

# Locust Bulletin

ISSN 2204-9851

## GENERAL SITUATION IN AUTUMN AND OUTLOOK TO SPRING 2021

### Australian Plague Locust

### *Chortoicetes terminifera*

The locust population in inland eastern Australia declined significantly during autumn. Adult numbers had reduced to low – medium levels over much of the interior by May from much higher densities identified earlier, which had included some long, narrow swarms observed in mid-February very closely associated with drainage lines in parts of the Channel Country of Queensland and several swarms detected in early March in Hillston and Hay districts of the Riverina of New South Wales. Apart from a small Sub-band density of nymphs identified in the north of Jerilderie of the Riverina of NSW in early March, only occasional low-density nymphs were observed by ground surveys, and no bands were detected in the Queensland Channel Country and surrounding areas by aerial surveys during late March and early April. Most eggs laid in autumn would have undergone overwintering in either diapause/quiescence or slow development, with only a small proportion hatching prior to the onset of winter. Widespread rainfall and flooding in March hampered ground survey of areas where large locust populations had previously been identified. Weather patterns, detections by the insect monitoring radar in Hay, light-trap captures in White Cliffs, Fowlers Gap and Dulkaninna, and public reports indicate several occurrences of short-distance migration, with likely redistributions of the adult population prior to egg-laying. No surveys were conducted in Victoria and no reports were received, but locust populations are expected to remain at low levels in that State.

Rainfall for autumn was slightly below average over inland eastern Australia, about average over much of Queensland, above to very much above average over much of the North East Pastoral of South Australia and the North West and Central West of NSW, but below to very much below average over south-western NSW, north-western Victoria and south-eastern SA districts. The total rainfall for autumn ranged from less than 25 mm in the southern part to more than 300 mm in the eastern part, mainly received in March, while the interior had nil or less than 25 mm in April and May (below to very much below average). Mean temperature for autumn over the eastern interior was generally below average. It was above average over much of the North West and Central West of Queensland but below to very much below average over central and northern NSW and adjacent southern Queensland, while about average over much of south-western NSW, Victoria and SA regions. This was mainly attributed to lower minimum temperature over inland NSW and adjacent areas. The La Niña event had ended in March and the El Niño–Southern Oscillation (ENSO) remained neutral during winter and likely persists in spring. Rainfall and temperatures are expected to return to normal seasonal patterns with slightly wetter spring. With about average rainfall and warmer temperature for winter, the overwintering locust populations are likely to have experienced faster development.

The spring outlook is for possible early nymphs hatching in late winter in sub-tropical Queensland, and possible localised high-density nymphs developing in late September in the Riverina of NSW and adjacent areas (refer to Page 4). It is expected that some bands may develop and result in localised high-density spring populations in the Riverina and adjacent areas, and some low – medium density nymphs in parts of Queensland.

There is a low likelihood of widespread high-density populations and region-wide infestations developing in spring, but possible localised high-density populations and limited infestations in parts of New South Wales.

2 September 2021

**Spur-throated Locust*****Austracris guttulosa***

Surveys detected consistent occurrences of Present-density nymphs and Isolated – Numerous-density adults in the Clermont-Roma and Longreach-Winton areas of Queensland. Only occasional adults were identified in New South Wales and South Australia. Isolated high-density adults were reported in localised areas of the Queensland Gulf region in late winter.

With sufficient rainfall and warmer temperatures in tropical and sub-tropical Queensland, it is possible for localised low – medium-density adult populations to persist through winter.

There is a low risk of a widespread infestation, but localised higher density infestations may develop in subtropical Queensland during the winter and spring.

**Migratory Locust*****Locusta migratoria***

Surveys in mid-March detected occasional Isolated – Scattered-density adults in the Clermont-Injune areas of Queensland. Improved habitat conditions in the Central Highlands and Coalfields and the Darling Downs and Granite Belt regions of Queensland may have encouraged some localised breeding. High-density gregarisation is unlikely to result from the current very low background level.

