



Australian Government

Department of Agriculture, Fisheries and Forestry
Australian Plague Locust Commission

May 2010

Locust Bulletin

GENERAL SITUATION IN APRIL AND OUTLOOK TO SPRING 2010

Australian plague locust

Chortoicetes terminifera

Widespread swarm formation occurred in New South Wales, northern South Australia, northern Victoria and Southwest Queensland during early April after the fledging of the major nymph infestation during March. There have been three generations of population increase this locust season as a result of widespread heavy rainfall and favourable habitat conditions. Despite intensive control of the current generation in New South Wales, eggs laid in autumn will produce a further generation of high density nymphs next spring. Migration to the south during the first week of April brought many swarms into the Murray Valley and Northeast regions of South Australia, Northwest and North Central Victoria and the southern Riverina in New South Wales. Further southward migrations occurred in mid-April. High density autumn egg laying followed immigration into these regions, and has also taken place in other regions of New South Wales and Victoria. There have been many reports of damage to autumn fodder, vegetable, canola and cereal crops. The outlook is for swarm densities to decline during May and there is unlikely to be further significant long distance migration. A serious widespread nymph infestation is expected in New South Wales, northern Victoria and eastern South Australia during spring. The plague situation, where numerous regions across several member states are affected by high densities of locusts, could continue during spring and summer if there is a high level of nymphal survival in spring.

In New South Wales swarms affected the Western, Darling, Central West, Lachlan, Riverina, Hume and Central North Livestock Health and Pest Authority (LHPA) areas during April. Surveys and reports identified swarms and high density adults throughout grassland habitats in mid-April. Migrations in early and mid-April extended the distribution of swarms into previously lightly infested areas in the southern parts of Riverina and Western LHPA areas, which was followed by high density egg laying in many locations. There were also swarms in the Bourke–Brewarrina and Nyngan areas, in the Central West, Lachlan and northern Riverina LHPA areas, where swarm egg laying has continued. Widespread high density adults remained in the Tibooburra–Wilcannia area in mid-April, but the low number of swarms detected is the result both emigration and APLC control of nymphs during March. Hatching of eggs in spring will commence in late August in northern areas, during September in the Central West, Lachlan and Western LHPA areas and from the end of September in the Riverina.

In South Australia southward migration from the Far North region of that state and from western New South Wales during the first week of April resulted in increased swarm activity in the southern Flinders Ranges area of the Northeast region and throughout the Riverland in the Murray Valley region. Further movement to the south in mid-April brought swarms as far south as Bordertown and Keith in the Southeast region. On the eastern Eyre Peninsula adult numbers declined to medium densities by mid-April, following swarm egg laying in late March. Spring hatchings will commence in mid-September in the Hawker area and from the end of September in the Murray Valley.

Adult locust population levels continued to increase in northern Victoria during April. Further migrations from New South Wales and within Victoria resulted in dense swarms and egg laying in the Swan Hill, Mallee and Wimmera districts of the Northwest, and continued swarm activity in areas along the Murray River and in the Bendigo and Shepparton districts. Swarms were reported as far south as Horsham and Maryborough. Spring hatchings will commence at the end of September in Northwest Victoria, through to mid-October in areas south of Echuca.

1 May 2010

Australian Plague Locust Commission

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Spur-throated locust

Austracris guttulosa

Late instar nymphs and recently fledged adults were widespread in Central West and Southwest Queensland during April. Surveys in mid-April by APLC and Biosecurity Queensland identified consistent Numerous–Concentration and some swarm density adults, along with Present–Numerous density late instar nymphs, in the Longreach, Barcaldine and Blackall-Tambo Regional Council areas. In Bulloo Shire nymphs were recorded at Sub-Band density in several locations and widespread Numerous–Concentration density adults. Swarms moved into Longreach in early April, but densities in the township declined again two weeks later. Swarm reports were also received from Thargomindah, Blackall, Muttaborra, Tambo, Augathella, Charleville and Dirranbandi. The swarms are formed by young adults from this season's breeding and the continued presence of nymphs during April is likely to result in an increase in density and the formation of further swarms in late autumn and winter. Similar densities of adults are likely to be in the Queensland Gulf region, other Shires of Southwest and Northwest Queensland and in Murweh, Balonne and Paroo Shires in South Central Queensland. Only Isolated–Scattered density adults and very few nymphs were detected in the Central Highlands and the Roma Regional Council area.

In New South Wales Numerous–Concentration density fledglings and young adults were identified in the Brewarrina–Goodooga and the Tibooburra area of the Far West. Similar densities are likely to be in the Bourke and Wanaaring districts. In other districts of the Northwest and Central West LHPA areas there were consistent Scattered–Numerous density adults.

Light traps at Nooyeah Downs and Julia Creek caught high numbers of this species during April, while at Dulkaninna and Fowlers Gap low numbers were caught during 17–20 April. At Nooyeah Downs, peak numbers of several hundred each night were caught during 5–12 and 16–22 April, associated with migratory activity. At Nooyeah Downs over 1000 locusts were caught on 4 May, indicating the size of the population still in that area. At Oodnadatta in South Australia, there were moderate trap catches during 9–12 April.

An increase in adult numbers and formation of swarms in late autumn is usual for this species. Migratory activity of immature adults can result in regional population redistribution. Adults form largely sedentary swarms during winter in treed areas. The outlook is for a larger than average over-wintering adult population in parts of Southwest, Northwest and Central West Queensland as a result of the high early season population of breeding adults and widespread repeated heavy summer rains providing suitable conditions for repeated egg laying and nymph survival. The low population densities in the Central Highlands and South Central Queensland are below that in recent years, but gradual local redistributions during winter and spring, or migration at the start of the next wet season could result in an increase in swarm numbers in these regions.

