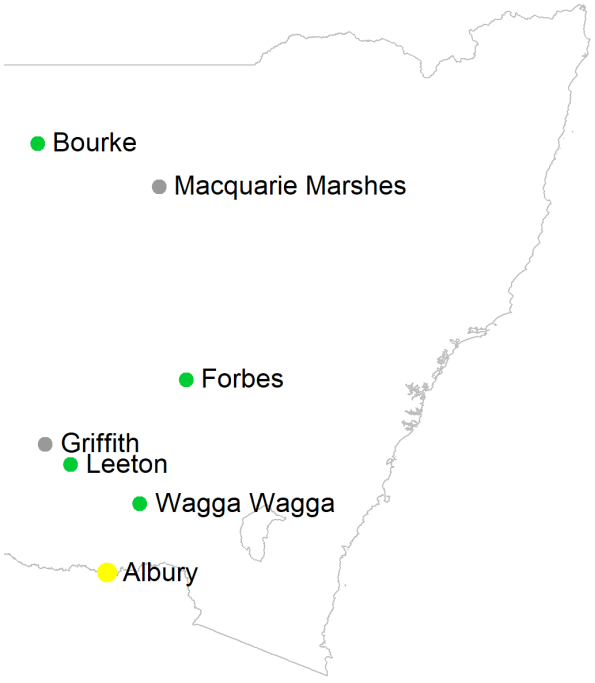
- No collection
- Low (<50)
- Medium (50-100)
- High (101-1,000)
- Very high (1,001-10,000)
- Extreme (>10,000)

