

NSW ARBOVIRUS SURVEILLANCE & MOSQUITO MONITORING PROGRAM 2016-2017

Weekly Update

Date: 6/Feb/2017

SUMMARY

- **Climate:** over the last week, the last week, there was light rainfall along the ranges and parts of the coast. For January, rainfall was average for most of the state with parts of the south coast being drier than normal, and parts of the west being wetter than average. Maximum and minimum temperatures for January were up to 4-5 degrees above average.
- **Three Month Forecast:** for February to April 2017, rainfall predictions for NSW are for below average precipitation, with central areas of the state having a higher probability of being drier than average. Maximum and minimum temperatures are expected to be above normal across the state. According to the BOM as of 31/Jan/2017, the El Niño-Southern Oscillation remains neutral.
- **Tidal:** the next series of high tides that may result in larval hatching are set to occur over 8-13/Feb/2017.
- **MVEV models:** the data relevant to both the Forbes' and Nichols' hypotheses have been updated to the end of January 2017 and both theories remain inconsistent with past MVEV outbreaks.
- **Mosquito Numbers Inland:** the hot and dry conditions over the last few weeks has resulted in reduced mosquito numbers at most sites. The one exception is Griffith, with close to 12,000 mosquitoes trapped this week. Leeton and Albury again yielded 'high' numbers, but collections have been smaller in recent weeks.
- **Mosquito Numbers Coast:** there were some large collections this week with almost 700 mosquitoes trapped at Empire Bay on the Central Coast, the majority being *Aedes vigilax*. Ballina continues with the 'high' collections. However, numbers of *Aedes vigilax* remain 'low' at most sites.
- **Mosquito Numbers Sydney:** the sites where *Aedes vigilax* dominate notably the Georges River sites and Homebush, continue with the 'high' mosquito collections. At other locations, collections were 'low'.
- **Arboviral Isolates:** new isolates included 5SINV from Griffith.
- **Chicken Sentinel Seroconversions:** there were no new seroconversions.
- **Human Notifications:** there were 81 new Ross River virus notifications for the week 22-28/Jan/2017.

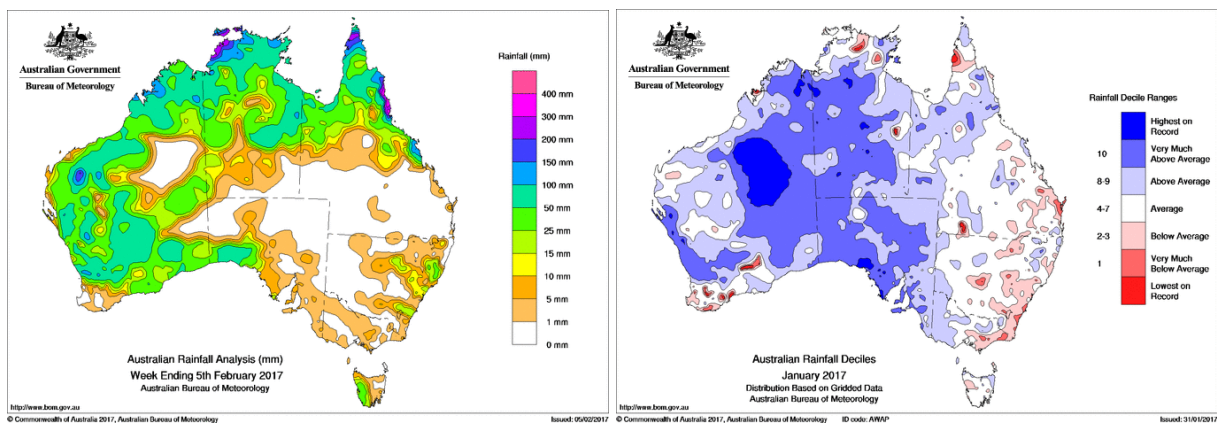
Comment: record numbers of notifications of Ross River virus disease were recorded during the period over December 2016 to January 2017. The total of 501 is the highest since 1998-1999, when there were 276 cases. Most of the reports have occurred from southern inland regions. Similarly, Victoria has had a huge amount of activity, with 654 notifications reported in January alone. Most of these have come from along the Murray. The good news is that it now has been some weeks

(16/Jan/2017) since there has been an isolate of Ross River virus and perhaps the outbreak is now on the wane.

