

NSW Arbovirus Surveillance & Mosquito Monitoring 2019-2020

Weekly Update: 1 May 2020

(Report Number 19)



Summary

Arboviral Detections

- **Sentinel Chickens:** there have been no detections of Murray Valley encephalitis virus and Kunjin virus in the current surveillance season.
- **Mosquito Isolates:** Ross River virus was detected in mosquitoes trapped in Sydney (Northern Beaches) and Port Macquarie, Barmah Forest virus was detected in mosquitoes trapped in Sydney (Northern Beaches and Liverpool).

Mosquito Numbers

- **Inland:** Surveillance ended on 29 March 2020.
- **Coast:** VERY HIGH at Yamba, HIGH at Tweed Heads, Kempsey, Port Macquarie and Gosford, MEDIUM at Ballina, LOW elsewhere.
- **Sydney:** Surveillance ended on 29 March 2020.

Environmental Conditions

- **Climate:** in the past week, there was low to moderate rainfall in NSW. The outlook for May is for usual rainfall in NSW except for the coast where lower than usual rainfall is predicted, maximum temperatures are predicted to be higher than usual in the north east of the state.
- **Tides:** high tides over 1.8 metres, which could trigger hatching of *Aedes vigilax*, are predicted for 6-11 and 22-26 May 2020, however colder temperatures are likely to reduce mosquito numbers (see comments below).

Human Arbovirus Notifications

- **Ross River Virus:** 82 cases were notified in the week ending 18 April 2020.
- **Barmah Forest Virus:** 7 cases were notified in the week ending 18 April 2020.

Comments and other findings of note

NSW experienced increased rainfall and flooding during early February, followed by increased mosquito numbers and arboviral isolates in March. These factors may have contributed to an increased number of Ross River and Barmah Forest virus notifications in April. Recent colder weather is likely to significantly reduce mosquito populations in May.

In the past week, Stratford virus was detected in mosquitoes trapped in Sydney (Northern Beaches), Edge Hill virus was detected in mosquitoes trapped in Sydney (Northern Beaches), Central Coast and Yamba. Human cases of Stratford and Edge Hill virus infection are not notifiable in NSW, infection usually presents as a mild self-limiting febrile illness.

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: nswh-envepi@health.nsw.gov.au

Testing and scientific services were provided by the Department of Medical Entomology, NSW Health Pathology (ICPMR) for the mosquito surveillance, and the Arbovirus Emerging Diseases Unit, NSW Health Pathology (ICPMR) for the 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) 190738

Cover photos: **Bottom left** - Common banded mosquito, *Culex annulirostris*
Top and bottom right - Saltmarsh mosquito, *Aedes vigilax*
(Copyright 2019)

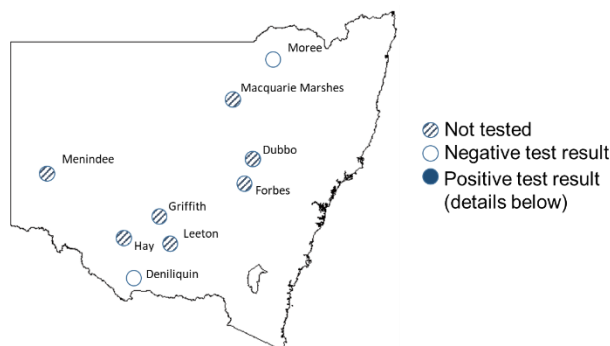
Arboviral Detections

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 reporting weeks. *No collection* indicates there has been no collection for the last two reporting weeks.

Test results in the latest week to 1 May 2020 (by date of report)



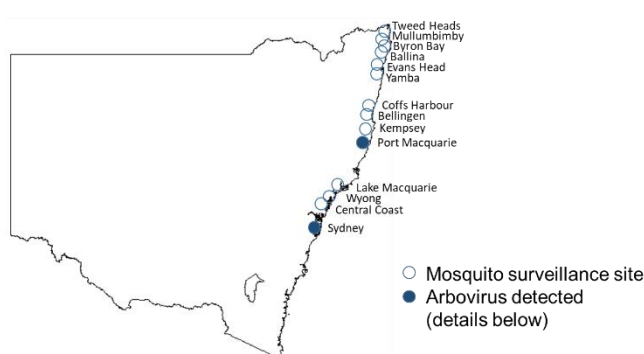
Positive test results in the 2019-2020 surveillance season

Date of sample collection	Location	Positive test results
There have been no detections in the 2019-2020 surveillance season		

Mosquito isolates

Whole grinds of mosquitoes are tested for arboviral nucleic acids (including Ross River virus and Barmah Forest virus).