Inland sites

Total mosquito counts

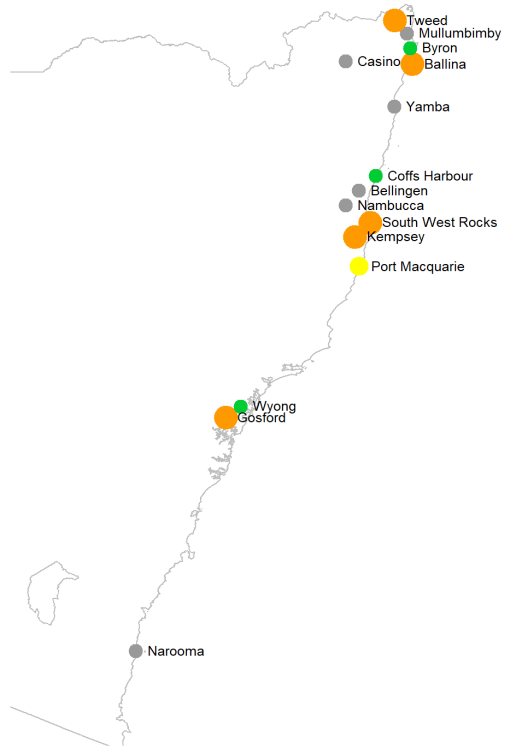


***Culex annulirostris* counts**



Coastal sites

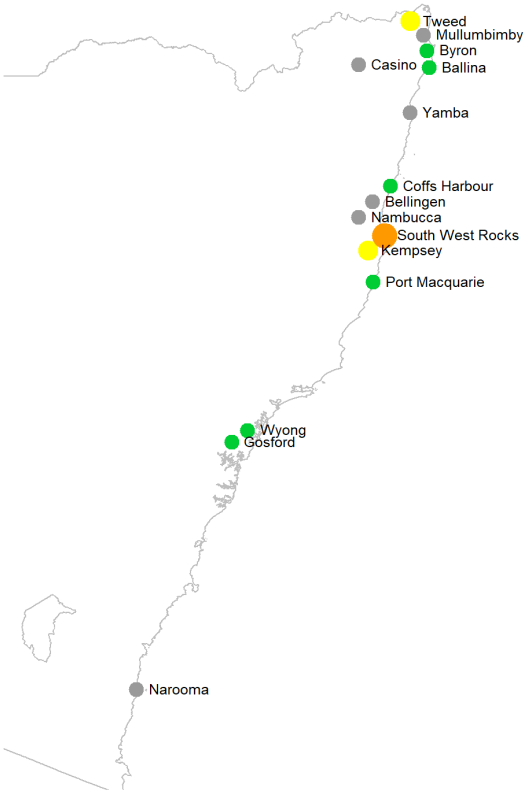
Total mosquito counts



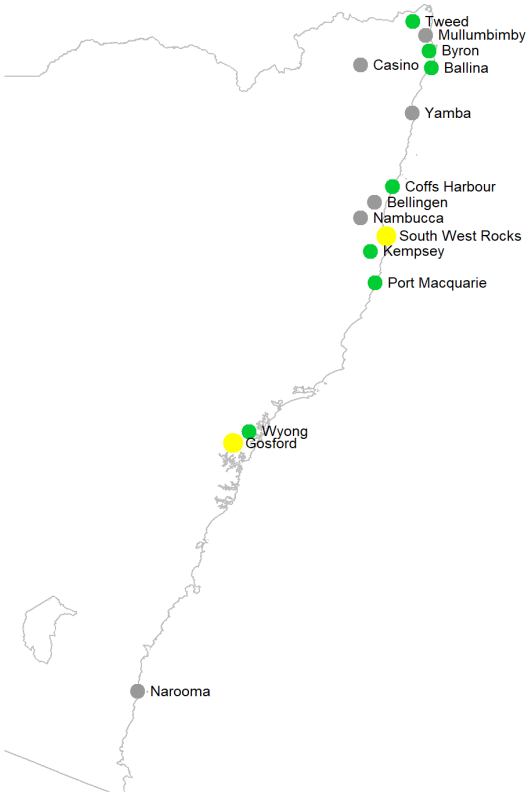
Key:

- 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

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 abundance data for 2020-21 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 tables represent the average for all trapping sites at that location. "*Cx. annul*" refers to *Culex annulirostris* and "*Ae.vigilax"* refers to *Aedes vigilax*.