ENVIRONMENTAL CONDITIONS

Rainfall

Rainfall across Australia for the week ending 5/Feb/2017 is depicted on the left and monthly rainfall deciles for January 2017 are on the right. Over the last week, there was light rainfall along the ranges and parts of the coast. Precipitation during January (right graph below) was average for most of the state with parts of the south coast being drier than normal, and parts of the west being wetter than average. Maximum and minimum temperatures for January were up to 4-5 degrees above average.



Three Month Rainfall & Temperature Forecast

For February to April 2017, rainfall predictions for NSW are for below average precipitation, with central areas of the state having a higher probability of being drier than average. Maximum and minimum temperatures are expected to be above normal across the state. The following pages contain graphics of the seasonal outlook:

www.bom.gov.au/climate/outlooks/#/rainfall/median (Rainfall outlook).

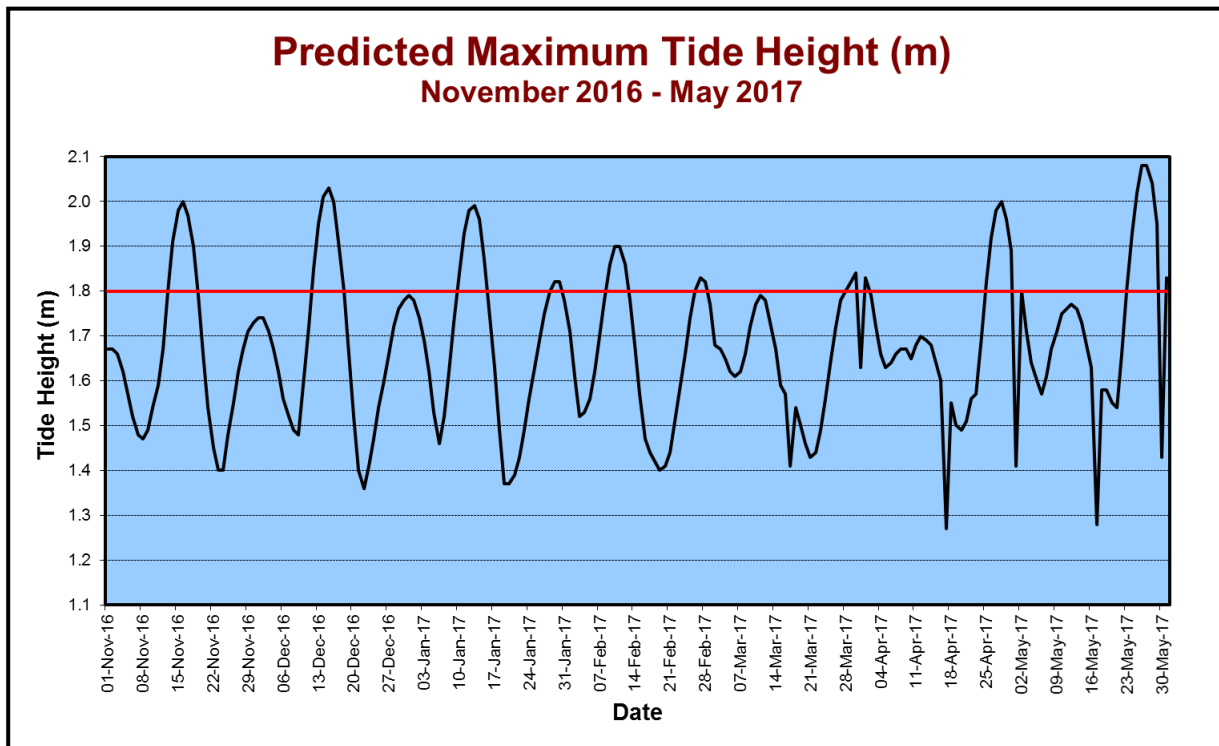
www.bom.gov.au/climate/outlooks/#/temperature/summary (Max & min temperature outlook).

