January 2023

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 January were generally higher than average in the state's west, but close to average or drier than average in the east. January rainfall was 1% above the 1961–1990 average, which was much less than in January 2022 but higher than in January 2021.

Both daytime and night-time temperatures were generally warmer than average in the state's east, but days were cooler than average in the west and night-time temperatures were close to average in southern areas of the state. Mean maximum temperatures were below average in the west, and very much below average in the far north-west. Mean minimum temperatures were generally close to average or below average in agricultural districts.

During January, moderate to major flood levels continued along the River Murray in SA, the high flows continue to pass through the length of the River Murray in SA and the Lower Lakes.

The ENSO Outlook continues at LA NIÑA, but La Niña is weakening. While ocean temperatures have eased from La Niña thresholds, the atmosphere has yet to respond, and remains indicative of La Niña.

Source: Australian Government, Bureau of Meteorology

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 three of the six northern Adelaide trap locations during January compared to the previous two seasons. See table 1.

Mosquitoes from northern Adelaide traps collected on the 13th and 20th January 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.

Government of South Australia
SA Health

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

Trap location	2021	2022	2023
Globe Derby Park Racetrack	19	70	32
Daniel Avenue Wetland	26	165	118
Swan Alley	1238	1930	2943
TI Quarantine Station	723	811	493
TI Power Station	253	149	318
Mawson Lakes	40	48	227

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.

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

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

Council area	Mean trap abundance	Mean *Culex annulirostris* abundance
Barossa Regional (JEV Team)	21	15
Goyder (JEV Team)	25	8
Light & Wakefield (JEV Team)	39	1.5
Loxton Waikerie (JEV Team)	297	269.3
Mid Murray (JEV Team)	429	153
Murray Bridge (JEV Team)	319	110
Renmark Paringa (JEV Team)	263	66

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 January. 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 January by council area for three seasons.

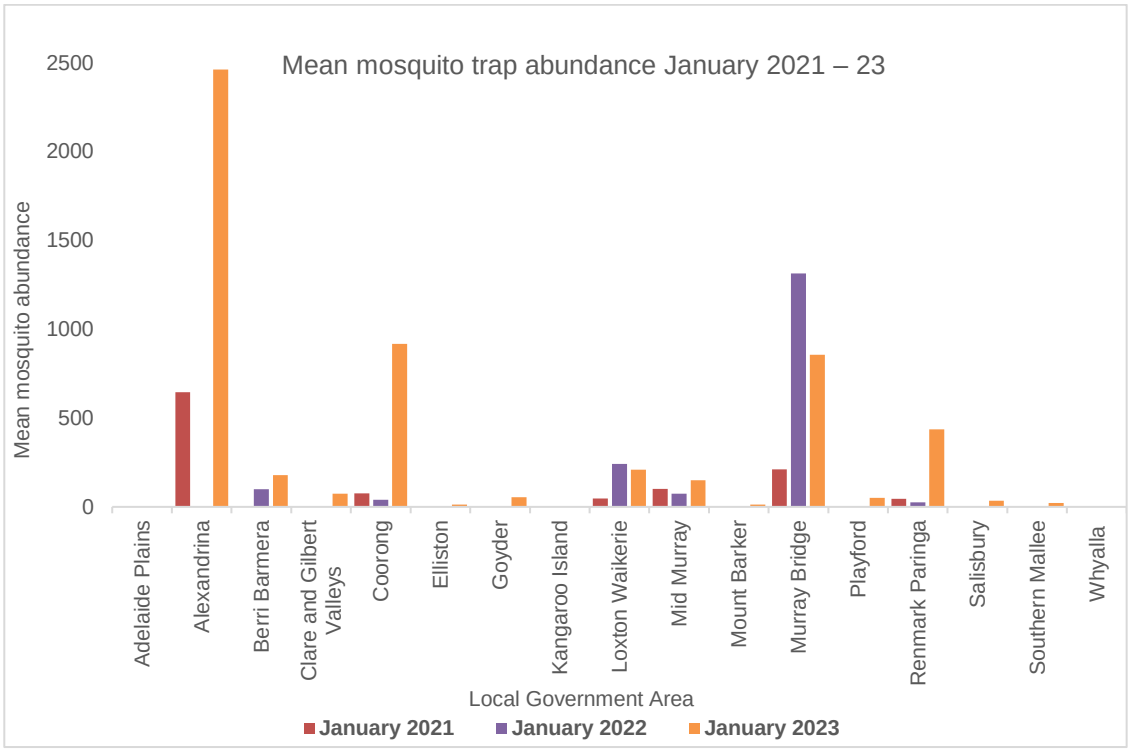

Figure 1: Mean mosquito trap abundance for January 2021-23.

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

Table 3: Local council mosquito surveillance trapping mean abundance data January 2023 three-year comparison.

