

The South Australian arbovirus and mosquito monitoring report

Current hierarchy of response level 3 **HIGH**

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 the main Murray Valley encephalitis virus (MVEV) and Japanese encephalitis virus (JEV) vector mosquito, *Culex annulirostris*. 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 totals in February were less than average across most of the state and overall it was the state's driest February since 2019. Daytime temperatures in February were warmer than average throughout the northern half of SA but were close to average for the month in the eastern Agricultural districts. Night-time temperatures were close to average or cooler than average in the state's east but were warmer than average in the west. The overall mean temperature was the state's highest in February since 2018.

Daytime temperatures in February were warmer than average throughout the northern half of the state but were close to average for the month in the eastern Agricultural districts. The mean maximum temperature for SA was 2.01°C above average, the highest for February since 2015. Low-intensity to severe heatwave conditions affected many areas of SA during the month. Low-intensity heatwave conditions persisted across areas of northern and western SA for 2 weeks from the 8th, and severe intensity heatwaves affected some southern and eastern areas of the state from the 20th to the 24th. The mean maximum temperature for SA was 2.01°C above average and the mean minimum temperature for SA as a whole was 0.63 C above average.

La Niña is nearing its end in the Pacific Ocean. Oceanic indicators, including sea surface temperatures, have returned to ENSO-neutral values and atmospheric indicators are weakening towards neutral values. All but one of the surveyed international climate models suggest sea surface temperatures in the tropical Pacific will remain neutral through autumn.

Source: Australian Government, [Bureau of Meteorology](#)

Animal surveillance

SA Health was notified by the Department of Primary Industries and Regions (PIRSA) of serology surveillance results which suggested that a small number of horses may have been infected with MVEV or JEV. Areas impacted included the Mount Lofty Ranges, Adelaide Plains, Gawler, Barossa and Mid North regions. HPP conducted targeted adult mosquito surveillance and liaised with affected councils to promote Fight the Bite messaging in key high-risk locations.

In addition to the suspected horse cases, PIRSA notified SA Health of a suspected piggery with mummified fetuses, stillborn and deformed piglets which can be symptoms of JEV infection. Subsequent PCR testing returned negative results for JEV. HPP visited the piggery to provide advice and guidance in relation to their mosquito management plan.



Northern Adelaide mosquito surveillance program trapped mosquito data

The 2022-23 northern Adelaide mosquito surveillance program commenced on 6 September 2022. Mosquito surveillance is conducted weekly at six locations. Mean abundance data from trap catches shows increased mean abundance at one of the six northern Adelaide trap locations during February compared to the previous two seasons. See table 1.

Mosquitoes from northern Adelaide traps collected on the 10th and 24th February were submitted to the Agriculture Victoria laboratory enumeration, speciation and viral screening for JEV, MVEV, Ross River virus (RRV), Barmah Forest virus (BFV) and West Nile virus/Kunjin (WNV/KUN). No viruses were detected.

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

Trap location	2021	2022	2023
Globe Derby Park Racetrack	50	409	77
Daniel Avenue Wetland	147	860	106
Swan Alley	2367	5267	3397
TI Quarantine Station	2787	2074	465
TI Power Station	422	404	646
Mawson Lakes	66	227	131

SA Health regional surveillance and control officers trapped mosquito data

To support the JEV response in SA, regional surveillance officers have been employed to conduct surveillance and control activities in regional areas located outside of local council mosquito surveillance and control programs. Health Protection Programs assisted with response surveillance during February.

Regional officers engage with key local stakeholders and conduct surveillance and control activities across several council areas. During February *Culex annulirostris* accounted for a significant proportion of mosquitoes trapped in the Onkaparinga, Northern Areas and River Murray council areas. Table 2 details the results of adult mosquito surveillance undertaken by regional officers during February 2023.

Table 2: SA Health regional surveillance and control officer's mosquito surveillance data February 2023.