According to the BOM as of 31/Jan/2017 the El Niño-Southern Oscillation remains neutral and is likely to during the remainder of the summer and the autumn (a La Niña event is typically associated with wetter than average conditions and an El Niño with drier conditions).

For more information: www.bom.gov.au/climate/enso/ and, <http://www.bom.gov.au/climate/iod/>

Tidal

Tidal information is relevant for the prediction of the activity of the salt marsh mosquito, *Aedes vigilax*. Typically for NSW, tides of over 1.8m can induce hatching of *Aedes vigilax* larvae and the graph below of predicted tide heights can provide some indication of when this is likely to occur.



The next series of high tides that may lead to *Aedes vigilax* larval hatching are over due to occur over 8-13/Feb/2017.

Note that actual tide heights can vary by 0.3m (or more in unusual circumstances) due to variations in atmospheric pressure, rainfall, wind and other climatic phenomena. Thus predicted tide height should be used as a gauge only for potential *Aedes vigilax* activity. The larvae of the saltmarsh mosquito relies on a inundation/drying cycle for the mudflats in which it lives; continual wet weather prevents the drying cycles thereby reducing larval production.

MVEV Climatic Models

Three predictive environmental based models for MVEV activity have been developed; the Forbes (which relies on rainfall in the river catchment basins of Eastern Australia), Nichols (based on the Southern Oscillation), and the Bennett theory (based on the Indian Ocean Dipole). The latter theory is poorly developed (and unreliable), and is not considered below. Note that all the predictive models have been developed on a limited data set and do not always forecast activity. There can also be unusual environmental conditions that may lead to the introduction of the virus to southeastern Australia, such as the movement of low pressure cells from the north to the south of the country during 2008 and 2011. Vertical transmission of the virus (from adult to the egg in *Aedes* species) can result in restricted activity following localised heavy precipitation (as per 2003 at Menindee).

i. Forbes' Hypothesis

Rainfall was not above Decile 7 in all of the river catchment basins in eastern Australia for the last quarter of 2015 or the majority of the catchments for the first quarter of 2016 (Table 1). For the Oct-Dec 2016 and Jan-Mar 2017 periods, rainfall was not above Decile 7 in all of the catchment basins.

Table 1. Rainfall indices for the main catchment basins of eastern Australia as per Forbes' hypothesis, relevant to the 2016-2017 season. Note that a value of 1 equals Decile 7 rainfall.

Catchment Basin	Oct-Dec 2015	Jan-Mar 2016	Oct-Dec 2016	Jan-Mar 2017*
Darling River	0.72	0.67	0.58	0.68
Lachlan/Murrumbidgee/Murray Rivers	0.70	1.14	0.92	2.40
Northern Rivers	1.35	0.57	0.98	1.13
North Lake Eyre system	1.35	0.63	1.09	1.03

*Data for January 2017 only/

ii. Nichol's Hypothesis

Table 2. The seasonal atmospheric pressures (in mm) according to Nichol's hypothesis, relevant to the 2016-2017 season.

	Autumn 2016	Winter 2016	Spring 2016
2015 Value	1010.30	1012.57	1010.07
Pre past MVEV seasons	<1009.74	<1012.99	<1009.99

Only the Winter period pertaining to the Nichol's hypothesis is in line with past MVEV active years.