Migratory locust

Locusta migratoria

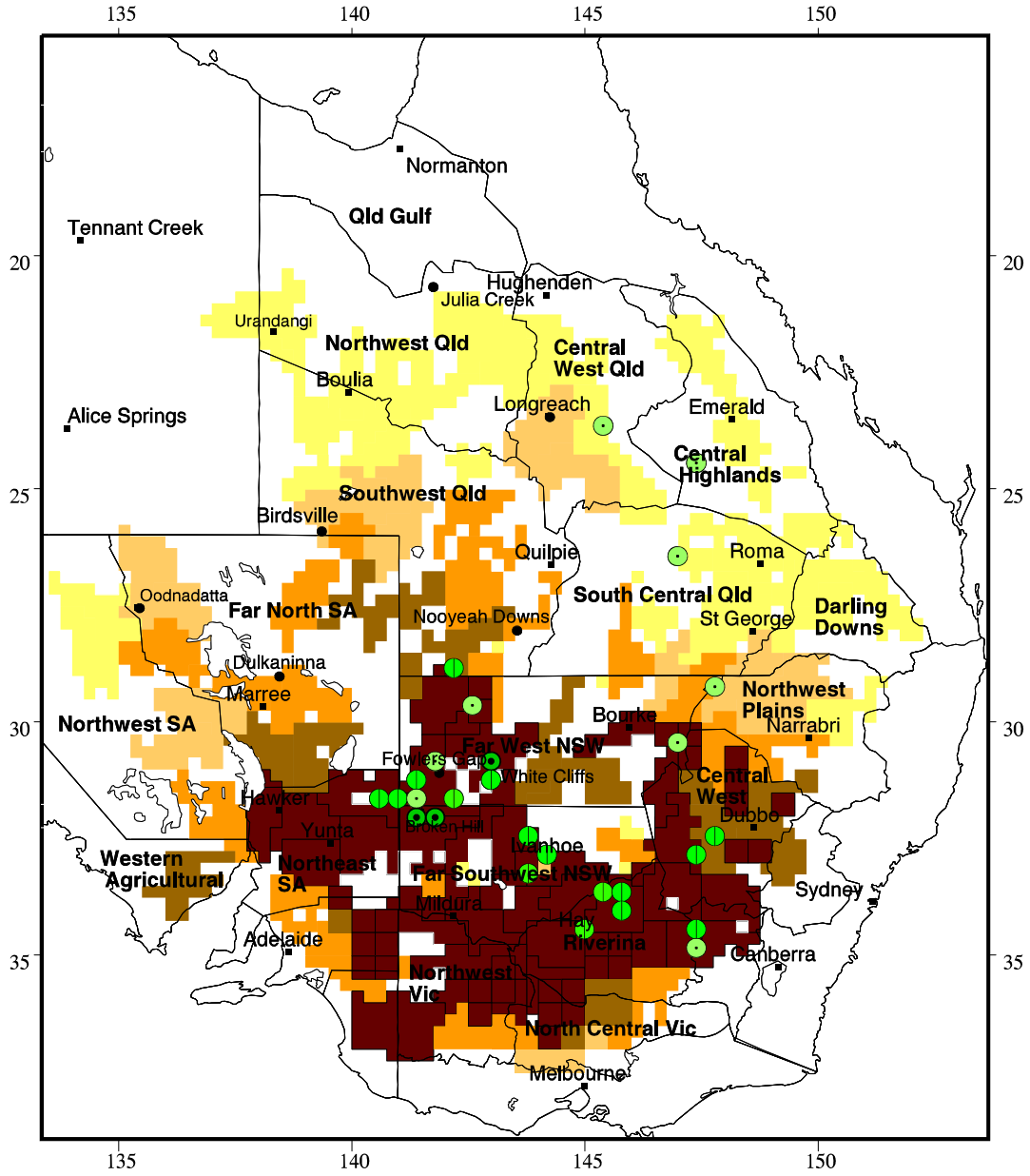
APLC surveys in the Central West, Central Highlands and Murweh and Roma Shires identified occasional Isolated density adults near Capella and Jericho. The Julia Creek light trap caught very low numbers of this species on several nights during April. While heavy summer rains and further rains in March and April provided suitable conditions for breeding and continued generations in Queensland, there is a low probability of gregarious populations developing in South Central or the Central Highlands of Queensland before 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 can be made on 1800 635 962. An answering machine is attached for after-hours calls. Reports can also be e-mailed to APLC at aplc@daff.gov.au or sent through the web page at <http://www.daff.gov.au/aplc>