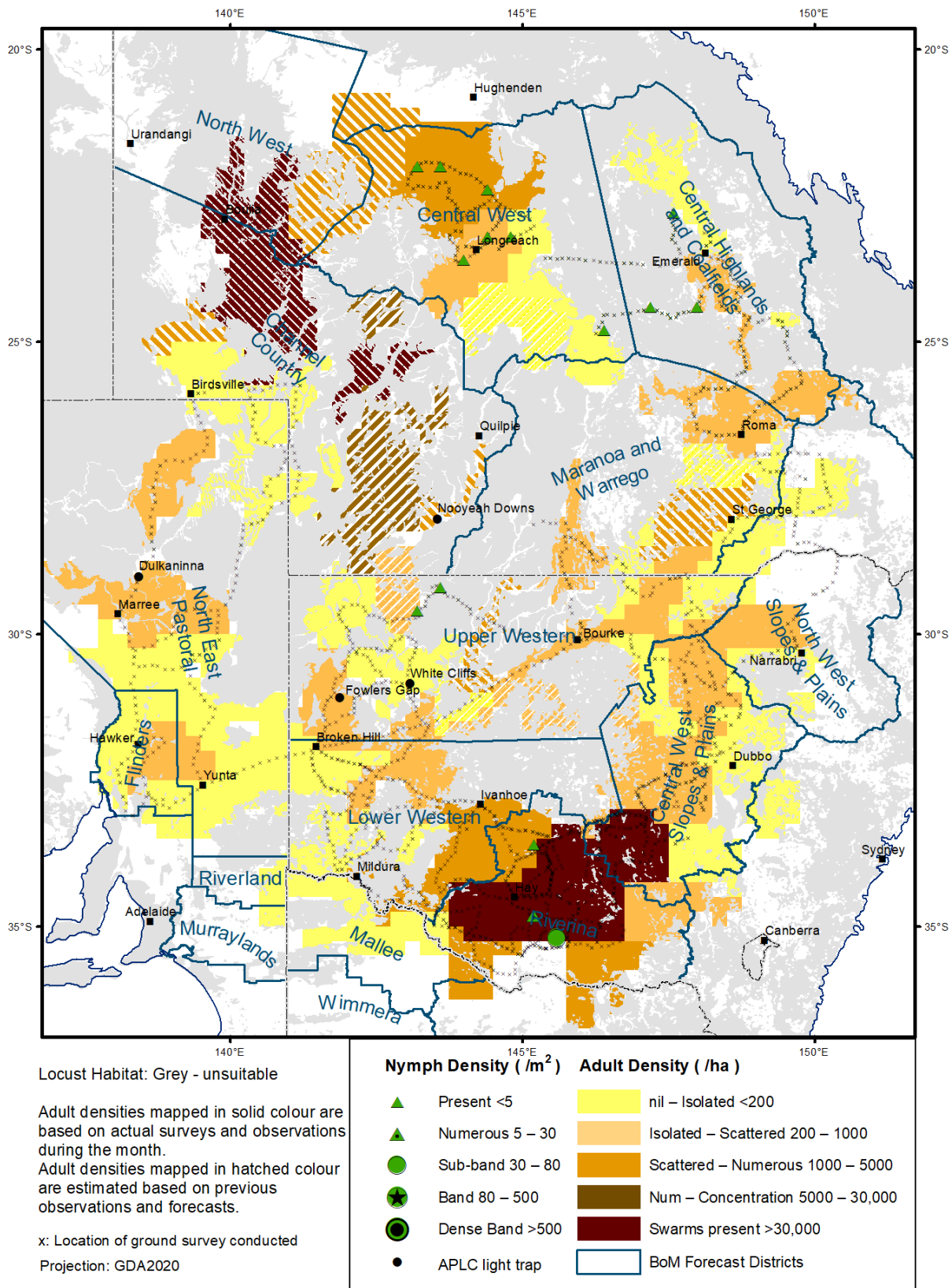
There is a very low risk of a widespread infestation developing during the winter and spring.