Table 3. ARBOVIRAL ISOLATES

LOCATION - Site	Date Trapped	Mosquito Species	Virus
GRIFFITH – Hanwood	31/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	31/Jan/17	<i>Anopheles annulipes</i>	Sindbis
GRIFFITH – Lake Wyangan	31/Jan/17	<i>Culex annulirostris</i>	Sindbis
ALBURY – Kremur St	23/Jan/17	*	Kokobera
GRIFFITH – Hanwood	22/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	22/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	22/Jan/17	*	Sindbis
GRIFFITH – Lake Wyangan	22/Jan/17	*	Sindbis
LEETON – Farm 347	17/Jan/17	<i>Culex annulirostris</i>	Sindbis
LEETON – Farm 347	17/Jan/17	<i>Culex annulirostris</i>	Sindbis
ALBURY – Waterworks Rd	16/Jan/17	<i>Culex annulirostris</i>	Ross River
ALBURY – Waterworks Rd	16/Jan/17	*	Ross River
GRIFFITH – Hanwood	16/Jan/17	*	Barmah Forest
GRIFFITH – Hanwood	16/Jan/17	<i>Culex annulirostris</i>	Barmah Forest
GRIFFITH – Hanwood	10/Jan/17	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Hanwood	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	10/Jan/17	<i>Culex annulirostris</i>	Sindbis
LEETON – Almond Rd	9/Jan/17	<i>Culex annulirostris</i>	Ross River
LEETON – Almond Rd	9/Jan/17	*	Ross River
LEETON – Farm 347	9/Jan/17	*	Sindbis
GRIFFITH – Lake Wyangan	3/Jan/17	<i>Culex annulirostris</i>	Sindbis
GEORGES RIVER – Alford's Point	29/Dec/16	<i>Aedes alboannulatus</i>	Ross River
GEORGES RIVER – Alford's Point	29/Dec/16	*	Ross River
ALBURY – Kremur St	19/Dec/16	*	Ross River
ALBURY – Kremur St	19/Dec/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Barren Box	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Barren Box	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Barren Box	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	19/Dec/16	<i>Culex annulirostris</i>	Sindbis
LEETON – Farm 347	13/Dec/16	<i>Culex annulirostris</i>	Ross River
LEETON – Farm 347	13/Dec/16	<i>Culex annulirostris</i>	Ross River
LEETON – Farm 347	13/Dec/16	<i>Culex annulirostris</i>	Sindbis
LEETON – Farm 347	13/Dec/16	<i>Culex annulirostris</i>	Sindbis