Locust distribution map

Australian Plague Locust Distribution

1 April to 31 April 2010



Densities estimated for area of locust habitat, based on survey and reports

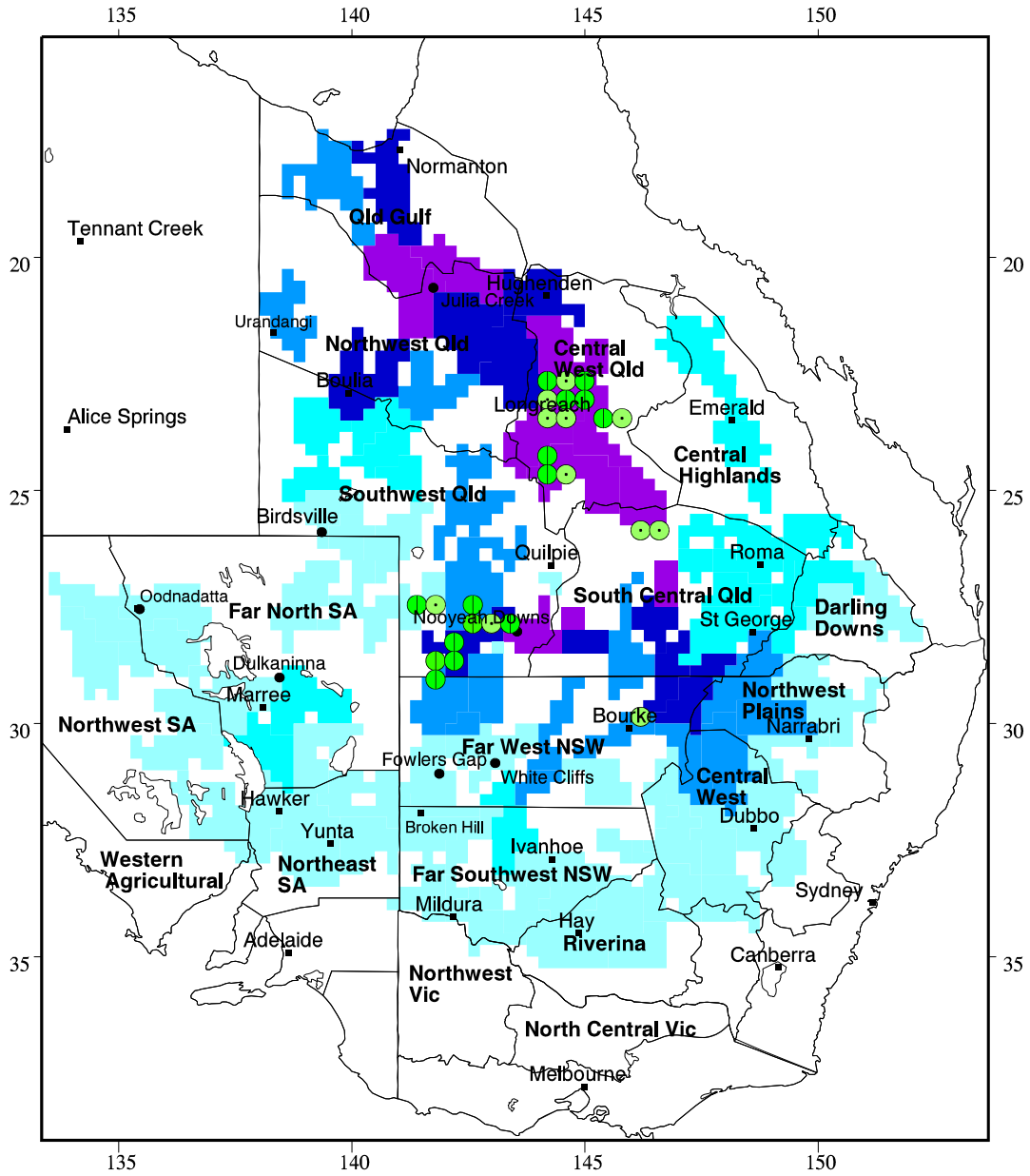
400km

Scale: ~1:14 million
Reference: geographic

nymphal density		adult density	
● present	● numerous-subband	■ nil-isolated	■ isol-scattered
● band	● APLC light trap	■ scat-numerous	■ num-concentration
		■ SWARMS present	

Locust distribution map

Spur-throated Locust Distribution
April 2010



Densities estimated for area of locust habitat, based on survey and reports

400km

Scale: ~1:14 million
Reference: geographic

nymphal density

- present
- numerous-subband
- band

adult density

- nil-isolated
- isol-scattered
- scat-numerous
- num-concentration
- SWARMS present

Forecast hatching and development times for indicative locations.

Location - NSW	Egg laying	Hatching	Mid-instar	Fledging
Brewarrina-Bourke	24 April	29 August	17 September	7 October
Tibooburra-Wanaaring	24 April	25 August	13 September	8 October
Broken Hill-Wilcannia	25 April	15 September	30 September	20 October
Ivanhoe-Hillston	16 April	21 September	6 October	26 October
Nyngan-Tottenham	24 April	20 September	5 October	26 October
Tullamore-Condobolin	16 April	5 October	19 October	17 November
Dubbo-Peak Hill	16 April	6 October	20 October	11 November
Parkes-Cowra	16 April	18 October	31 October	19 November
Forbes-West Wyalong	16 April	13 October	27 October	14 November
Hay-Balranald	16 April	5 October	19 October	7 November
Wagga-Cootamundra	16 April	25 October	6 November	26 November
Narrandera-Griffith	16 April	10 October	23 October	13 November
Jerilderie-Deniliquin	16 April	18 October	31 October	19 November
Location - Victoria	Egg laying	Hatching	Mid-instar	Fledging
Mildura-Ouyen	16 April	7 October	21 October	9 November
Swan Hill-Boort	16 April	16 October	29 October	17 November
Echuca-Bendigo	16 April	24 October	6 November	25 November
Shepparton-Tungamah	16 April	20 October	3 November	22 November
Horsham-Stawell	16 April	31 October	12 November	1 December
Location - SA	Egg laying	Hatching	Mid-instar	Fledging
Marree-Lyndhurst	16 April	25 August	5 September	1 October
Andamooka-Coober Pedy	16 April	28 August	8 September	4 October
Hawker-Orroroo	16 April	24 September	10 October	30 October
Renmark-Morgan	16 April	30 September	15 October	4 November
Pinnaroo-Karoonda	23 April	6 October	21 October	10 November
Keith-Bordertown	23 April	30 October	11 November	30 November
Kimba-Cowell	5 April	11 October	25 October	13 November
Port-Augusta-Quorn	16 April	21 September	6 October	27 October

Forecast dates are based on development models for known or estimated egg laying by adult populations and assume sufficient soil moisture for development after diapause. Dates are estimated from long term average temperatures. Dates indicate the start of the majority of the population entering the life stage. Actual egg laying will be different from the nominated dates and hatchings could extend for several weeks. Expect some variation around these dates as egg development is sensitive to temperature in late winter and earlier hatchings have occurred in recent years.

Australian plague locust***Chortoicetes terminifera*****SITUATION FOR APRIL AND FORECAST TO SPRING 2010****NEW SOUTH WALES****CENTRAL WEST****Lachlan, Central West and Central North Livestock Health & Pest Authority****Locusts and conditions**

- Swarm activity continued in localised areas of the Central West and Lachlan LHPA areas during April, but extensive swarm development occurred in the Nyngan and Condobolin–West Wyalong areas in the second half of the month. Swarm density egg laying continued in the Parkes–Forbes, Grenfell–Quandialla and the Condobolin–West Wyalong areas during April, and more sporadically in other parts of the region. High density adults and some egg laying was reported from several locations in Central North LHPA area in April.
- Reports during April indicated swarms persisting in the eastern parts of Lachlan LHPA, where egg laying was reported in some locations in the Cowra–Canowindra, Grenfell–Young, Parkes–Eugowra, Forbes–Quandialla and Yeoval–Cumnock areas. In late April swarm egg laying was reported near Armatree in the Coonamble district.
- In Central West LHPA, mid-April surveys identified Scattered–Numerous density adults in the Narromine–Warren and Coonamble–Quambone area, but several large swarms formed in the Nyngan–Hermidale area. In Lachlan LHPA, there were swarms in the Tottenham–Bobadah, Condobolin–Lake Cargelligo and the West Wyalong–Ungarie–Naradhan areas. Most swarm samples indicated a proportion of females were still developing eggs and some had already laid.
- Large swarms were reported in the Nyngan area from 9 April and egg laying by swarms in that area from 20 April. Survey identified continuous swarm density adults for 40 km between and to the south of Nyngan and Hermidale.
- Late instar nymphs were reported from south of Narromine and in Lachlan LHPA, while some hatching was reported from west of Nyngan in late April.
- Landholders and LHPA staff continued to carry out ground control of locusts in Lachlan and Central West LHPA areas during April.
- There was also a range of grasshopper species throughout the region, including *Oedaleus australis* and *Aiolopus thalassinus* at Concentration and swarm density in some locations. A number of locust reports from the Central West LHPA indicated mixed populations of *Chortoicetes* and other species. In mid-April there were mixed swarms of *Aiolopus thalassinus* and *Chortoicetes* from Forbes to Gooloogong in eastern Lachlan LHPA.
- In Central North LHPA reports of swarms were received from near Tambar Springs and Mullaey and also the Merrygoen–Gilgandra and Dunedoo–Mudgee area in early April and egg laying was reported in the middle of the month.
- There was widespread moderate rainfall (20–40 mm) in Central West LHPA, with heavy falls near Coonamble, and light rains (<20 mm) in Lachlan and Central North LHPA during the first week of April. There was further light rainfall across the region during the last week of April, with moderate falls in eastern areas of Central West and Lachlan LHPA areas.