**It is important that any locust activity be reported as soon as possible to your local biosecurity authority, primary industries department or to the commission. A toll-free call to the APLC hotline can be made on 1800 635 962. An answering machine is attached to this phone for after-hours calls. Reports can also be emailed to APLC via [aplc@agriculture.gov.au](mailto:aplc@agriculture.gov.au) or made through the website at [https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting\\_locusts](https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting_locusts).**

**Locust distribution map—*Chortoicetes terminifera***

**Australian Plague Locust Distribution**

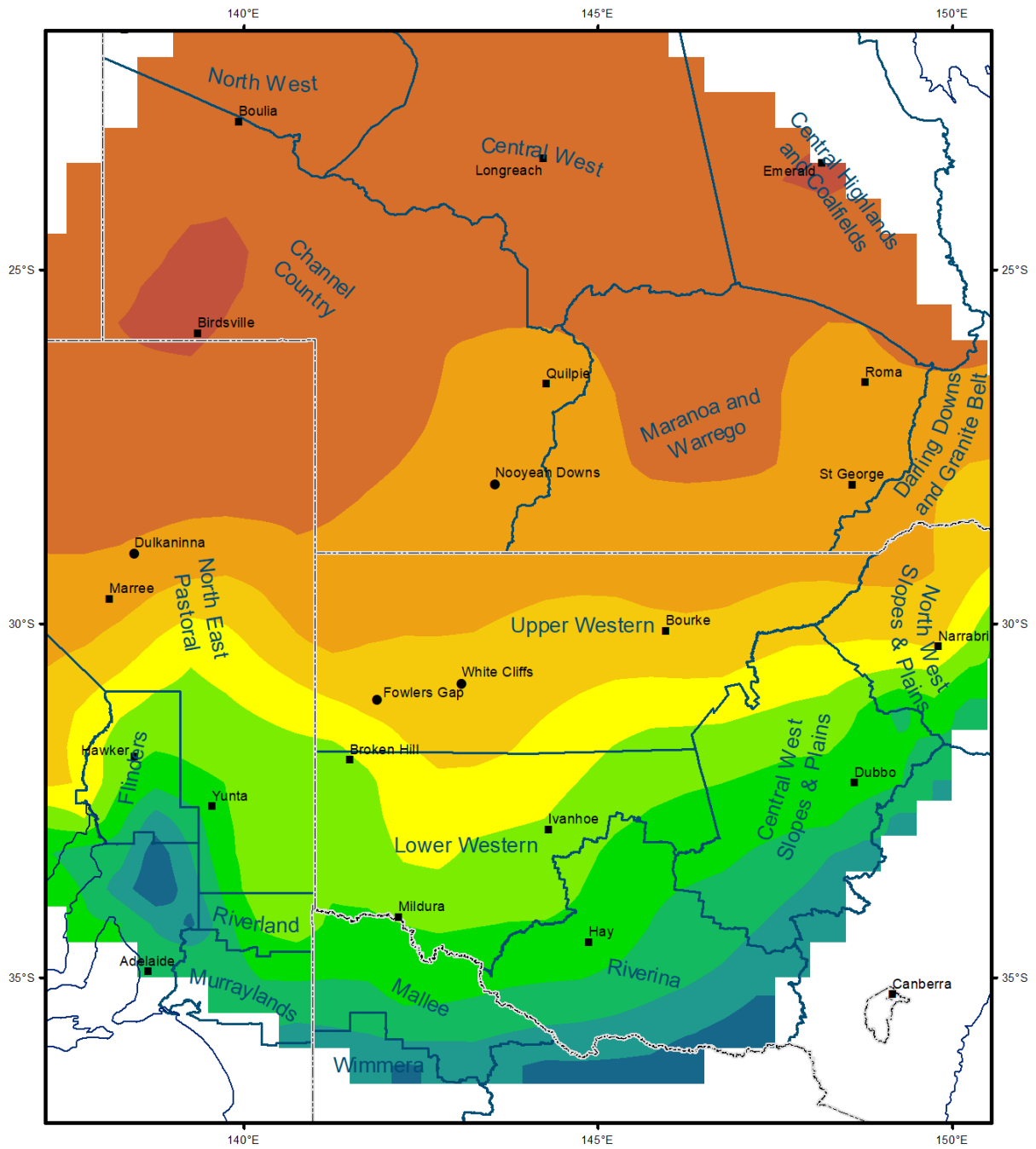
01 March - 02 June 2021



Locust hatching prediction map—*Chortoicetes terminifera*

### Hatching Prediction of Australian Plague Locust Diapause Eggs

Model Run on 22 August 2021 with the assumption of egg-laying on 31 March 2021



#### Nymph Hatching Date



**Australian Plague Locust****(*Chortoicetes terminifera*)****SITUATION IN AUTUMN AND OUTLOOK TO SPRING 2021****NEW SOUTH WALES****NORTH WEST SLOPES & PLAINS****Northwest Local Land Services****Locusts and conditions**

- No surveys were conducted within this region in March due to flooding. Surveys in mid-April only identified Isolated – Scattered densities of adults in the Narrabri district with no nymphs detected.
- LLS officers followed up more than 30 locust reports in early March. The majority were of adult activity with a few sightings of young nymphs reported in the beginning of March. No further reports were made to LLS after the last couple of adult sightings at the end of March.
- This region received very much above average to highest on record rainfall in March (100 – 300 mm). For example, Moree received 263.4 mm while 62.8 mm is the historical average of March rainfall. However, both April and May this region received average or below average rainfall, with a monthly total less than 50 mm.

**Forecast**

- Overwintering eggs are likely to hatch from early September onwards. Localised bands may be possible, but the general population density is expected to be at low – medium levels.
- There is a low probability of significant immigration during spring but there may be some short-distance population exchanges with adjacent areas under suitable weather conditions.

**Risks**

- There is a low to moderate risk of a widespread regional infestation developing during spring.

**CENTRAL WEST SLOPES & PLAINS****Central West Local Land Services****Locusts and conditions**

- Surveys in early March identified Isolated to Low-Density Swarm adults with higher densities in the south-western part of the region (the Condobolin-Lake Cargelligo-West Wyalong areas). No nymphs were detected in the surveyed southern part of the region.
- Surveys in early and mid-April identified consistent Isolated – Scattered-density adults in the northern part of this region with no nymphs detected.