GRIFFITH – Barren Box	12/Dec/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	12/Dec/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	12/Dec/16	*	Ross River
GRIFFITH – Barren Box	12/Dec/16	<i>Anopheles annulipes</i>	Sindbis
GRIFFITH – Barren Box	12/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Barren Box	12/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Barren Box	12/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	12/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	12/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	12/Dec/16	<i>Culex annulirostris</i>	Sindbis
GEORGES RIVER – Illawong	8/Dec/16	*	Ross River
LEETON – Farm 347	7/Dec/16	*	Ross River
LEETON – Farm 347	7/Dec/16	<i>Culex annulirostris</i>	Sindbis
MURRAY – Moama	6/Dec/16	*	Ross River
ALBURY – Kremur St	5/Dec/16	*	Ross River
ALBURY – Kremur St	5/Dec/16	<i>Culex annulirostris</i>	Ross River
ALBURY – Kremur St	5/Dec/16	<i>Aedes bancroftianus</i>	Ross River
FORBES – STP	5/Dec/16	*	Ross River
FORBES – STP	5/Dec/16	<i>Culex annulirostris</i>	Ross River
FORBES – STP	5/Dec/16	<i>Culex annulirostris</i>	Ross River
FORBES – STP	5/Dec/16	<i>Culex annulirostris</i>	Ross River
FORBES – STP	5/Dec/16	<i>Culex australicus</i>	Ross River
GRIFFITH – Barren Box	5/Dec/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	5/Dec/16	<i>Culex australicus</i>	Ross River
GRIFFITH – Lake Wyangan	5/Dec/16	<i>Culex australicus</i>	Ross River
GRIFFITH – Hanwood	31/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Hanwood	31/Nov/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	31/Nov/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	31/Nov/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Lake Wyangan	31/Nov/16	<i>Anopheles annulipes</i>	Ross River
GRIFFITH – Lake Wyangan	31/Nov/16	<i>Anopheles annulipes</i>	Ross River
GRIFFITH – Lake Wyangan	31/Nov/16	*	Ross River
FORBES – STP	29/Nov/16	<i>Culex annulirostris</i>	Ross River
FORBES – STP	29/Nov/16	<i>Culex australicus</i>	Ross River
FORBES – Toms Lagoon	29/Nov/16	<i>Culex annulirostris</i>	Ross River
LEETON – Farm 347	29/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	21/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	21/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	21/Nov/16	<i>Anopheles annulipes</i>	Ross River
GRIFFITH – Barren Box	21/Nov/16	<i>Culex annulirostris</i>	Sindbis
GRIFFITH – Hanwood	21/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Hanwood	21/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Hanwood	21/Nov/16	<i>Culex annulirostris</i>	Ross River
GRIFFITH – Barren Box	21/Nov/16	*	Ross River
LEETON – Farm 347	16/Nov/16	<i>Culex annulirostris</i>	Ross River
LEETON – Farm 347	16/Nov/16	<i>Anopheles annulipes</i>	Ross River
LEETON – Farm 347	16/Nov/16	*	Ross River
FORBES – Toms Lagoon	15/Nov/16	<i>Culex annulirostris</i>	Ross River
FORBES – STP	15/Nov/16	<i>Culex annulirostris</i>	Barmah Forest
FORBES – STP	15/Nov/16	*	Barmah Forest

GRIFFITH – Lake Wyangan	14/Nov/16	<i>Aedes sagax</i>	Barmah Forest
GRIFFITH – Lake Wyangan	14/Nov/16	*	Barmah Forest
MURRAY – Moama	8/Nov/16	*	Ross River
MURRAY – Moama	8/Nov/16	<i>Aedes sagax</i>	Ross River
FORBES – Toms Lagoon	7/Nov/16	<i>Aedes sagax</i>	Sindbis
GRIFFITH – Lake Wyangan	1/Nov/16	<i>Aedes theobaldi</i>	Ross River
GRIFFITH – Lake Wyangan	1/Nov/16	<i>Anopheles annulipes</i>	Ross River

*Detection via Honey-Baited Cards, the mosquito species cannot be determined.

<http://medent.usyd.edu.au/arbovirus/results/virusisolates.htm>

Table 4. Arboviral Detections* 2016-2017, Summary Table

LOCATION	Date Trapped	Virus				Total
		BFV	RRV	SINV	KOKV	
ALBURY	23/Jan/17				1	1
ALBURY	16/Jan/17		2			2
ALBURY	19/Dec/16		2			2
ALBURY	5/Dec/16		3			3
FORBES	5/Dec/16		5			5
FORBES	29/Nov/16		3			3
FORBES	15/Nov/16	2	1			3
FORBES	7/Nov/16			1		1
GEORGES RIVER	29/Dec/16		2			2
GEORGES RIVER	8/Dec/16		1			1
GRIFFITH	22/Jan/17			4		4
GRIFFITH	16/Jan/17	2				2
GRIFFITH	10/Jan/17		1	7		8
GRIFFITH	3/Jan/17			1		1
GRIFFITH	19/Dec/16			9		9
GRIFFITH	12/Dec/16		3	7		10
GRIFFITH	5/Dec/16		2	1		3
GRIFFITH	31/Nov/16		4	3		7
GRIFFITH	21/Nov/16		7	1		8
GRIFFITH	14/Nov/16	2				2
GRIFFITH	1/Nov/16		2			2
LEETON	17/Jan/17			2		2
LEETON	9/Jan/17		2	1		3
LEETON	13/Dec/16		2	2		4
LEETON	7/Dec/16		1	1		2
LEETON	29/Nov/16		1			1
LEETON	16/Nov/16		3			3
MURRAY	6/Dec/16		1			1
MURRAY	8/Nov/16		2			2
TOTAL		6	50	41	1	97

*This is a summary of the detections via FTA card and cell culture, in some cases both systems will be detecting the same virus.