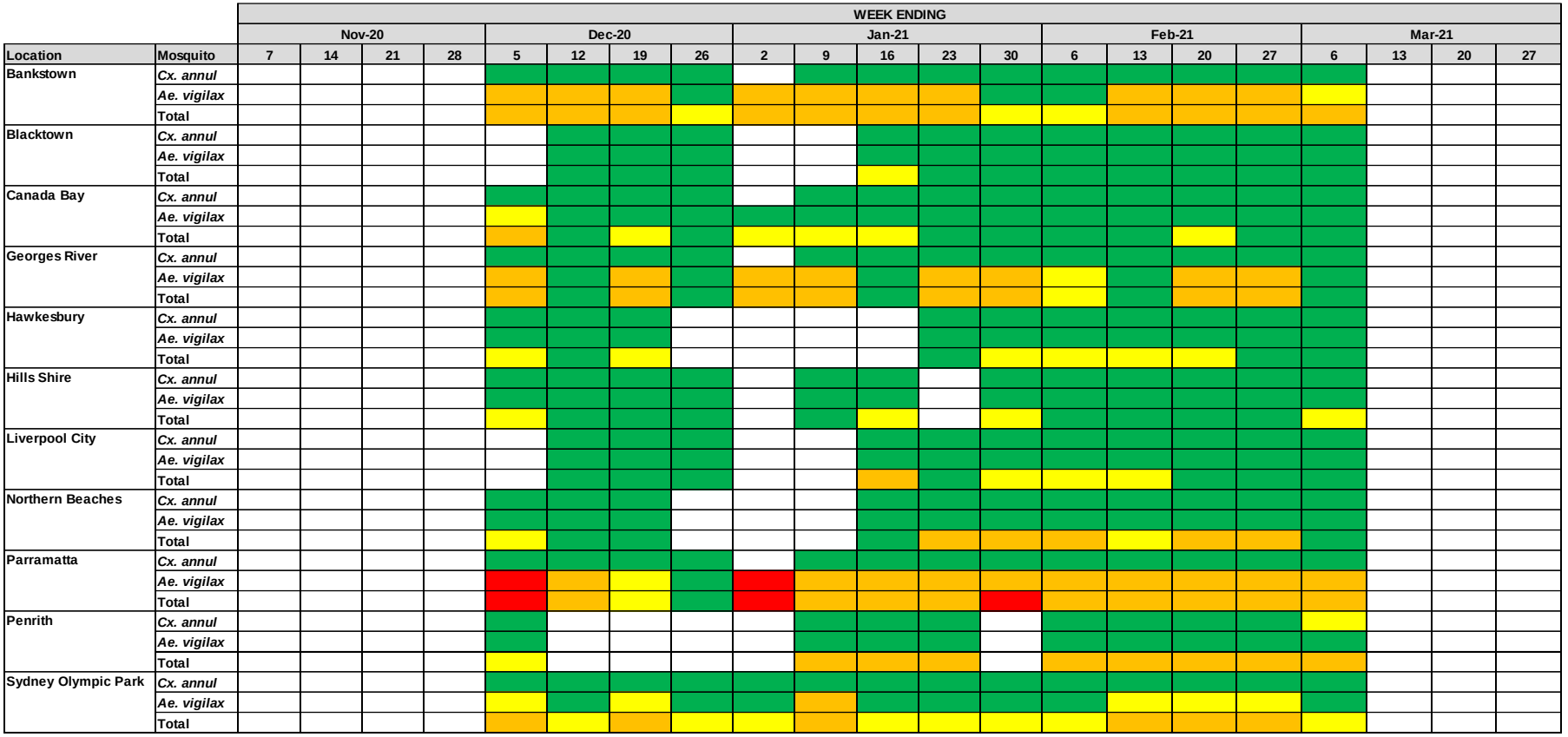
Inland

		WEEK ENDING																				
		Nov-20				Dec-20				Jan-21					Feb-21				Mar-21			
Location	Mosquito	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	6	13	20	27
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-20				Dec-20				Jan-21					Feb-21				Mar-21			
Location	Mosquito	7	14	21	28	5	12	19	26	2	9	16	23	30	6	13	20	27	6	13	20	27
Ballina	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Bellingen	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Byron	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Casino	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Coffs Harbour	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Gosford	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Kempsey	*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																					
Yamba	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Narooma	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
South West Rocks	*Cx. annul*																					
	Ae. vigilax																					
	Total																					
Nambucca	*Cx. annul*																					
	Ae. vigilax																					
	Total																					

Sydney

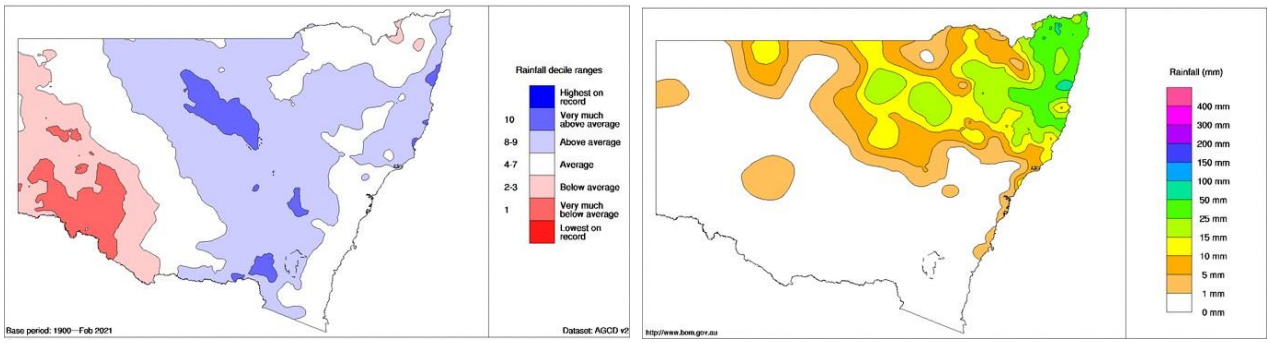

WEEK ENDING
Nov-20
Dec-20
Jan-21
Feb-21
Mar-21
Location
Mosquito
7 14 21 28 5 12 19 26 2 9 16 23 30 6 13 20 27 6 13 20 27
Bankstown
Cx. annul
Ae. vigilax
Total
Blacktown
Cx. annul
Ae. vigilax
Total
Canada Bay
Cx. annul
Ae. vigilax
Total
Georges River
Cx. annul
Ae. vigilax
Total
Hawkesbury
Cx. annul
Ae. vigilax
Total
Hills Shire
Cx. annul
Ae. vigilax
Total
Liverpool City
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

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 February, rainfall was higher than usual across most of central and northeastern NSW. Rainfall was lower than usual in far western and southwestern NSW. Rainfall was usual in coastal NSW, south of Newcastle (left). In the week ending 27 February 2021, there was little to no rainfall in central, western and southern NSW. There was moderate rainfall in areas along the north coast (right).



