December 2023

The South Australian arbovirus and mosquito monitoring report

Current hierarchy of response level 2 **MEDIUM**

The South Australian (SA) arbovirus and mosquito monitoring report summarises the most recent available data to inform the current level of risk of mosquito-borne disease in SA. This data determines the appropriate graded response in accordance with the SA Arbovirus Coordinated Control and Operations Plan (the Plan) hierarchy of response (HoR). The HoR is dependent upon on-going data and trends identified by surveillance activities, weather forecasting and disease notifications.

The broad areas of flood plain associated with the River Murray provide breeding opportunities for *Culex annulirostris*, the main vector mosquito associated with Murray Valley encephalitis virus (MVEV) and Japanese encephalitis virus (JEV). This is particularly significant after a period of high and prolonged river flow, when floodwaters recede and during times of high spring and summer rainfall spanning the months of September through to April. The most current River Murray flow report is available on the WaterConnect website here.

Meteorological data

Rainfall in December was very much above average across a large area of South Australia, particularly in the Eyre and Yorke peninsulas. The total rainfall was 93% above the 1961-1990 average. Many sites had either their highest total December rainfall on record or their highest total December rainfall for at least 20 years. The mean maximum temperature for South Australia was 0.69 °C above the 1961 -1990 average. The mean minimum temperature was 0.64 °C above the 1961 -1990 December average, the highest since 2019.

January to March rainfall is likely to be above median across the south-east of Australia and below median across much of the north and west of Australia. January to March maximum and minimum temperatures are very likely to be above median for most of Australia. January to March maximum and minimum temperatures are at least 2.5 times more likely than normal to be unusually high for much of Australia. Unusually high temperatures equate to the warmest 20% of January to March periods from 1981 to 2018.

The El Niño event continues in the tropical Pacific. The typical drying influence of El Niño on Australia's climate usually reduces during summer, especially in the east; however, below median rainfall is still often observed in north-east Australia. As we have seen this year and in the historical data, high-impact rainfall events can occur during El Niño years, particularly during October to April when severe storm frequency peaks. Model forecasts indicate the warmth of sea surface temperatures (SSTs) is likely at or near its peak, with SSTs expected to remain above El Niño thresholds into the southern hemisphere autumn 2024. A positive Indian Ocean Dipole (IOD) event remains active but is weakening steadily.

Source: Australian Government, Bureau of Meteorology

Northern Adelaide mosquito surveillance program

The 2023-24 northern Adelaide mosquito surveillance program commenced on 6 September 2023. Mosquito surveillance is conducted weekly at six locations. Mean abundance data from trap catches shows decreased abundance at three trap locations and increased abundance at three trap locations compared to the 2022-23 mosquito season. Five trap locations had increased mean abundance compared to the 2021- 22 mosquito season. See table 1.

Government of South Australia
SA Health

Table 1: Northern Adelaide mosquito surveillance program trapping mean trap abundance data December 2023 three-year comparison.

Trap location	2021	2022	2023
Globe Derby Park Racetrack	361	129	134
Daniel Avenue Wetland	426	996	1492
Swan Alley	1407	5524	2933
TI Quarantine Station	230	3407	1250
TI Power Station	64	375	427
Mawson Lakes	102	566	327

Local council mosquito surveillance

In response to the season risk level, River Murray councils continued to set between four and six adult mosquito traps in their local area fortnightly. Several non-River Murray councils continued to participate in the SA mosquito surveillance subsidy program with these councils setting between four and six adult mosquito traps in their local area monthly.

All council traps containing >10 mosquitoes were submitted to the Agriculture Victoria laboratory to be processed according to trap location, counted, identified to species level, then screened for JEV, MVEV, Ross River virus (RRV), Barmah Forest virus (BFV) and West Nile virus/Kunjin (WNV/KUN). Traps containing <10 mosquito traps were not routinely submitted to Agriculture Victoria for processing.

Table 2 details the mean December trap abundance data in SA from local council traps for three seasons (where applicable). The available data shows decreased mean trap abundance across 12 council areas compared to previous seasons.

Table 2: Local council mosquito surveillance trapping mean abundance data December 2023 three-year comparison.

Council	2021	2022	2023
Adelaide Plains Council		2392	14
Alexandrina Council	-	3542	125
Barossa Council			13
Berri Barmera Council	-	1667	19
Coorong District Council	122	1741	79
District Council of Elliston		98	<10
Kangaroo Island Council		498	-
District Council of Loxton Waikerie	371	2366	58
Mid Murray Council	273	1751	35
Mount Barker District Council	12	18	-
Renmark Paringa Council	77	1043	68
Rural City of Murray Bridge	335	5166	51
City of Salisbury	522	901	68
City of Playford		460	131
City of Tea Tree Gully			30
Southern Mallee District Council		296	<10
Whyalla City Council		32	-

Table 3 details the mean December trap abundance data for *Culex annulirostris* from local council mosquito traps. The available data shows decreased mean *Culex annulirostris* abundance in seven council areas and increased mean *Culex annulirostris* abundance in two council areas compared to the 2022-23 mosquito season.