HUMAN NOTIFICATIONS

Weekly notifications of human mosquito-borne diseases infections are available from the NSW Ministry of Health, Communicable Disease Weekly Report and summarised in the Table below*: www.health.nsw.gov.au/Infectious/reports/Pages/CDWR.aspx. It should also be noted that notifications are for NSW residents and that infection may have been acquired elsewhere.

Table 5. Notifications of Mosquito-Borne Disease in NSW, 2016-2017*

Week Ending	RRV	BFV	DENV [†]	Malaria [†]	CHIKV [†]	ZIKV [†]	Total
3-Jul-16	3	0	1	1	0	0	5
10-Jul-16	2	0	5	2	0	0	9
17-Jul-16	4	1	6	0	0	0	11
24-Jul-16	3	3	9	2	0	0	17
31-Jul-16	2	0	6	4	0	0	12
7-Aug-16	2	0	6	3	0	0	11
14-Aug-16	1	0	5	1	0	0	7
21-Aug-16	4	0	1	1	1	0	7
28-Aug-16	2	0	4	0	1	0	7
4-Sep-16	3	0	4	0	0	0	7
11-Sep-16	1	0	3	2	0	0	6
18-Sep-16	3	0	3	1	0	1	8
25-Sep-16	9	0	4	1	0	1	15
2-Oct-16	2	0	0	0	0	1	3
9-Oct-16	3	0	5	2	0	0	10
16-Oct-16	2	0	8	4	1	0	15
23-Oct-16	3	0	9	0	1	0	13
30-Oct-16	6	0	5	0	1	0	12
6-Nov-16	4	0	4	2	2	0	12
13-Nov-16	2	0	9	0	1	0	12
20-Nov-16	6	0	10	0	1	0	17
27-Nov-16	8	0	4	2	1	0	15
4-Dec-16	13	0	6	2	1	0	22
11-Dec-16	18	0	8	3	0	0	29
18-Dec-16	21	0	2	0	2	0	25
25-Dec-16	31	0	0	2	0	0	33
1-Jan-17	8	0	3	1	0	0	12
7-Jan-17	35	0	2	2	1	0	40
14-Jan-17	82	1	7	1	1	0	92
21-Jan-17	122	1	8	3	0	0	134
28-Jan-17	81	3	12	0	0	0	96
Total	486	9	159[†]	42[†]	15[†]	3[†]	601

†All of these viruses are acquired overseas, although some DENV cases may be from North Queensland. *The data in this table is updated once available from the NSW Ministry of Health.

Comment: high notifications of Ross River virus disease for 2016-2017 are continuing with another 81 cases reported with last weeks total amended up from 108 to 122. The December 2016 and January 2017 notifications are the highest since 2013 (Table 6). The total for this period was 501 notifications and this is several times higher than for the most recent years during the comparable period; e.g. 2015-2016 (96), 2014-2015 (207), and 2013-2014 (63). In comparison to previous years that had high case numbers in December and January, the season of 2005-2006 had 295 notifications, and 1998-1999 produced 276. The difference for this season highlights the dramatic nature of the outbreak.

The figure below depicts the locations from where most of the notifications are occurring within NSW, namely southern inland regions. Victoria has also experiencing a major Ross River virus disease outbreak, with some 654 cases, the majority coming from the Hume and Loddon Mallee regions (Stacey Rowe, DHHS, pers.comm.). This is also a record number for the state.

Barmah Forest virus disease notifications continue to be very low despite some arboviral detections. This decline appears to be artificial and due to the withdrawal of the commercial test that was over diagnosing patients.