Forecast

- Swarm development in Lachlan LHPA was primarily the result of fledging of nymphs within the region at the end of March. Some swarms in the eastern Lachlan and Central West in April were formed by older adults, which moved into these areas during March. Sporadic high density egg laying continued in many locations in Lachlan LHPA during April.
- The large swarms in the Nyngan area were likely to have been immigrants from the Far West of NSW, either from the Bourke or Wilcannia area. Swarms were first reported on a large scale on 9 April, and egg laying was reported after 20 April.
- High density adults are likely to continue to persist locally in this region, but adult numbers will decline during May with falling temperatures and after egg laying. The majority of eggs laid during April should enter diapause and not hatch until early September in the northern Central West, mid-September in the Nyngan–Tottenham area and late September in the Condobolin–West Wyalong area. A small

proportion of eggs could hatch in May and overwinter as nymphs. Spring hatchings are likely to commence in early October in the Forbes–Parkes area and after mid-October in the Molong and Wellington areas. Egg development is sensitive to temperatures in early spring and above average temperatures could result in earlier hatching dates.

- A widespread pest infestation with Bands of nymphs is expected in much of Lachlan LHPA and parts of Central West LHPA area in spring. The protracted laying of overwintering eggs in late March and throughout April is the result of the persistence of adults from March and the addition of a new cohort of adults during April. Areas of possible intense Band development include Hermidale–Nyngan–Tottenham, Tullamore–Condobolin, Lake Cargelligo–Ungarie–West Wyalong. However, Bands are likely to be more widespread throughout Lachlan LHPA.

Risk(s)

- There is a high probability that extensive egg laying by swarms in Lachlan and Central West LHPA areas during autumn will produce a high density nymphal generation with widespread Band development during spring.
- Adults are likely to persist in localised areas, but with declining densities during May. Further sporadic swarm egg laying is possible.

RIVERINA

Riverina and Hume Livestock Health & Pest Authority

Locusts and conditions

- Swarm numbers increased throughout the Riverina during April, following fledging of the March nymph population. Continuing southward migration of swarms resulted in the infestation extending from the northern and western parts of Riverina and Hume LHPA areas into the southern Riverina. Widespread high density egg laying has been recorded throughout the region and a serious nymphal infestation is expected to develop in October.
- There was an almost continuous distribution of Concentration–swarm density adults in the Hay and Narrandera districts in mid-April. The high population level is the result of repeated successful breeding events by local populations during summer. There have been swarms continuously present in northern and western parts of the region since February.
- Migration from Far Southwest and Far West NSW is likely to have contributed to the overall size of the April adult population.
- Continued egg laying from March swarms was reported in the Wagga and Narrandera districts in early April. Widespread fledging of Bands in late March and subsequent southward movements resulted in extensive swarm formation and a further period of egg laying in the Narrandera, Colleambally, Hay, Jerilderie, Deniliquin and Moulamein areas during the second half of April. Reports currently indicate high numbers of egg beds in the Ardlethan–Coolamon area of Narrandera district and areas south of Jerilderie, but high density egg laying has occurred throughout the region and continued to be reported at least until the end of April.
- Surveys during April identified swarms throughout the Hillston–Hay, Moulamein–Balranald, Colleambally–Jerilderie and Narrandera–Weethalle–Rankins Spings areas. Areas surveyed in mid-April in this region showed an extensive high population level, with consistent Concentration and swarm density adults at most sample locations. Samples showed a large proportion of females with fully developed eggs in most locations, indicating further egg laying would occur in late April.
- Surveys in mid-April identified Present–Numerous density late instar nymphs in the Ardlethan–Wagga area, and the Goolgowi area. In late April there were several reports of small Bands fourth instar nymphs in the Wagga–Coolamon area.
- Reports show adults moved into the eastern part of Hume LHPA. Adults and egg laying has been reported from Junee, Bethungra, Stockinbingal, Wallendbeen and Temora. Egg laying was reported near Wagga and The Rock in late March, but at this stage southern Hume LHPA has produced few reports.
- Landholders and LHPA staff continued extensive ground control across the northern Riverina and Hume LHPAs, and in the Moulamein area, throughout April. The sustained control efforts have had an effect on the size of swarms laying eggs in some areas, but the scale of the infestation and migrations in Riverina LHPA will produce widespread hatchings in spring.
- There was a southward movement of swarms in the first and third weeks of April, in association with warm air movements. This produced an increase in swarms in the Hay–Deniliquin area, and in areas from Jerilderie to the Murray River. Swarms were still active in the Riverina LHPA at the end of April,

and localised damage to autumn forage and cereal crops has been reported. Several dense swarms, up to several kilometres long, were reported in the Darlington Point–Carrathool area at the end of April.

- There was light rainfall (<20 mm) in the Hay district and moderate falls around Balranald during the first week of April. There were localised light falls around Urana and Narrandera during 16-23 April, followed by widespread light rainfall and moderate falls in parts of Hume LHPA during the last week of the month.