- Surveys in early May identified Isolated – Scattered-density adults in the southern part of this region with no nymphs detected.
- Surveys in early June only detected occasional adults.
- LLS officers investigated five reports of adult sightings in early March.
- This region received very much above average to highest on record rainfall (100 – 300 mm) in March. For example, Warren received 253.8 mm, Nevertire 220.6 mm, Condobolin 139.4 mm and Lake Cargelligo 100.2 mm, compared to the long-term average March rainfall of around 40 mm for these districts. However, April rainfall was below average to very much below average, from less than 25 mm down to zero in the southwest. May rainfall ranged from 10 to 50 mm, which was below average to just about average.

**Forecast**

- Overwintering eggs are likely to hatch from mid-September onwards. Localised bands are likely to develop in spring, with general population level up to medium levels.

- There is a low to moderate probability of significant immigration from the North West Slopes & Plains into this region during late spring, and some short-distance emigration to adjacent west or southwest areas is possible under suitable weather conditions.

### **Risks**

- There is a moderate risk of widespread regional infestations developing during spring.

## **RIVERINA**

### **Riverina, Murray, and part of Western Local Land Services**

#### **Locusts and conditions**

- Surveys in early March identified a widespread adult population, with higher densities up to Low-Density Swarm in the Hillston-Hay-Jerilderie areas. An area of 5<sup>th</sup> instar Sub-Band density was detected in the Jerilderie district and a few instances of Present – Numerous-density of nymphs were identified in other areas.
- Surveys in mid-April identified a decrease in adult numbers in this region, with consistent Scattered to Numerous densities of adults but no nymphs detected.
- Surveys in early May indicated further decline in adult numbers, only occasional Numerous-density was detected among Isolate – Scattered densities of adults, with no nymphs identified.
- Surveys in early June did not detect any locusts.
- LLS officers confirmed a hatching report in Barellan in mid-March, and a small 3<sup>rd</sup> instar band in Leeton in addition to two test drillings in the northwest of Jerilderie in early April.
- The UNSW insect monitoring radar in Hay detected a significant locust migration on the night of 12-13 March.
- March rainfall ranged from nil in the west to over 100 mm in the east (Hay 14.6mm, Narrandera 98 mm, Yanco 122 mm), which represents average to very much above average falls. April rainfall was very much below average in most areas, less than 10 mm at most, while the May total was from 5 mm in the west to less than 50 mm in the east, which was below average to about average.