Source: Australian Government, Bureau of Meteorology: http://www.bom.gov.au/climate/maps/rainfall

Upcoming month's rainfall and temperature outlook

The Bureau of Meteorology's rainfall outlook map predicts higher than usual rainfall across most of NSW for the remainder of March, especially in some areas of central and southern NSW. Rainfall is expected to be around usual across most of NSW in April.
www.bom.gov.au/climate/outlooks/#/rainfall/median/monthly/0

The Bureau of Meteorology's temperature outlook maps predicts that maximum temperatures are likely to be lower than usual across most of NSW for the remainder of March and in April. Minimum temperatures are likely to be around usual across most of NSW in March and above usual in April.
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

- 27-31 March 2021
- 2 April 2021

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*, all arboviral infections are notifiable in NSW. The NSW Health Communicable Diseases Weekly Report (CDWR) (www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx) details cases by the week that they are received by NSW Public Health Units.

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

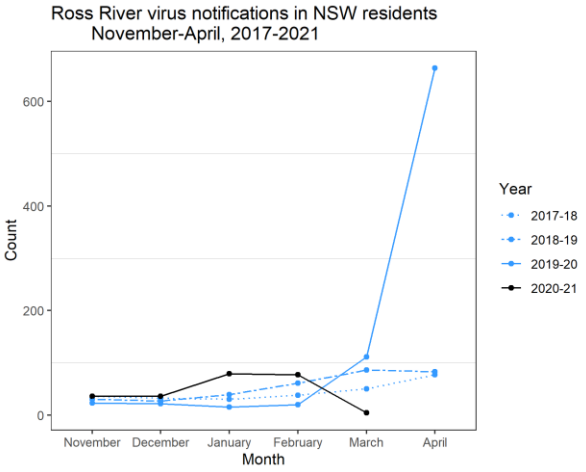
Recent notifications of Ross River virus and Barmah Forest virus in humans
(by date of case report received)

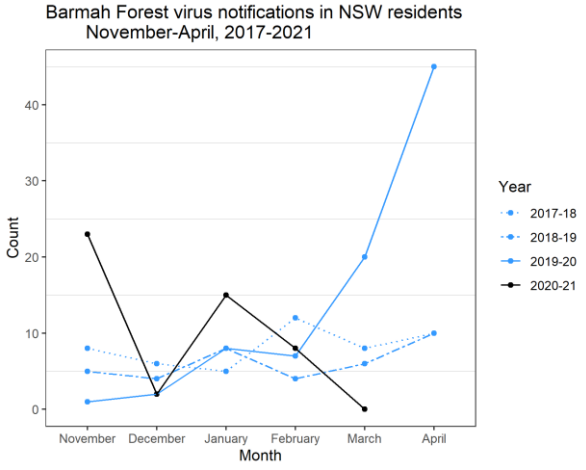
	Week		
	Latest week (14 - 20 Feb 2021)	**1-week prior (7 – 13 Feb 2021)**	**2-weeks prior (31 Jan - 6 Feb 2021)**
Ross River virus	14	27	21
Barmah Forest virus	0	3	5

Source: CDWR, Communicable Diseases Branch, Health Protection NSW, NSW Health
Notifications are for NSW residents - infection may have been acquired outside NSW.

Monthly Ross River virus and Barmah Forest virus notifications, by month of disease onset (the earlier of patient-reported onset, specimen, or notification date), are available at the following NSW Health website: https://www1.health.nsw.gov.au/IDD/pages/data.aspx

The following figures show the monthly number of notifications of Ross River virus and Barmah Forest virus for the current NSW Arbovirus and Mosquito Monitoring season (November 2020 to April 2021), 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

Note: The data for the current month are the notifications to date (data extracted on 8 March 2021).