Forecast

- A widespread major infestation of nymphs, forming many Bands will occur in spring. The intensity of Band development in some areas will result from repeated laying of diapause eggs from mid-March and throughout April.
- A large autumn egg population throughout the Riverina is indicated by the number of confirmed egg bed reports and the extent of swarm distribution during April. This which will produce a significant high density population of nymphs in late September and October. High density egg laying can be expected to have occurred in most areas where swarms were active during April.
- The fourth instar nymphs reported in the Wagga area in late April would have hatched from eggs probably laid in the half of week of March. Any hatchings or areas of younger nymphs are likely to represent a small proportion of eggs laid after that time.
- Hatching will commence at the end of September in the Hay and Narrandera districts, and from early October in the Wagga, Murray and Riverina districts. However, extended egg laying during April and early May could produce protracted hatchings for a number of weeks after initial hatchings of diapause eggs.

Risk(s)

- There is a high probability that a serious pest infestation of nymphs forming many Bands will develop during October and November.
- Local movements of remaining swarms could continue in May and some further localised crop damage is possible, but there is unlikely to be further long distance migrations.

NORTHWEST SLOPES & PLAINS

Northwest Livestock Health & Pest Authority

Locusts and conditions

- Locust population remained at low–medium densities in most areas during April, but several swarms were identified in the southern corner of the Walgett district to the west of Carinda. Surveys were restricted by flooding in some areas.
- Surveys were conducted in the Walgett, Moree and Narrabri districts in mid-April. Scattered–Numerous density adults were identified in most areas of Walgett and Narrabri districts, while there were Isolated–Scattered density adults in the Moree district. There were also occasional mid-instar nymphs in the Walgett–Lightning Ridge area.
- There was moderate rainfall (20–40 mm) in the Walgett district during the first week of April, then widespread light rainfall (<20 mm) in all districts during 8–15 April.

Forecast

- Some local movement of the swarms identified in the adjacent Brewarrina district in mid-April could increase adult density in the western part of Walgett district during early May and lay diapause eggs. Along with any eggs laid during April, these eggs could produce localised medium–high density nymphs during late August.
- This region appears to have the lowest infestation level of all reporting regions in NSW. Surveys suggest there was no significant immigration during April and there is a low probability of immigration from Far West NSW or South Central Qld during May.

Risk(s)

- A widespread nymphal population in this region is unlikely during spring, but some localised high density nymphs could develop in the western areas of the Walgett district.

FAR WESTERN

Darling and Western Livestock Health & Pest Authority

Locusts and conditions

- A large number of swarms formed in the Tibooburra–Broken Hill–Wilcannia area in early April, following the fledging of Bands in Western LHPA in late March. Swarm activity continued to mid-April and southward migrations brought swarms to Broken Hill. Migrations resulted in a reduction in adult densities in areas north of Broken Hill by late April. Swarms also developed in the Bourke–Brewarrina area.
- APLC carried out aerial control of Bands in the Tibooburra–White Cliffs area during 14–25 March and a total of 170,000 ha of infestation were treated.
- Surveys in response to reports of immigration in early April identified several swarms in the Broken Hill–Eldee area on 7 April. Surveys on 19–20 April identified consistent Numerous–Concentration density adults throughout the Tibooburra–Packsaddle, Wanaaring–White Cliffs and Wilcannia–Broken Hill areas, along with swarms in a number of locations. There were occasional late instar nymphs in favourable locations. Survey near Broken Hill identified Concentration density young adults and Numerous density late instar nymphs on 22 April. The distribution of adults in the northern Bourke district during April was likely to have been similar to that in surveyed areas.
- Swarm egg laying was confirmed at Langawirra, northeast of Broken Hill, at the start of May.
- The light trap at Fowlers Gap caught high numbers of locusts during 5–11 and 17–22 April, while at White Cliffs there were high numbers 5–9 April and lower numbers during 18–22 April.
- There was moderate–heavy rainfall (20–>40 mm) in the Bourke, Wanaaring and Brewarrina districts during the first week of April, and further light falls (<20 mm) in the Bourke, White Cliffs and Broken Hill districts during 8–15 April.

Forecast

- The fledging of the widespread high density nymph population began in late March and continued into the first week of April. Many fledgling and young adult swarms were present in early April. The light trap catches and wind trajectories are consistent with migratory activity in the first week and third weeks of April in a generally southward direction. Reports of swarms arriving in the first week of April west of Broken Hill and of immigration in South Australia would support nocturnal long distance migration on warm depressions ahead of the passage of frontal systems.
- The presence of remaining low density late instar nymphs near White Cliffs and Broken Hill as late as 20 April indicates sporadic egg laying occurred into mid-March in some localities.
- There was the potential for widespread egg laying to have occurred within this region during April and further egg laying is possible during May. While habitat conditions remain favourable for locust breeding, there have been few confirmed reports of egg laying in areas north of Broken Hill and the extent of a possible generation of nymphs in early spring is difficult to estimate.
- Rainfall in the Wanaaring and Bourke districts during April could have initiated egg laying by remaining high density adults in those areas. Swarms remained in the area south of Brewarrina in mid-April could have laid in late April. Any eggs laid in the northern section of this region would commence hatching from late August and in the Broken Hill, Wilcannia and Cobar areas from mid- September. Higher than average temperatures could allow hatchings to be up to two weeks earlier.
- Further significant long distance migrations from this region are unlikely during May.

Risk(s)

- There is a moderate probability that high density egg laying occurred in several locations in the region. Bands of nymphs could develop in many areas of Western and Darling LHPA during September.

FAR SOUTHWEST

Western Livestock Health & Pest Authority

Locusts and conditions

- Swarms formed after the widespread infestation of nymphal Bands fledged at the end of March. Swarms extended through much of the region during April, including the Hillston–Ivanhoe–Booligal and Pooncarie–Wentworth–Willandra Lakes areas and there were several southward migratory movements. Swarm egg laying was reported in the Balranald–Clare area and sporadic egg laying may continue during May. A widespread pest infestation of nymphs is expected to develop during spring.

- Surveys in mid-April identified almost continuous Concentration–swarm density adults in the Ivanhoe–Mossgiel–Hillston–Booligal area and in open habitat areas in the Pooncarie–Wentworth–Willandra Lakes–Clare area.
- There were reports of swarms from several properties along the lower Darling River and the Hatfield area in late April and egg laying was reported from 19 April. Dense swarms were reported in the area north of Wentworth to Coomba in mid-April.
- There was widespread light rainfall (<20 mm) across the region, with some moderate falls in the Ivanhoe district, during the first week of April. There were moderate falls (20–40 mm) in the Broken Hill area during 8–15 April, and light in the Balranald–Oxley area during the last week of the month.