#### **Forecast**

- Overwintering eggs are likely to hatch from late September onwards and the formation of localised bands are possible. Locust population levels could reach high density in some areas.
- There is a low to moderate probability of migration from and to adjacent regions in the spring.

### **Risks**

- There is a moderate risk of a widespread infestation developing during spring.

## **UPPER and LOWER WESTERN**

### **Western Local Land Services**

#### **Locusts and conditions**

- Surveys in early March in the Lower Western region identified only Isolated-density adults in the western part but higher densities in the south-eastern part (Scattered - Numerous-density adults in the Ivanhoe and Balranald districts). No nymphs were detected.
- Surveys in early April identified consistent Isolated – Scattered-density adults in the north-eastern part of the Upper Western region. Surveys in mid-April identified consistent Isolated – Scattered-density adults in the Lower Western region. No nymphs were detected in April.
- Surveys in early May identified Isolated-density adults in the Upper Western region with a few 2<sup>nd</sup> instar nymphs detected.
- Aerial surveys in the north-western part of the Upper Western region in early April did not identify any nymphal bands.
- LLS officers followed up three reports of adult activity in March in White Cliffs, Bourke and Brewarrina respectively but only identified fledglings in Bourke district.
- The light trap at White Cliffs captured 57 locusts on the night 12-13 March and 46 on 23-24 March in contrast to less than 10 on the nights of 10-11, 17-18, 20-21, 24-28 March and 31 March – 1 April, 7-9 and 16-17 April. The light-trap at Fowlers Gap captured 120 and 150 locusts on the two consecutive

nights of 11-13 March respectively, and 4 locusts on the night of 15-16 March with zero capture on all other nights. Weather maps indicate weak troughs and low-pressure systems facilitated short-distance migrations on these dates, which were reflected in these light-trap captures.

- March rainfall was uneven, from less than 10 mm in the southwest to over 100 mm in the northwest (Tibooburra 153.6 mm) and northeast (Brewarrina 131 mm), which represented average to very much above average falls. April rainfall was very much below average to below average, with zero recorded except for the northeast corner where less than 10 mm was received in mid-April. May rainfall ranged from nil in the northwest to less than 25 mm in the northeast of this region, which is very much below average to just about average in some areas.

### Forecast

- Locust numbers are likely to be low in most parts of this region except the south-eastern part where localised medium density populations could develop from overwintering eggs.
- There is a low – moderate likelihood of migration activity in late spring.

### Risks

- There is a low risk of a widespread infestation developing during spring.

All locust activity should be reported to your [Local Land Services](#) (1300 795 299) or the [Department of Primary Industries](#). A toll-free call to the APLC hotline can be made on 1800 635 962. An answering machine is attached to this phone for after-hours calls. Reports can also be emailed to APLC via [aplc@agriculture.gov.au](mailto:aplc@agriculture.gov.au) or sent through the web page at [https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting\\_locusts](https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting_locusts).

<b>QUEENSLAND</b>
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**CENTRAL HIGHLANDS AND COALFIELDS****Isaac and Central Highlands Regional Councils; Banana Shire****Locusts and conditions**

- Surveys in mid-March identified consistent Isolated – Scattered densities of adults and occasional 5<sup>th</sup> instar nymphs.
- No surveys were conducted after March in this region.
- No reports of locust activity were received from this region.
- Most parts of this region received more than 50 mm rainfall in March, ranging from average to above average (Clermont 206.8 mm). April rainfall was uneven, from a few millimetres to more than 100 mm (Taroom 106.6 mm), ranging from below average to above average. May rainfall was less than 10 mm in most parts of this region, which represented below average to very much below average falls.