Test results in the latest week to 1 May 2020 (by date of report)



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

Date trapped	Location	Virus
15 April 2020	Ballina	Barmah Forest
20 April 2020	Sydney (Northern Beaches)	Ross River
20 April 2020	Sydney (Northern Beaches)	Barmah Forest
20 April 2020	Port Macquarie	Ross River
27 April 2020	Sydney (Northern Beaches)	Ross River
27 April 2020	Sydney (Northern Beaches)	Barmah Forest
27 April 2020	Sydney (Liverpool)	Barmah Forest
27 April 2020	Port Macquarie	Ross River

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. *No collection* indicates there has been no collection for the last two reporting weeks.

Mosquito counts in the latest week to 1 May 2020

Key:

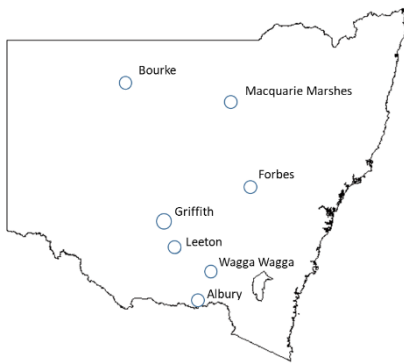
- No collection
 - Low (<50)
 - Medium (50-100)
 - High (101-1,000)
 - Very high (1,001-10,000)
 - Extreme (>10,000)
- ↑ Increase from previous week
 - ↓ Decrease from previous week

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

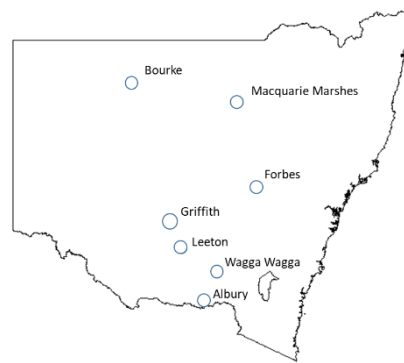
*Surveillance at inland and Sydney sites ended on 29 March 2020.

Inland sites*

Total mosquito counts

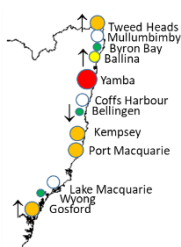


Culex annulirostris counts

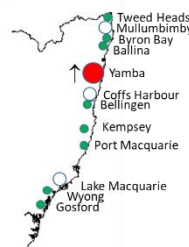


Coastal sites

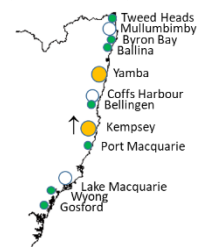
Total mosquito counts



Aedes vigilax counts



Culex annulirostris counts



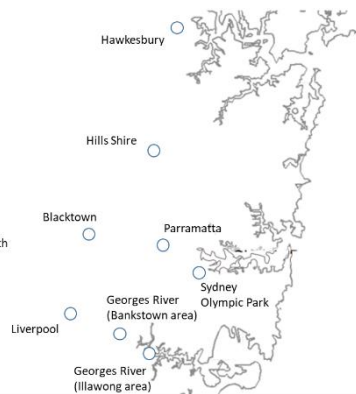
Sydney sites*

Total mosquito counts



Aedes vigilax counts

(*C. annulirostris* for Blacktown, Hawkesbury, Hills Shire, Penrith)