Forecast

- Southward migration of swarms formed in this region and from Far West NSW increased swarm numbers in the southern part of region in mid-April. Significant migrations occurred in the first week of April and during 16–23 April, resulting in migration into the western Riverina, Northwest Victoria and the Murray Valley of South Australia. Further local swarm movements are possible in May, but major long distance migrations are unlikely.
- Swarms are likely to persist in some areas during May, but population density will gradually decline as a result of natural mortality after breeding and egg laying, and reduced temperatures.
- Swarms are likely to have moved into the Lake Victoria area west of Wentworth.
- High density egg laying is likely to have been more widespread in this region than reports indicate. Hatchings of nymphs in the Ivanhoe area will begin in mid-September and in the Balranald–Wentworth area from the end of September.

Risk(s)

- The persistence of swarms in this region will pose a risk of possible localised damage to early cereal and fodder crops in the southern districts of this region during May.
- There is a high risk of a pest infestation of nymphs occurring in September and October, with Bands developing in many locations.

All locust activity should be reported to your Livestock Health and Pest Authority or Primary Industries, Industry and Investment NSW. A toll-free call to the APLC can be made on 1800 635 962. An answering machine is attached for after-hours calls. Reports can be emailed to APLC at apl@daf.gov.au or sent through the web page at <http://www.daff.gov.au/aplc>

QUEENSLAND**SOUTHWEST****Barcoo, Bulloo, Quilpie and Diamantina Shire****Locusts and conditions**

- There was a widespread medium–high density adult population in Bulloo Shire during April. A similar distribution was likely in some other parts of the region.
- Survey in Bulloo Shire in mid-April identified consistent Concentration density adults in the Tickalara–Nockatunga area where control had been carried out on Bands in March. There were Scattered–Numerous density adults in the Nappa Merrie–Kihee area. Some Numerous density late instar nymphs were detected near Tickalara.
- There was a report of several Bands seen in the area west of Windorah in mid-April.
- The Nooyeah Downs light trap recorded high numbers of locusts during 5–12 April and low numbers during 16–23 April.
- There was patchy light rainfall (<20 mm) across all shires and moderate (20–40 mm) falls in western Bulloo and Barcoo Shires during 8–15 April. There were further scattered light rains in parts of Quilpie and Diamantina Shires during 16–23 April. Vegetation conditions remained favourable for locust breeding in areas that were flooded during summer.

Forecast

- The limited survey in this region in recent months makes estimation of the autumn population outside Bulloo Shire difficult. Adults are likely to be widespread at Scattered–Numerous density, but there may have been egg laying in February or March in other areas.
- Swarms were expected in Bulloo Shire, but adult densities show the effect of control and may have declined as a result of emigration in early April.
- Migration of young adults from this region during 4–8 April may have contributed to swarms in other regions. While some movement to Far North SA was possible on 4 April, nocturnal migrations after this time would have been into Far West NSW or redistributed locusts within western Qld.
- Some localised high density egg laying was possible in Bulloo Shire in the second half of April. This would have produced mostly diapause eggs, which would hatch from mid-August. Some Bands of nymphs could develop in this area during September.
- Egg laying in Barcoo or Quilpie Shire in March or April could have produced localised nymphs which would maintain a medium density adult population into winter.
- There is unlikely to be further long distance migration from this region in May.

Risk(s)

- There is a moderate probability that some egg laying occurred in favourable habitat areas in this region in late April and of some high density nymphs developing in localised areas in early spring.

CENTRAL WEST & NORTHWEST**Longreach, Barcaldine and Blackall-Tambo Regional Council. Boulia, Cloncurry, Flinders, McKinlay, Mt Isa, Richmond and Winton Shire****Locusts and conditions**

- Population density in this region declined to low levels during April.
- Survey in mid-April in Longreach, Blackall-Tambo and Barcaldine Regional Council areas and in Winton Shire identified only occasional Isolated density adults. At one location near Longreach there were Present density late instar nymphs and Numerous density adults.
- The Longreach and Julia Creek light traps recorded no significant activity during April.
- There were heavy rains (>40 mm) in Winton and Flinders Shires, and light falls in other parts of these region during the first week of April. There were further widespread light rains throughout the Central West region and eastern Winton Shire during 8–15 April, and in parts of Barcaldine Shire during the last week of the month.

Forecast

- Survey detected no evidence of significant immigration from Southwest Qld during April. The decline in *Chortoicetes* densities may partly be a result high numbers of other species in the region.

- Sporadic late autumn egg laying is possible, which could produce localised low density nymphs during winter or in August.

Risk(s)

- No significant risks are identified during the forecast period.

CENTRAL HIGHLANDS**Central Highlands and Isaac Regional Council****Locusts and conditions**

- Population density in this region was very low during April. There were no reports of locust activity.
- Survey was conducted in Central Highlands and Isaac Regional Council areas in mid-April. Only occasional isolated density adults were detected. Present density late instar nymphs were found at one location southwest of Springsure.
- There was variable moderate rainfall (20–40 mm) in both Regional Council areas and some locally heavy storm rains during 8–15 April.

Forecast

- The very low population level in the region is likely to continue during spring.

Risk(s)

- No significant risks are identified during the forecast period.

SOUTH CENTRAL QUEENSLAND & DARLING DOWNS**Balonne, Murweh and Paroo Shire. Roma, Dalby and Goondiwindi Regional Council****Locusts and conditions**

- Population density in this region remained generally low and there were no reports of locust activity.
- Survey was conducted in parts of Roma Regional Council and Murweh Shire in mid-April. There were occasional isolated density adults in the Roma–Mitchell area, but consistent isolated-scattered density adults and fledglings, along with present density late instar nymphs, in the Morven–Augathella area.
- There was moderate–heavy rainfall (20–>40 mm) in parts of Dalby Regional Council Area during the first week of April. There were patchy light falls (<20 mm) in Balonne Shire and Roma and Goondiwindi Regional Council Areas during each of the first two weeks of April.

Forecast

- The small population in the Morven area indicates some low level breeding occurred in early March. This may have been more widespread in the region, but is unlikely to produce a significant increase in population in May.
- Survey found no evidence of any significant immigration from Southwest Qld or the Brewarrina area of NSW during April.
- There may still be a population remaining from the summer infestation in suitable habitats in western Paroo Shire.
- Some nymphs may appear in Murweh or Paroo Shire during August–September, but a continuing low density population is likely in most Shires and Council areas during spring.