Council	2021	2022	2023
Adelaide Plains Council			-
Alexandrina Council	645	-	2463
Berri Barmera Council	3	99	178
Clare and Gilbert Valleys Council			74
Coorong District Council	76	40	918
District Council of Elliston			13
Regional Council of Goyder			54
Kangaroo Island Council			-
District Council of Loxton Waikerie	48	242	209
Mid Murray Council	101	74	150
Mount Barker District Council		-	13
Rural City of Murray Bridge	212	1315	856
City of Playford			51
Renmark Paringa Council	46	25	437
City of Salisbury	-	125	35
District Council of Southern Mallee	-	-	22
Whyalla City Council	-	-	-

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

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

Council	2021	2022	2023
Adelaide Plains Council			-
Alexandrina Council	0	-	851
Berri Barmera Council	1.5	0	73
Clare and Gilbert Valleys			30
Coorong District Council	0	0	195
District Council of Elliston			0
Regional Council of Goyder			37
Kangaroo Island Council			-
District Council of Loxton Waikerie	30.3	111.2	187
Mid Murray Council	26.8	24.75	67
Mount Barker District Council		-	5
Rural City of Murray Bridge	4.3	9.86	347
City of Playford			8.4
Renmark Paringa Council	37	11.2	399
City of Salisbury		1	8
District Council of Southern Mallee			12
Whyalla City Council	-	-	-

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 January 2022.

MVEV was detected in trapped mosquitoes at ten trap locations across the following five council areas: Berri Barmera Council, the District Council of Loxton Waikerie, Mid Murray Council, Rural City of Murray Bridge and Renmark Paringa Council.

RRV was detected in trapped mosquitoes at one trap location in the Rural City of Murray Bridge council area in January. BFV was not detected in trapped mosquitoes in January.

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

Arbovirus	JEV	MVEV	RRV	BFV	WNV/KUN
January 2023	0	10	1	0	0
Year to date	0	10	17	12	0

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 January. Results from blood samples taken week commencing 19 January returned positive a seroconversion of MVEV antibodies from one chicken in both the Paringa and Mannum flocks.

Blood samples taken on 31 January 2023 returned a positive seroconversion of MVEV antibodies from one chicken in the Clare flock. The detection in Clare is the first time MVEV has been found outside of the River Murray in South Australia. The flock in Clare was established in October 2022, after JEV was detected in pigs in the region last mosquito season.

Final results from all January 2023 sentinel chicken bleeds have not yet been received and will be reported in the February 2023 report. Table 6 details the sentinel chicken positive detections of arbovirus during January 2023.

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

Flavivirus	JEV	MVEV	WNV/KUN
Mannum	0	1	0
Paringa	0	1	0
Clare	0	1	0

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.

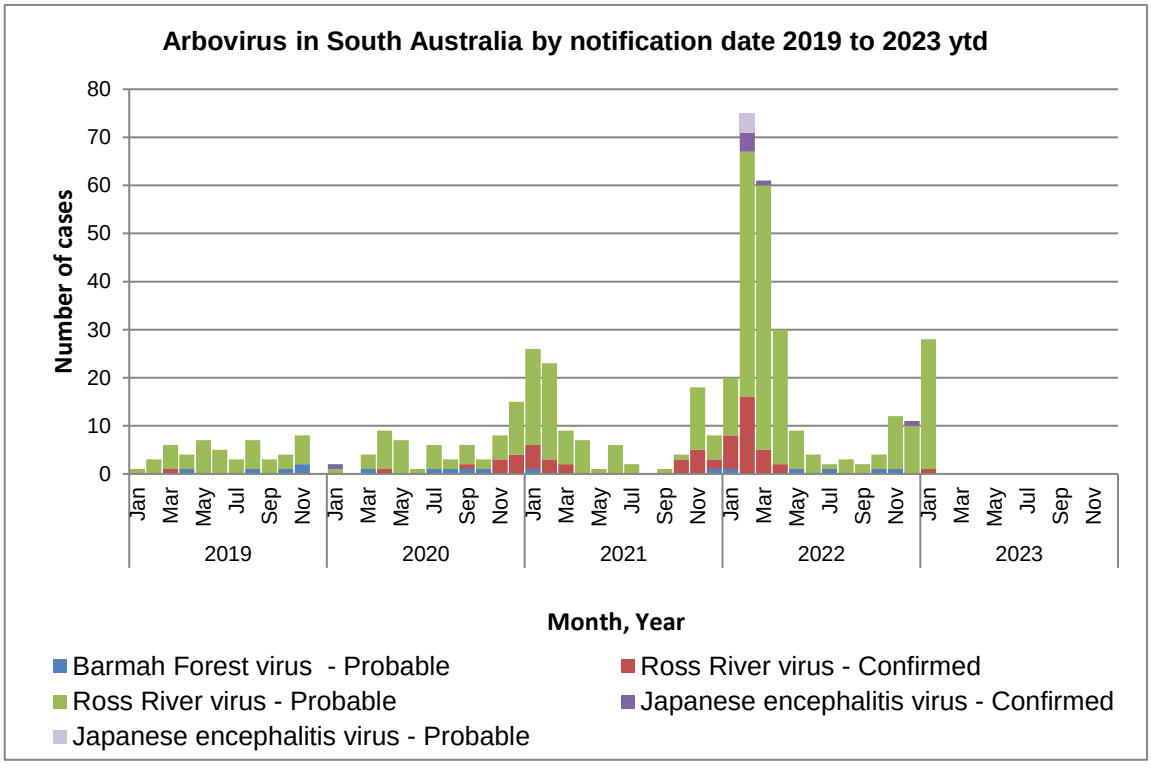

Figure 2: Arbovirus in South Australia by notification month – 01 January 2019 to 31 January 2023

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

Health Protection Programs
Health Protection and Licensing Services
Department for Health and Wellbeing
PO Box 6
RUNDLE MALL SA 5000
Email:
HealthProtectionPrograms@sa.gov.au
Telephone: 08 8226 7100
www.sahealth.sa.gov.au