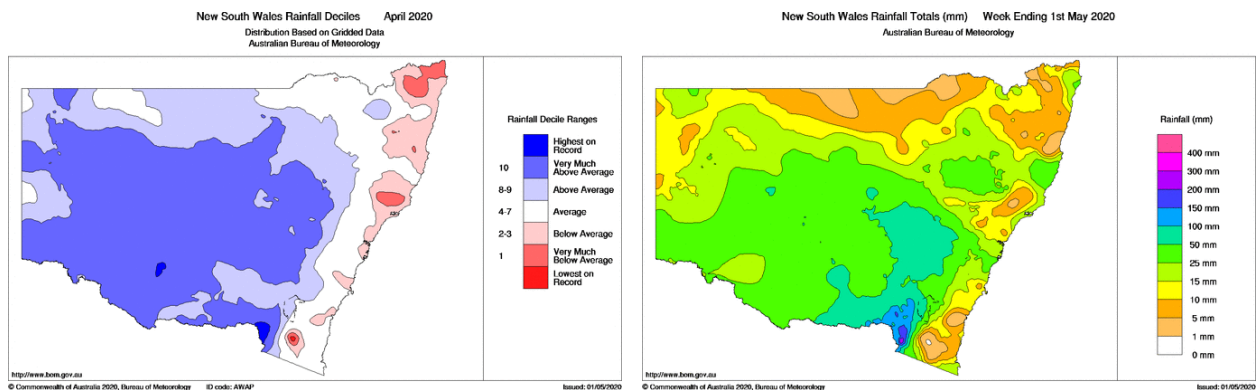


Environmental Conditions in NSW

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 April, rainfall was above average in inland NSW and below average along the central and northern coasts (left). In the week ending 1 May 2020, there was low to moderate rainfall across NSW (right).



Source: Australian Government, Bureau of Meteorology: <http://www.bom.gov.au/jsp/awap/rain/index.jsp>

Next month's rainfall and temperature outlook

The Bureau of Meteorology's rainfall outlook map for May predicts that most of NSW is likely to receive usual rainfall except for the coast which is predicted to have less than usual rainfall.

www.bom.gov.au/climate/outlooks/#/rainfall/median/monthly/0

The Bureau of Meteorology's temperature outlook maps for May predict that maximum temperatures are likely to be higher than usual in the north east and minimum temperatures are likely to be usual across 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 the next month

6-11 May and 22-26 May 2020.

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/realtime/oceantide/Station-213470>.

Human Vector Borne Disease Notifications

Under the *NSW Public Health Act 2010*, public health laboratories, general practitioners and hospitals are required to notify of any case of human vector borne disease listed as a scheduled medical condition. The NSW Health's 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 3 weeks are in the following table.

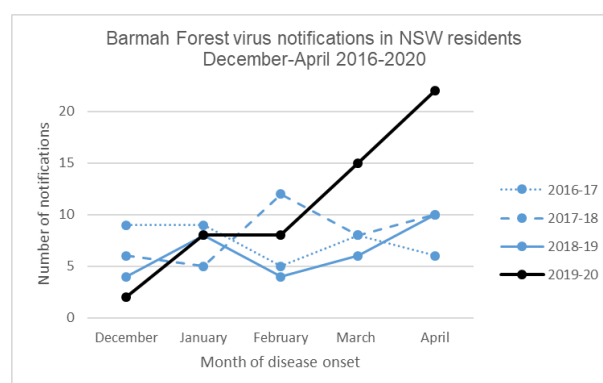
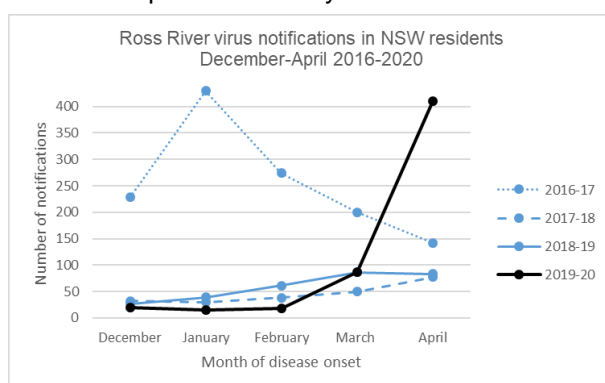
Recent notifications of Ross River virus and Barmah Forest virus in humans (by date of case report received)

	Week		
	Latest week (19-25 Apr 2020)	1-week prior (12-18 Apr 2020)	2-weeks prior (5-11 Apr 2020)
Ross River virus	125	82	44
Barmah Forest virus	1	7	3

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 (December 2019-April 2020), 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

The data for the current month are the notifications to date (data extracted on 4 May 2020).