Risk(s)

- There is a moderate probability of a continuing medium level population in parts of Paroo Shire.

Locust activity should be reported to Biosecurity Queensland (Queensland Primary Industries & Fisheries). A toll free call to the APLC can be made on 1800 635 962. An answering machine is attached for after-hours calls. Reports can be emailed to APLC at aplc@daff.gov.au or sent through the web page at <http://www.daff.gov.au/aplc>.

SOUTH AUSTRALIA

FAR NORTH, NORTHWEST & WESTERN AGRICULTURAL REGION**Locusts and conditions**

- Fledging of nymphs across the Far North region at the end of March would have produced swarms in the Marree–Lyndhurst and northern Flinders Ranges areas, where Bands were reported during March. Several periods of migration during April resulted in swarms moving generally southward. Sporadic swarm density egg laying is likely to have occurred in habitats where vegetation remained green during April. On the eastern Eyre Peninsula, where there had been localised high density adults and sporadic egg laying in late March, adult densities declined to medium densities by mid-April.
- No APLC survey was conducted in these regions during April. Few reports were received to indicate the extent of swarm formation, but Band reports in late March from properties on the eastern and western side of the Flinders Ranges suggest that a number of swarms would have developed in early April.
- The Eyre Peninsula does not appear to have received further significant immigration from regions to the north during April. Survey by PIRSA staff in mid-April detected mostly Numerous and some Concentration density adults in the Cowell–Kimba area, and Isolated–Scattered density adults further north. Some redistribution in mid-April is indicated by reports of locusts as far south as Port Lincoln in late April.
- The Dulkaninna light trap recorded high numbers of locusts during 17–20 April. Adult numbers around Dulkaninna were reported to have declined around that time. At Oodnadatta, high numbers were caught during 6–12 April. Wind directions during the former and part of the latter period was to the south.
- There was moderate–heavy rainfall (20–>40 mm) in the northern Flinders Ranges area and around Roxby Downs in the Northwest during 8–15 April, along with scattered light rains (<20 mm) in other parts of the Far North and Northwest. There were further moderate falls around Andamooka and patchy light rains (<20 mm) in the Far North and Northeast regions during 16–23 April.

Forecast

- The scale of the adult population which developed from nymphs in northern areas during March is difficult to estimate, but reports of Bands indicated that the northern Flinders Ranges, the Marree–Dulkaninna area and as far north as Innamincka would have produced swarms in early April. Southward migrations from the Far North region contributed to the increase in swarms in the Northeast and Murray Valley regions.
- Some sporadic swarm egg laying may have occurred in habitats remaining green in mid-April in the Far North. Some localised nymphs, and possibly some Band development, are likely during spring given the adult vegetation conditions and population size, particularly on properties around the northern Flinders Ranges. A small proportion of any eggs could hatch during May. Spring hatching in the Marree area will commence in late August and in mid-August in the Moomba–Innamincka area.
- Rainfall during mid-April around the northern Flinders Ranges and Roxby Downs areas could have prompted some swarm egg laying activity. A nymphal population and some localised Band development are possible in these areas in September.
- Hatchings on the Eyre Peninsula will commence in early October.

Risk(s)

- Localised small Bands are likely to develop in the Kimba–Buckleboo area during October.
- Bands could develop in the northern Flinders Ranges area and in some drainage lines further north in the Far North or southern Northwest region from late September.

NORTHEAST, MURRAY VALLEY & SOUTHEAST REGION**Locusts and conditions**

- There were reports of locusts arriving in the Riverland of the Murray Valley from mid-March, but major immigration in the first week of April resulted in many swarms moving into the southern Northeast and Murray Valley regions. Swarms continued to move southwards during April into the Murray Mallee and by mid-April swarms were reported at Pinnaroo and Bordertown in Southeast SA. Widespread swarm

egg laying occurred from mid-April. A similar pattern of southward migration occurred in the southern Flinders Ranges area where there were swarms from Hawker–Peterborough and in the Port Augusta–Wilmington area in mid-April, and reports as far south as Kadina on the Yorke Peninsula in late April. A widespread nymph infestation is expected in spring.

- Surveys by PIRSA staff in mid-April identified swarms from Parachilna south to Quorn in the southern Flinders Ranges area, the Port Augusta–Port Germein area and Peterborough–Jamestown area, extending south to Morgan. In the Riverland swarms were identified in pasture areas from Renmark to Swan Reach, with many swarms in the Malpas–Mindarie and Maggea areas. Widespread swarm egg laying has been reported in the Riverland district.
- In mid-April swarms were reported in the Pinnaroo–Karoonda areas of the Southern Mallee district and around Bordertown in the Southeast region, although fewer swarms reached these areas.
- There was light–moderate rainfall (20–40 mm) in the Murray Valley and Southeast regions, and some light falls (<20 mm) in the Northeast, during the first week of April. There were further scattered light rains in these regions during each of the next three weeks of April.

Forecast

- The pattern of swarm reporting from Sturt Vale to Burra on 5 April, and also in the Riverland during 5–7 April, indicates a significant southward migration event beginning on April 4. Swarms were described as flying continuously during the day of 5 April. This suggests a combination of nocturnal and day flight migration. Wind trajectories during 4–8 April show northerly winds on 4–5 April and then westerly winds on 6–8 April. The swarms in the Riverland are therefore likely to have been immigrants from the eastern side of Flinders Ranges, where several properties reported Bands in March, and from western NSW, where nocturnal migration on 4–5 April could have transported locusts to the Murray Valley. Movement on subsequent nights could have contributed to increased locust numbers in northwest Victoria.
- Swarms in the southern Flinders Ranges and Port Augusta areas are likely to be immigrants from the north, where properties as far north as Marree reported Bands during March. However, there was already a significant population and Bands in the Hawker area during March, which also contributed to the swarms in this area in April.
- Continued southward migrations of adults within SA occurred during mid-April, and there were possibly some exchange movements into and from Victoria. The spread of swarms as far south as Bordertown by mid-April indicates further southward swarm migration.
- Winds during the period 16–18 April would have provided another opportunity for significant long distance migration from the north, and immigration from western NSW into the Northeast and Murray Valley regions was possible at that time.
- The majority of eggs laid during April will enter diapause and not hatch until spring. Some low density hatchings are possible in late April, from eggs laid in late March or early April. A serious nymphal infestation is expected in spring in the southern Flinders Ranges from Parachilna south to Orroroo and Peterborough. Hatching is likely to commence in the Hawker area from mid-September and in late September around Burra–Morgan.
- A serious nymphal infestation with Band development is expected in the Murray Valley region during spring. Hatching should commence in the first week of October in the Riverland, but could be up to ten days earlier if temperatures are above average in August and September. Further egg laying during May could produce eggs which hatch one or two weeks later and result in protracted emergence of nymphs during October. Hatching further south around Pinnaroo and Bordertown will commence after mid-October, where the number of high density hatching is likely to be more sporadic.