Table 3: *Culex annulirostris* mean trap abundance data by local council area December 2023 three-year comparison.

Council	2021	2022	2023
Adelaide Plains Council		25.3	0
Alexandrina Council	0	0	0
Barossa Council			0.25
Berri Barmera Council	0	64.5	11
Coorong District Council	0	0	0
District Council of Elliston		0	0
Kangaroo Island Council		0	-
District Council of Loxton Waikerie	12.2	156.3	2.83
Mid Murray Council	0	34.5	3.5
Mount Barker District Council	0	0	-
Renmark Paringa Council	2.4	133.7	7.76
Rural City of Murray Bridge	0	9.5	0
City of Playford		0	0.60
City of Salisbury	0.8	0	0.25
Southern Mallee District Council		2.6	0.33

Arbovirus isolations from trapped mosquitos (whole trap grinds)

As detailed in table 4, there were no arbovirus detections from qPCR testing of trapped mosquitos during December.

Table 4: Arbovirus isolations from whole trap grinds December 2023.

Arbovirus	JEV	MVEV	RRV	BFV	WNV/KUN
Detections	0	0	0	0	0

South Australian sentinel surveillance program

Ten sentinel chicken flocks established in high-risk locations are bled throughout the mosquito season. The blood is tested for JEV, MVEV and WNV/KUN antibodies, which if present indicates that the chicken has been bitten by a mosquito carrying one of these viruses. The sentinel chicken flock bleed frequency is currently every three weeks, and bleeds commenced on 30 October. There were no positive arbovirus detections during December.

Arbovirus notification data

All confirmed and probable arbovirus infections detected in humans in SA are notifiable under the *South Australian Public Health Act 2011*. The two most common locally acquired arbovirus infections notified in SA are infections with RRV and BFV. Figure 1 details arbovirus notification data 2019-2023 by month.

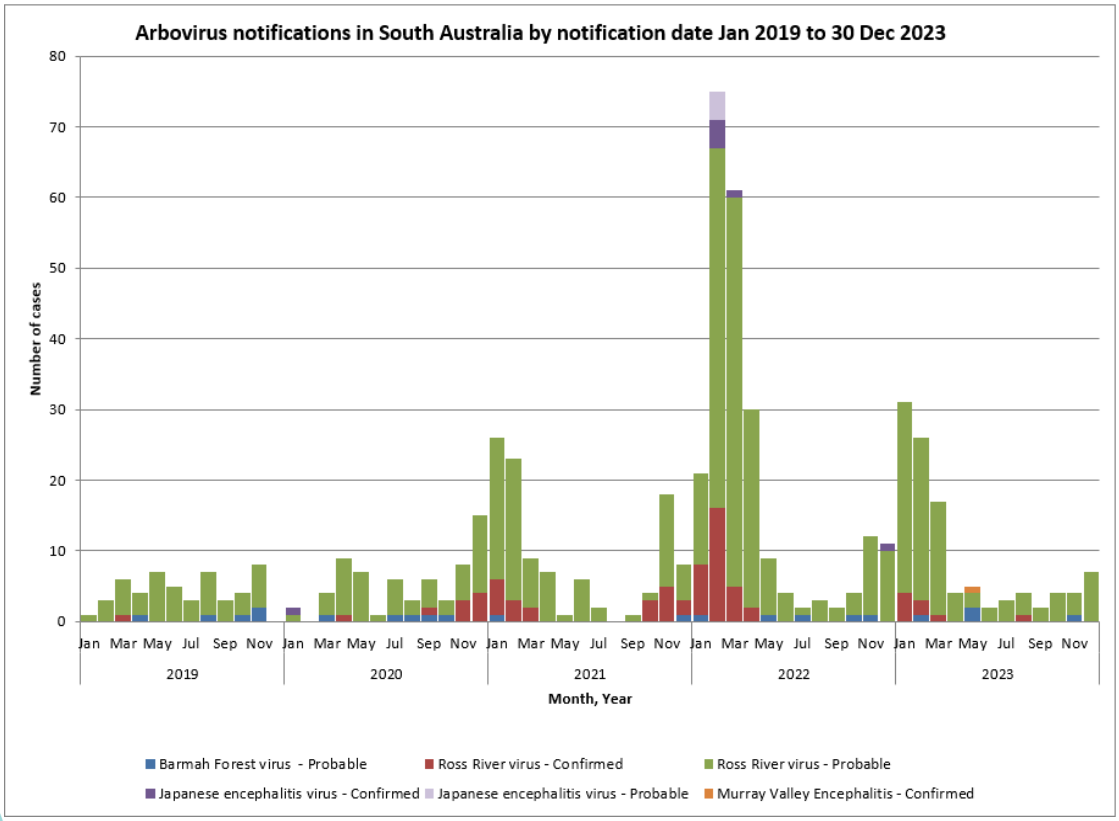

Figure 1: Arbovirus in South Australia by notification month – 01 January 2019 to 30 December 2023

Source: Communicable Disease Control Branch, SA Health.

Further information

For further information regarding mosquito borne disease see the SA Health website here.

For mosquito management resources and information for environmental health officers see the SA Health website here.

For more information

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