Council area	Mean trap abundance	Mean <i>Culex annulirostris</i> abundance
Adelaide Plains Council (JEV Team)	963	9.6
Barossa Council (JEV Team)	23	4.8
Berri Barmera Council (JEV Team)	62	33
Clare and Gilbert Valleys Council (JEV Team)	28	7.5
Coorong District Council (JEV Team)	164	19.9
Town of Gawler (JEV Team)	12.5	2
Light Regional Council (JEV Team)	11	1
District Council of Loxton Waikerie (JEV Team)	60	53.3
Mid Murray Council (JEV Team)	198	187.08
Northern Areas Council (JEV Team)	108	36.54
City of Onkaparinga (JEV Team)	68.5	34.7
Renmark Paringa Council (JEV Team)	91	66.20
Southern Mallee District Council (JEV Team)	93	12

Regional officers and team members from Health Protection Programs (HPP) also attended caravan parks, local businesses, pharmacies, and public events in multiple council areas during February. The purpose of these activities was to promote Fight the Bite messaging and provide information, resources and advice to local communities.

Local council mosquito surveillance trapped mosquito data

In response to the detection of JEV in SA the number of local councils undertaking routine adult mosquito trapping increased from eight to seventeen compared to the 2021-22 season. Surveillance areas and the frequency of trapping have been expanded for the 2022-23 season and councils in high-risk areas set between four and six adult mosquito traps in their local area fortnightly (increased from monthly). All other councils trap at frequencies determined by risk in their council area.

Each batch of mosquitoes from local council traps were submitted to the Agriculture Victoria laboratory to be processed according to trap location, counted, identified to species level, then ground and screened for JEV, MVEV, RRV, BFV and WNV/KUN. Figure 1 compares the mean trap abundance for February by council area for three seasons.

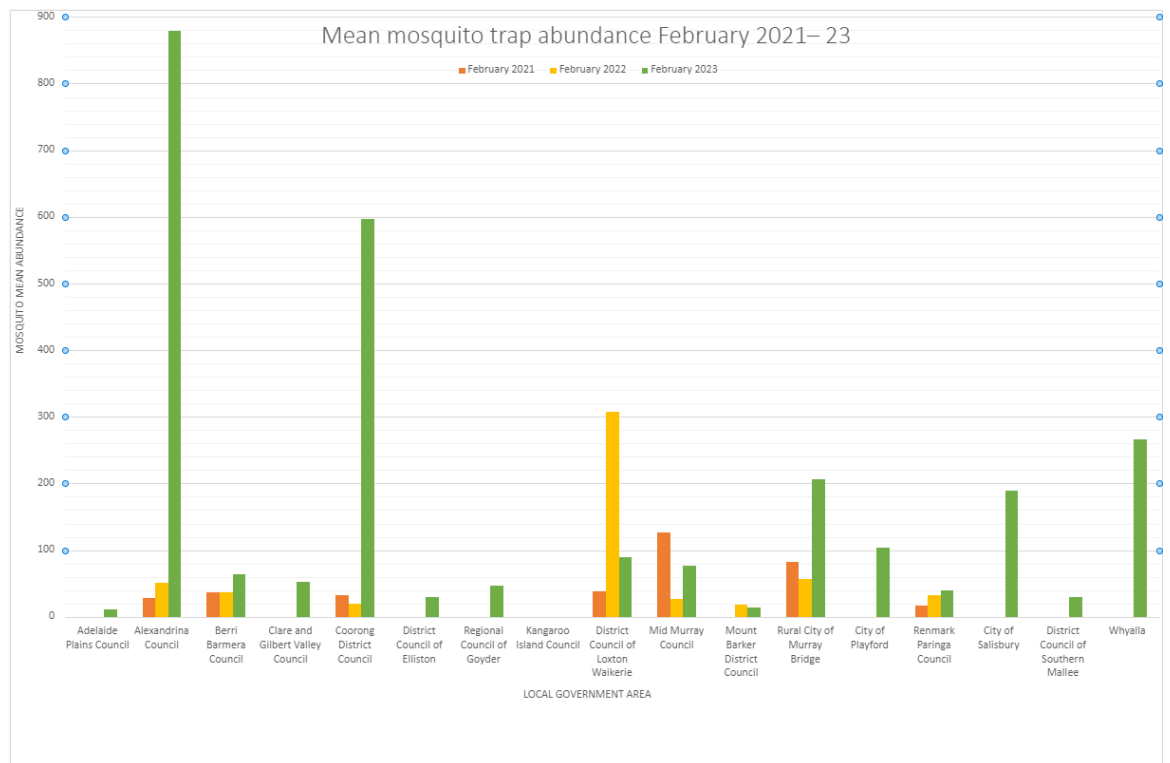


Figure 1: Mean mosquito trap abundance for February 2021-23.