**Forecast**

- Nymphs may start to appear from early August onwards from overwintering eggs, and localised low to medium-density may develop.
- There is a low probability of any significant migration.

**Risks**

- There is a low risk of a widespread infestation developing during spring.

**DARLING DOWNS AND GRANITE BELT****Western Downs and Goondiwindi Regional Councils****Locusts and conditions**

- No surveys were conducted in this region during March due to flood.
- Surveys in mid-April identified only occasional adults.
- No locust reports were received from this region.
- March rainfall ranged from over 100 mm in most parts to above 200 mm in the south-eastern part of this region, ranging from very much above average (Miles 153.8 mm, Dalby 172.2 mm) to highest on record (Warwick 224 mm). April rainfall was from a few millimetres to over 50 mm, ranging from below average to very much above average. May rainfall varied from a few millimetres to over 25 mm, which was below average to average.

**Forecast**

- Diapause eggs may start to hatch from mid-August and localised bands may appear.
- There is a low-medium probability of emigration to adjacent areas later in spring.

**Risks**

- There is a low risk of a widespread infestation developing during spring.

**CENTRAL WEST****Barcaldine, Longreach, and Blackall-Tambo Regional Council; Flinders and Winton Shires****Locusts and conditions**

- Surveys in early March identified consistent Isolated – High-Numerous densities of adults and frequent Present-density of late instar nymphs in the Longreach-Winton-Muttaburra-Aramac areas. Surveys in mid-March detected only Isolated – Scattered densities of adults and occasional late instar nymphs in the south-eastern part of this region. Other grasshopper species were frequently detected by survey.
- No surveys were conducted in this region in April.
- Survey in mid-May in the Longreach district identified consistent Isolated – Scattered densities of adults and occasional 5<sup>th</sup> instar nymphs.
- Surveys in mid-June identified consistent Isolated-density adults in Winton district.



- Aerial surveys in the south-western part of this region in late March and early April did not identify any nymphal bands.
- March rainfall varied from less than 25 mm to over 200 mm (Aramac) and was generally above average in the southern part. April rainfall also had a very wide range, from 10 mm to over 200 mm, but was generally about average. May had almost no rain, which was below to very much below average

#### **Forecast**

- Overwintering eggs would have started to hatch from early August. Some localised higher numbers may occur.
- There is a low probability of redistribution and migration in spring.

#### **Risks**

- There is a low risk of a widespread infestation, with the development of some localised medium-density infestations possible in spring.

### **MARANOA AND WARREGO**

#### **Maranoa Regional Council; Murweh, Paroo, and Balonne Shires**

##### **Locusts and conditions**

- Surveys were conducted in mid-March in the Roma district only and identified frequent Isolated – Scattered densities of adults in the area.
- Surveys in early April in the southern part of this region identified consistent Isolated – Scattered densities of adults but no nymphs.
- March rainfall ranged from 50 mm to almost 200 mm, which was above average to very much above average. April and May all had less than 10 mm monthly rainfall, which was below average to very much below average.

##### **Forecast**

- Locust numbers are likely to remain low.
- There is a low probability of migration in spring.

##### **Risks**

- There is a low risk of a widespread infestation in spring.

### **NORTH WEST**

#### **Mt Isa, Cloncurry, McKinlay, Boulia, and Winton Shires**

##### **Locusts and conditions**

- No surveys were conducted in this region during March and April due to flooding and lack of road access.
- Surveys in mid-June identified frequent Isolated-density adults and occasional early instar nymphs.
- Aerial surveys in the south-eastern part of this region in late March and early April did not identify any nymphal bands.
- March rainfall ranged from 25 mm up to 100 mm, which was generally about average. However, April had nil in the western part and only a few millimetres in the eastern part, which was below average in most areas. No rainfall was recorded in May.