Figure 1. Number of Ross River virus notifications in NSW by onset and Australian Bureau of Statistics statistical area, 1-31/January/2017. From the NSW Communicable Diseases Weekly Report, week 4, 2017.

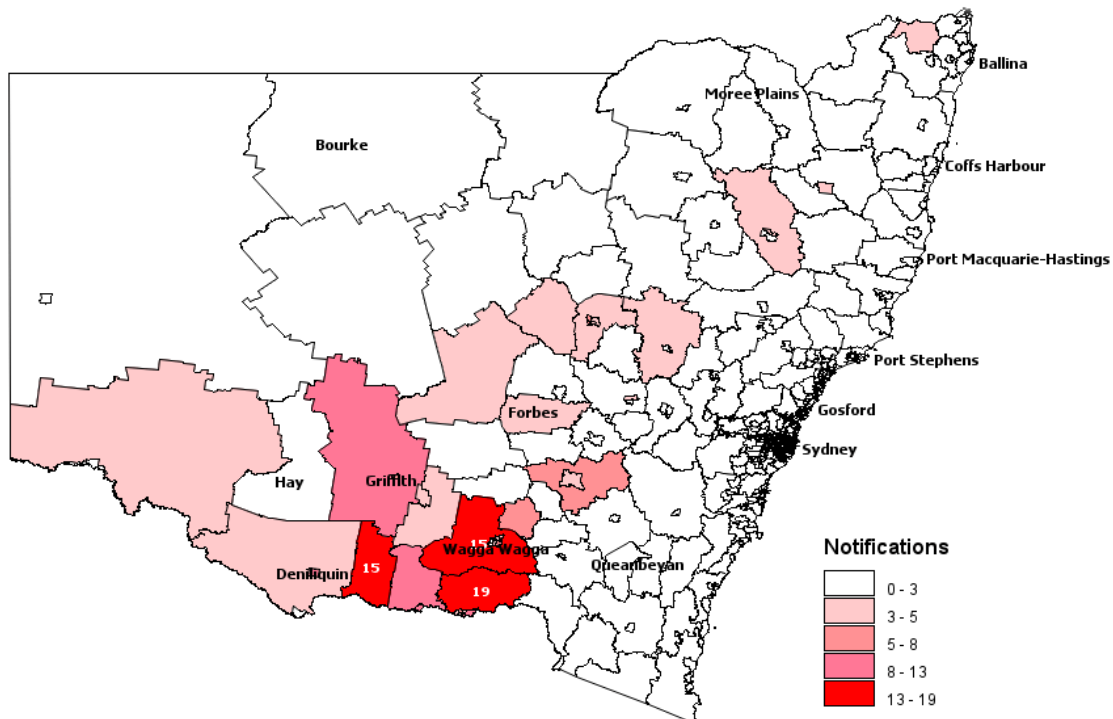


Table 6. Ross River virus infection notifications in NSW residents, by month of disease onset. January 2013 to January 2017*.

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2013	38	46	34	57	101	49	36	23	27	36	30	30	507
2014	33	35	45	72	86	57	38	50	46	67	59	90	678
2015	117	306	431	264	102	50	54	61	53	61	70	54	1623
2016	42	60	78	79	51	16	11	10	18	17	36	201	619
2017	300	8											308

*updated 6/Feb/2017. Table from:

<http://www0.health.nsw.gov.au/data/diseases/rossriver.asp>

For more data on Ross River virus notifications in NSW see:

<http://www0.health.nsw.gov.au/data/diseases/rossriver.asp>

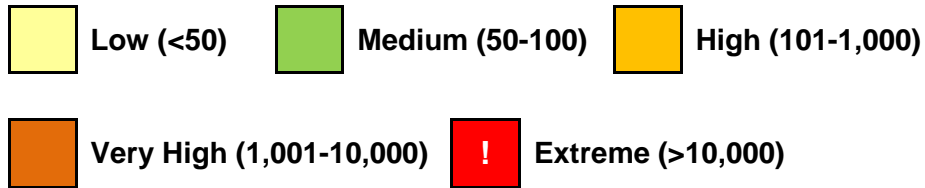
For more data on Barmah Forest virus notifications in NSW see:

<http://www0.health.nsw.gov.au/data/diseases/barmahforest.asp>

MOSQUITO RESULTS

All the full mosquito results can be obtained from:
<http://medent.usyd.edu.au/arbovirus/results/results.htm#site>

Mosquito abundances are best described in relative terms, and in keeping with the terminology from previous NSWASP Annual Reports, mosquito numbers are depicted on the tables below as:



Each location represents the average for all trapping sites at that location.

Inland

Location	Mosquito	Oct-16					Nov					Dec					Jan-17					Feb				Mar			
		2	9	16	23	30	6	13	20	27	4	11	18	25	1	8	15	22	29	5	12	19	26	5	12	19	26		
Albury	<i>Cx. annul</i>																												
	Total Mosq.																												
Bourke	<i>Cx. annul</i>																												
	Total Mosq.																												
Forbes	<i>Cx. annul</i>																												
	Total Mosq.																												
Griffith	<i>Cx. annul</i>																												
	Total Mosq.																												
Leeton	<i>Cx. annul</i>																												
	Total Mosq.																												
Mathoura	<i>Cx. annul</i>																												
	Total Mosq.																												
Menindee	<i>Cx. annul</i>																												
	Total Mosq.																												
Wagga	<i>Cx. annul</i>																												
	Total Mosq.																												

Coastal

Location	Mosquito	Nov				Dec				Jan-17					Feb				Mar				Apr				
		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	30
Ballina	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Coffs Harbour	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Gosford	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Lake Macquarie	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Port Macquarie	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Tweed	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Wyong	<i>Ae. vigilax</i>																										
	Total Mosq.																										

Sydney

Location	Mosquito	Nov				Dec				Jan-17				Feb				Mar				Apr					
		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	30
Banks-town	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Blacktown	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Georges River	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Hawkes-bury	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Hills Shire	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Penrith	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Sydney Olympic Park	<i>Ae. vigilax</i>																										
	Total Mosq.																										
Ryde	<i>Ae. vigilax</i>																										
	Total Mosq.																										

Sentinel Chicken Seroconversions

http://medent.usyd.edu.au/arbovirus/results/chicken_results_all_sites.htm

Location	Oct-16					Nov				Dec				Jan-17					Feb				Mar				
	2	9	16	23	30	8	13	20	27	4	11	18	22	1	8	15	22	29	5	12	19	26	5	12	19	26	
Bourke																											
Deniliquin						15N	15N	13N		13N	13N	13N	13N	12N	10N	10N	15N										
Forbes				15N	15N	15N	15N	15N	15N	15N	15N	15N		15N	15N												
Griffith			15N	15N	15N	15N	15N	15N	15N	15N	13N	14N		14N	14N	14N											
Hay			15N	15N	15N	15N	15N	15N	15N		15N	15N	15N	15N	15N	15N											
Leeton			15N	15N	15N	15N	15N	15N	15N		15N	14N	15N	15N		15N	15N										
Macquarie Marshes								15N	15N		15N			15N	15N	¹ KUNV, 13N											
Menindee					15N	15N	15N	14N	14N	15N	13N	13N	13N	13N		13N	13N										
Moama								15N	15N			15N															
Moree										15N	15N	15N	12N	15N	15N	15N	15N										
Wee Waa							15N	13N	15N	15N	15N		15N	15N		14N	14N										

N= Negative for MVEV & KUNV

Prepared by: Stephen Doggett, Senior Hospital Scientist, Department of Medical Entomology, Pathology West (ICPMR), Westmead Hospital NSW 2145. Email: Stephen.Doggett@health.nsw.gov.au

Please note that these results remain the property of the NSW Ministry of Health and may not be used or disseminated to unauthorised persons or organizations without permission.