Table 3 details the mean February trap abundance data in SA from local council traps for three seasons (where applicable). The available data shows increased mean trap abundance at five of the seven River Murray council areas compared to the two previous mosquito seasons. The data shows increased mean trap abundance at one of the seven River Murray council areas compared to the 2021/22 season.

Table 4 details the mean February trap abundance data for *Culex annulirostris* from local council mosquito traps. The data shows increased mean *Culex annulirostris* abundance in five of the River Murray councils compared to the previous two seasons.

Table 3: Local council mosquito surveillance trapping mean abundance data February 2021-23 three-year comparison.

Council	2021	2022	2023
Adelaide Plains Council	-	-	11
Alexandrina Council	28	51	879
Berri Barmera Council	36	36	64
Clare and Gilbert Valleys Council	-	-	53
Coorong District Council	33	20	597
District Council of Elliston	-	-	29
Regional Council of Goyder	-	-	47
Kangaroo Island Council	-	-	-
District Council of Loxton Waikerie	38	308	90
Mid Murray Council	126	27	76
Mount Barker District Council	-	18	14
Rural City of Murray Bridge	83	56	206
City of Playford	-	-	103
Renmark Paringa Council	17	33	39
City of Salisbury	-	-	189
District Council of Southern Mallee	-	-	29
Whyalla City Council	-	-	266

Table 4: *Culex annulirostris* mean trap abundance data by local council area February 2021- 23 three-year comparison.

Council	2021	2022	2023
Adelaide Plains Council	-	-	3.4
Alexandrina Council	0	0	621
Berri Barmera Council	1.5	29.5	47
Clare and Gilbert Valleys	-	-	26
Coorong District Council	0	0	423
District Council of Elliston	-	-	0
Regional Council of Goyder	-	-	27
Kangaroo Island Council	-	-	-
District Council of Loxton Waikerie	30.3	98.1	93
Mid Murray Council	26.8	9.2	47
Mount Barker District Council	-	1.4	2
Rural City of Murray Bridge	4.3	4.6	58
City of Playford	-	-	2.2
Renmark Paringa Council	37	29	33
City of Salisbury	-	-	93
District Council of Southern Mallee	-	-	9
Whyalla City Council	-	-	4.5

Arbovirus isolations from trapped mosquitos (whole trap grinds)

Table 5 details the arbovirus isolations from mosquitoes trapped by local councils and SA Health regional officers during February 2022.

WNV/KUN was detected in trapped mosquitoes for the first time in the District Council of Loxton Waikerie.

RRV was detected in trapped mosquitoes in two council areas in February, one in Renmark Paringa Council and one in the Barossa Council, where trapping was undertaken in response to a suspected horse MVEV/JEV infection. BFV was not detected in trapped mosquitoes in February.

Table 5: Arbovirus isolations from whole trap grinds 2022 - 2023.

Arbovirus	JEV	MVEV	RRV	BFV	WNV/KUN
February 2023	0	0	2	0	1
Season to date	0	10	18	12	1

South Australian sentinel chicken surveillance program

In response to the JEV situation, HPP increased the number of sentinel chicken flocks in high-risk locations from six to ten. Chicken flocks 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. Sentinel chicken flock bleeds for the season commenced during September.

Sentinel chicken bleeds were undertaken weekly throughout February. Results from blood samples taken week commencing 6 February returned positive MVEV results from two chickens, one from each of the Swan Reach and Qualco flocks. In the same week a positive WNV/KUN result was reported from one chicken in the Clare flock. The flock in Clare was established in October 2022, after JEV was detected in pigs in the region last mosquito season.