##### **Forecast**

- Locust numbers are likely to remain at low level during spring, despite some hatchings may start from early August.
- There is a low probability of migration activity.

##### **Risks**

- There is a low risk of a widespread infestation developing during spring.

## CHANNEL COUNTRY

### Boulia, Diamantina, Barcoo, Quilpie, and Bulloo Shires

#### Locusts and conditions

- No surveys were conducted in this region during March.
- Surveys in the south-western part of this region identified only Isolated-density adults in mid-April.
- Intensive aerial surveys in this region in late March and early April did not identify any nymphal bands.
- March rainfall ranged from over 10 mm to almost 100 mm, which was from average to very much above average. Almost no rain was recorded in April and May.

#### Forecast

- Locust numbers are likely to remain at low level during spring.
- There is a low probability of migration activity.

#### Risks

- There is a low risk of a widespread infestation developing during spring.

All locust activity should be reported the [Biosecurity Queensland \(Department of Agriculture and Fisheries\)](#) via the [Customer Service Centre](#) on 13 25 23. A toll-free call to the APLC hotline can be made on 1800 635 962. An answering machine is attached to this phone for after-hours calls. Reports can also be emailed to APLC via [aplc@agriculture.gov.au](mailto:aplc@agriculture.gov.au) or sent through the website at [https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting\\_locusts](https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting_locusts).

<b>SOUTH AUSTRALIA</b>
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**NORTH EAST PASTORAL and FLINDERS****Locusts and conditions**

- Surveys in mid-April identified persistent Isolated-density adults in this region with occasional Scattered-density adults detected.
- The Dulkaninna light-trap recorded 12 locusts on the morning of 29 March, and a few captures every night afterwards until 5 April. This contrasts with zero captures for the rest of the season.
- Aerial surveys in the north-eastern corner in early April did not identify any nymphal bands.
- Light-trap records and weather patterns indicate there may have been some low numbers of immigrants. There was one report indicating a short-range southward migration towards Burra on the evening of 13 April.
- March rainfall ranged from almost nil in the south-eastern part to almost 200 mm in the north-western part, which was from average to very much above average. Some rainfall totals for March totals were 16.8 mm for Yunta, 41.6 mm for Arkaroola, and 53.6 mm for Oodnadatta. April had almost zero while May had a few millimetres in the southwest.

**Forecast**

- Locust numbers are likely to remain low.
- There is a low probability of migration during spring.

**Risks**

- There is a very low risk of a widespread infestation developing during spring.

**RIVERLAND and MURRAYLANDS****Locusts and conditions**

- No surveys were conducted in this region during autumn and no locust reports were received from this region. No other information indicated a significant locust presence in any part of the region during autumn.
- March rainfall was less than 25mm, which was about average. April rainfall was less than 10 mm, which was very much below average to below average. May rainfall was below 25 mm, which was about average.

**Forecast**

- The locust population is likely to remain at very low densities.
- There is a low probability of immigration during spring.

**Risks**

There is a very low risk of a widespread infestation developing during spring.

Locust activity should be reported to [Biosecurity SA \(Primary Industries and Regions South Australia\)](#) via the Plant Health Hotline on 1300 666 010. A toll-free call to the APLC hotline can be made on 1800 635 962. An answering machine is attached to this phone for after-hours calls. Reports can also be emailed to APLC via [aplc@agriculture.gov.au](mailto:aplc@agriculture.gov.au) or sent through the website at [https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting\\_locusts](https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting_locusts).

<b>VICTORIA</b>
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**MALLEE****Mildura and Swan Hill Rural Cities; Yarriambiack and Buloke Shires****Locusts and conditions**

- No surveys were conducted in autumn, and no locust reports were received from this region.
- No indications of significant migrations occurred in autumn.
- March rainfall was between 5 and 25 mm, which was below average to average. April received less than 5 mm, which was below average to very much below average. May received 5-25 mm, which was below average.

**Forecast**

- Overwintering locust eggs are likely to hatch from late September onwards. Locust numbers are likely to remain at low levels.
- There is a low probability of immigration during late spring.

