

# 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 September was below to very much below average throughout SA. Rainfall was 81% below average (based on 1961–1990), making it the state's seventh-driest September on record (since 1900). Rainfall totals were less than 60% on average in the southern Agricultural districts, and little or no rain was recorded in the northern Pastoral districts.

Mean maximum temperatures for September were very much above average in the state's north to highest on record in the south. The mean maximum temperature for SA was 4.76 °C warmer than average (based on 1961–1990), which was the state's second-highest mean maximum temperature on record for September.

Mean minimum temperatures for September were above to very much above average in the north and west of the state but were closer to average in much of the east; some areas in the far west of the state had their warmest September on record.

October to December rainfall is likely to be below median for much of Australia. October to December maximum temperatures are at least three times as likely to be unusually warm for most of Australia. October to December minimum temperatures are very likely to be above median almost nationwide.

During September the Bureau of Meteorology (BOM) declared that the El Niño Southern Oscillation (ENSO) had shifted to El Niño. The term El Niño refers to the extensive warming of the central and eastern tropical Pacific Ocean which leads to a major shift in weather patterns across the Pacific. This occurs every three to eight years and is associated with drier conditions in eastern Australia. ENSO is the term used to describe the oscillation between the El Niño phase and the La Niña, or opposite, phase.

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

### 2023-24 mosquito season risk indicators

In accordance with the HoR, the threat level was scaled down from the 2022-23 mosquito season level 3 (HIGH) response to a level 2 (MEDIUM) response for the start of the 2023-24 mosquito season. The following indicators were considered:

- > During the 2022-23 mosquito season viral screening of trapped mosquitoes resulted in detections of MVEV, West Nile Virus – Kunjin strain (WNV/KUN), Ross River virus (RRV) and Barmah Forest virus (BFV).
- > Viral detections from trapped mosquitoes peaked during December 2022 and January 2023.



- > An adult mosquito surveillance program was run during autumn and winter 2023 which resulted in very low numbers of trapped mosquitoes and no viral detections.
- > During the 2022-23 mosquito season there were no detections of JEV from adult mosquito surveillance.
- > The expanded SA sentinel chicken program resulted detections of MVEV and WNV/KUN in multiple samples from several locations between January and April 2023.
- > JEV was not detected in sentinel chickens during the 2022-23 season.
- > Human cases of JEV were notified to the Department for Health and Wellbeing's Communicable Disease Control Branch (CDCB) in 2022 and 2023.
- > A case of MVEV was notified in May 2023 which is the first human case in SA since the 2010-11 season.
- > The number of RRV and BFV cases reported in SA in 2022-23 was less than in 2021-22 but similar to the 2020-21 season.
- > Predicted climatic conditions for the 2023-24 mosquito season are not conducive to mosquito breeding.

### 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 five northern Adelaide trap locations during September compared to previous seasons and an increase at one trap location compared to previous seasons. See table 1.

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

Trap location	2021	2022	2023
Globe Derby Park Racetrack	161	179	99
Daniel Avenue Wetland	334	244	386
Swan Alley	649	794	332
TI Quarantine Station	2095	1929	490
TI Power Station	596	691	52
Mawson Lakes	369	222	167

### 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.

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, Ross River virus (RRV), Barmah Forest virus (BFV) and West Nile virus/Kunjina (WNV/KUN).

Table 2 details the mean September trap abundance data in SA from local council traps for three seasons (where applicable). The available data shows decreased mean trap abundance at seven council areas compared to previous seasons. Two councils did not undertake adult mosquito surveillance during September.

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

Council	2021	2022	2023
Adelaide Plains Council	-	520	-
Alexandrina Council	31	-	45
Berri Barmera Council	78	181	23
Coorong District Council	290	246	57
District Council of Elliston	-	925	621
District Council of Loxton Waikerie	-	119	71
Mid Murray Council	17	118	12
Mount Barker District Council	-	2	-
Renmark Paringa Council	59	141	8
Rural City of Murray Bridge	29	123	14
City of Salisbury	-	-	199
City of Tea Tree Gully	-	-	12

Table 3 details the mean September trap abundance data for *Culex annulirostris* from local council mosquito traps. During September *Culex annulirostris* accounted for less than 1% of trapped mosquitoes across all council areas. The available data shows increased *Culex annulirostris* abundance at four River Murray council areas compared to previous seasons.