A blood sample collected from one chicken in the Meningie flock in the week commencing 13 February returned a positive MVEV result.

Final results from all February 2023 sentinel chicken bleeds have not yet been received and will be reported in the March 2023 report. Table 6 details the sentinel chicken positive detections of arbovirus during February 2023. Table 7 details the sentinel chicken positive detections for the 2022-23 season to date.

Table 6: Positive detections of arbovirus in sentinel chickens February 2023.

Flavivirus	JEV	MVEV	WNV/KUN
Qualco	0	1	0
Swan Reach	0	1	0
Meningie	0	1	0
Clare	0	0	1

Table 7: Positive detections of arbovirus in sentinel chickens for the 2022-23 season.

Flavivirus	JEV	MVEV	WNV/KUN
Season to date	0	8	1

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 2 details arbovirus notification data 2019-2022 by month.

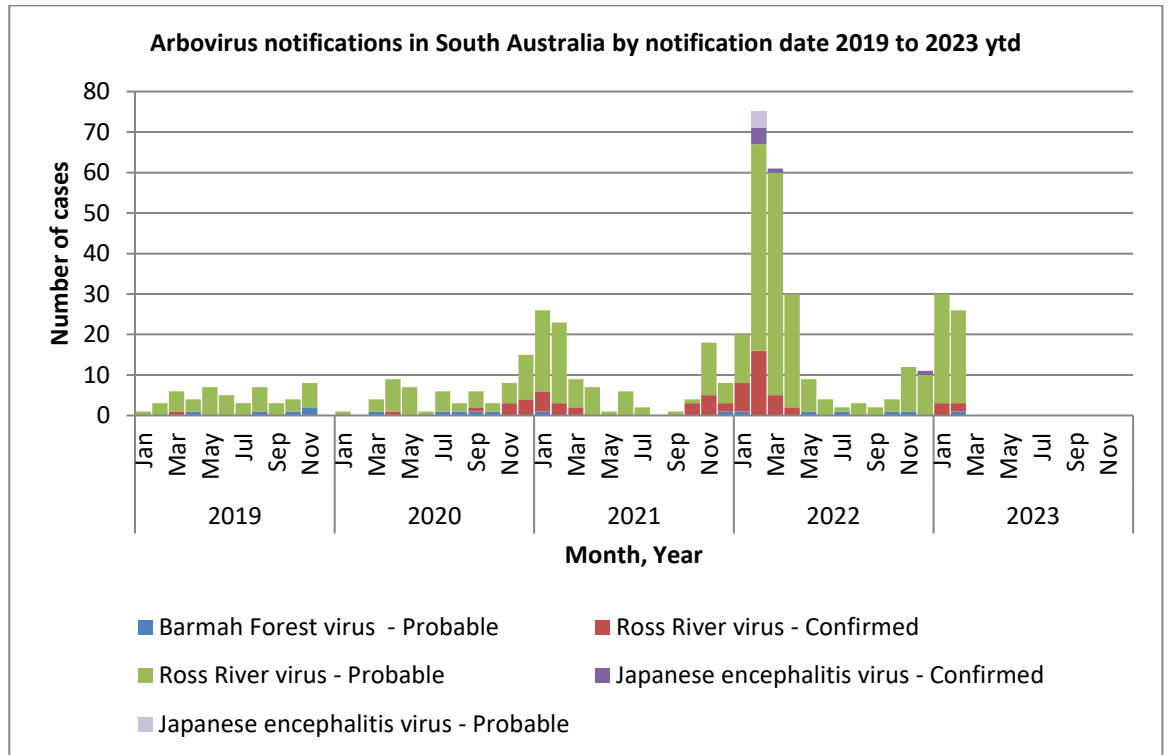


Figure 2: Arbovirus in South Australia by notification month – 01 January 2019 to 28 February 2023

Source: Communicable Disease Control Branch, SA Health.

Further information

For further information regarding mosquito borne disease see the SA Health website [here](#).

For further information regarding Japanese Encephalitis virus 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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