**Risks**

- There is a very low risk of a widespread infestation developing during autumn.

**WIMMERA****Hindmarsh and West Wimmera Shires****Locusts and conditions**

- No surveys were conducted in autumn, and no locust reports were received from this region. No other information was received to indicate any significant locust presence in this region during autumn.
- March rainfall was between 10 to 25 mm, which was about average. Rainfall received in April ranged from 5 to 25 mm rain, which was below average. May totals were between 10 – 50 mm, also representing below average rainfall.

**Forecast**

- Any overwintering locust eggs may start to hatch in October. Locust numbers are likely to remain at low levels.
- There is a low probability of immigration during late spring.

**Risks**

- There is a low risk of a widespread infestation developing during spring.

Locust activity should be reported to the [Agriculture Victoria Customer Contact Centre](#) on 136 186. Alternatively, you can make a report via the online form at <https://forms.bio.vic.gov.au/2020>. Please include photos where possible. A toll-free call to the APLC hotline can be made on 1800 635 962. An answering machine is attached to this phone for after-hours calls. Reports can be emailed to APLC via [apl@agriculture.gov.au](mailto:apl@agriculture.gov.au) or sent through the website at [https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting\\_locusts](https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting_locusts).

## Glossary of locust terms and density categories used in the Locust Bulletin

### Locust biology and behaviour

Term	Definition
adult	A fully winged, mature locust capable of breeding and migrating
band	Dense aggregation of nymphs, usually moving forward together
diapause	Period of dormancy induced in anticipation of unfavourable environmental conditions
egg bed	An area of soil containing many egg pods (hundreds per square metre)
fledge	Final nymphal moult to a soft-bodied adult incapable of long-distance flight
instar	Discrete stages of nymphal development each separated by a moult
laying	Female locusts depositing clutches of 20 – 60 eggs into the ground in froth-lined egg pods
nymph	Juvenile wingless locust. Often referred to as the hopper stage
swarm	Dense aggregation of adults, milling at the same spot or flying closely together

### Locust density categories

Where higher densities occur, a large proportion of the regional population is concentrated in very small areas with lower densities elsewhere, so the higher densities cannot be extrapolated over the area of an entire region. A range of density classes is usually found within a surveyed region.

Nymph Densities	Number per m <sup>2</sup>		
Present	1	–	5
Numerous	6	–	30
Sub-band	31	–	80
Band	81	–	500
Dense Band	>500		

Adult Densities	Number per m <sup>2</sup>			Number per 250 m <sup>2</sup>		
Isolated		–	0.02	1		5
Scattered	0.024	–	0.1	6	–	25
Numerous	0.104	–	0.5	26	–	125
Concentration	0.504	–	3	126	–	750
Low Density Swarm	4	–	10	751	–	2,500
Medium Density Swarm	11	–	50	2,501	–	12,500
High Density Swarm	>50			>12,500		

General density classes	Nymph densities			Adult densities		
very low, occasional	Nil	–	Present	Nil	–	Isolated
low	Present	–	Numerous	Isolated	–	Scattered
medium	Numerous	–	Sub-band	Scattered	–	Numerous
high	Bands			Concentration	–	Swarms

### Reporting locust infestations

It is important that all locust activity is reported as soon as possible to your nearest state agriculture agency office or to the Australian Plague Locust Commission.

State	Authority for reporting locusts
New South Wales	Local Land Services (LLS) or Department of Primary Industries
Queensland	Biosecurity Queensland, Department of Agriculture and Fisheries
South Australia	Biosecurity SA, Department of Primary Industries & Regions
Victoria	Biosecurity and Agriculture Services, Department of Jobs, Precincts and Resources

Reports to the **Australian Plague Locust Commission** can be made by:

Free call (Canberra): 1800 635 962 (24 hours)

Fax (Canberra): (02) 6272 5074

Email: [aplc@agriculture.gov.au](mailto:aplc@agriculture.gov.au)

Website: [https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting\\_locusts](https://www.agriculture.gov.au/pests-diseases-weeds/locusts/landholders/reporting_locusts)