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

Council	2021	2022	2023
Adelaide Plains Council	-	0	-
Alexandrina Council	0	0	0
Berri Barmera Council	0	0	2.5
Coorong District Council	0	0	0
District Council of Elliston	-	0	0
District Council of Loxton Waikerie	-	0	2
Mid Murray Council	0	0.4	2
Mount Barker District Council	-	0	-
Renmark Paringa Council	0	0.33	1
Rural City of Murray Bridge	0	0	0
City of Salisbury	-	-	0
City of Tea Tree Gully	-	-	0

## Arbovirus isolations from trapped mosquitos (whole trap grinds)

As detailed in table 4, there were no arbovirus detections from whole trap grinds of trapped mosquitos during September.

**Table 4:** Arbovirus isolations from whole trap grinds September 2023.

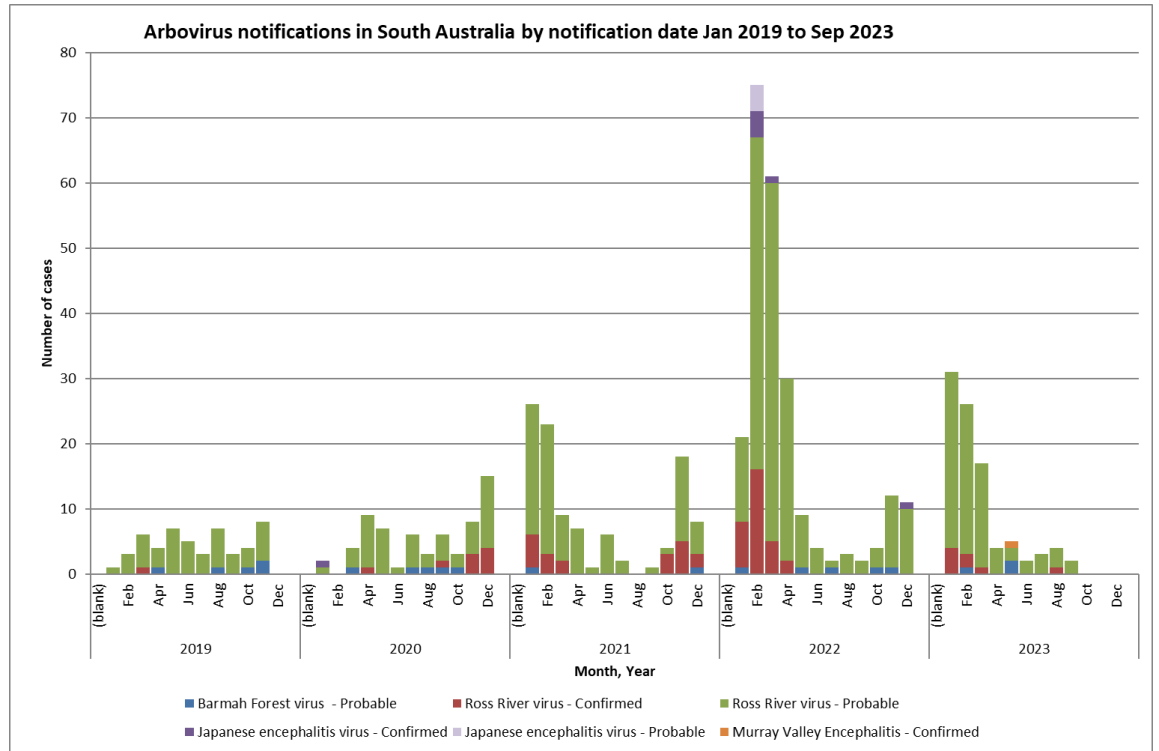
Arbovirus	JEV	MVEV	RRV	BFV	WNV/KUN
Detections	0	0	0	0	0

## 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. Sentinel chicken flock bleeds for the season will commence during November.

## 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 September 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](#).

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## For more information

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