Risk(s)

- There is a high risk of a significant nymphal infestation developing in farming districts of the southern Flinders Ranges, extending south to Orroroo, Peterborough and Jamestown.
- There is a high risk of a significant nymphal infestation developing in the Riverland and southern Mallee districts of the Murray Valley during October and November.
- The persistence of high densities of adults in cropping areas in the Northeast and Murray Valley regions during May will pose a continuing risk of localised damage to emerging cereal crops and some residual adults may remain in these areas during June.

Locust activity should be reported to Primary Industries & Resources SA (PIRSA) on 1300 666010. A toll-free call to the APLC can be made on 1800 635 962. An answering machine is attached for after-hours calls. Reports can be emailed to APLC at apl@daf.gov.au or sent through the web page at <http://www.daff.gov.au/aplc>.

VICTORIA

NORTHWEST AND NORTH CENTRAL VICTORIA**Locusts and conditions**

- Locust activity continued to increase across northern Victoria during April and widespread swarm activity and egg laying was reported from many areas. Further immigration and southward migration within Victoria resulted in an increase in swarm numbers, and reports as far south as Horsham in Southwest Victoria. The serious swarm infestation continued throughout April and significant damage to emerging crops has been reported. A major pest infestation of nymphs is expected to develop in October and November.
- Further immigration from the western Riverina, Far Southwest NSW, and possibly the Murray Valley of SA in the first and third weeks of April contributed to an increase in swarm numbers in the Mallee and Wimmera districts, in areas south from Swan Hill to Maryborough and from Echuca south to Bendigo. Widespread egg laying has been reported.
- Swarms continued to move southwards during April and by the middle of the month were reported near Stawell, St Arnaud and at Toolondo, south of Horsham.
- High density adults were reported in the Bendigo–Heathcote and Shepparton–Numurkah areas from mid-March and activity continued in these areas throughout April. Egg laying was also reported in these areas during April.
- Areas of highest intensity swarm activity and egg laying have been Mildura–Ouyen–Sea Lake, Swan Hill–Boort–Wedderburn, Kerang–Mitiamo–Rochester and Hopetoun–Horsham. Egg laying is also likely to have been widespread in areas along the Murray River, around Bendigo–Eltham, Shepparton and as far east as Tungamah.
- The current swarm infestation in Victoria is more widespread than has occurred since at least 1974. It is the cumulative result of an increasing resident population in northern Victoria over locust the season and several immigrations from southern NSW during March and April.
- Low density hatchings were reported from near Hopetoun in late April.
- There was widespread moderate rainfall (20–40 mm) in Northwest Victoria and the Bendigo area, with light falls in other parts of North Central Victoria, during the first week of April. There were further widespread light rains (<20 mm) during the second and third weeks of April.

Forecast

- Swarms will persist in some locations during May, but densities should decline as adults complete egg laying and temperatures fall. Some local movement of swarms is possible and further localised crop damage can be expected, but further long distance immigration is unlikely.
- The report of hatchings near Hopetoun possibly relates to the first swarm egg laying reports in late March. These nymphs would represent a small proportion of eggs laid, as the majority of eggs laid at that time, and throughout April, will be in diapause and not hatch until spring.
- A serious pest infestation of nymphs is likely to develop during spring, particularly in Northwest Victoria. Bands can be assumed to develop in spring in areas where intense swarm activity and egg laying occurred in autumn. Hatching will commence in the Mildura–Swan Hill area from late September, at Ouyen, Echuca and Shepparton from early October, around Bendigo–Wedderburn from mid-October and in areas around Horsham in late October. However, egg development in early spring is sensitive to temperature variation and if temperatures are consistently above normal at that time, hatchings could occur up to two weeks earlier. Hatchings could extend for several weeks during spring as a result of the extended period of egg laying from late March through to May.
- There has been a population in the Swan Hill–Echuca area throughout the season and localised breeding in November and January resulted in the persistence and increase in locust densities in Victoria. The extent of other local population increases is unclear, but populations in southern NSW increased through several breeding events during this season. Low density nymphs have been identified in the Swan Hill–Echuca area since December 2009.

Risk(s)

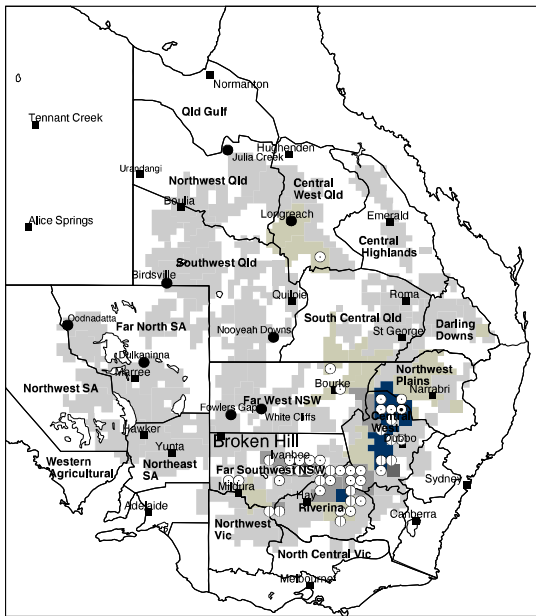
- There is a high probability of a widespread pest infestation of nymphs developing in October and November.
- Local movements of remaining adults during May and June could pose a continuing risk of localised damage to early cereal and fodder crops.

Locust activity should be reported to the Department of Primary Industries, Victoria on 1300 135559. A toll-free call to the APLC can be made on 1800 635 962. An answering machine is attached for after-hours calls. Reports can be emailed to APLC at aplc@daff.gov.au or sent through the web page at <http://www.daff.gov.au/aplc>.

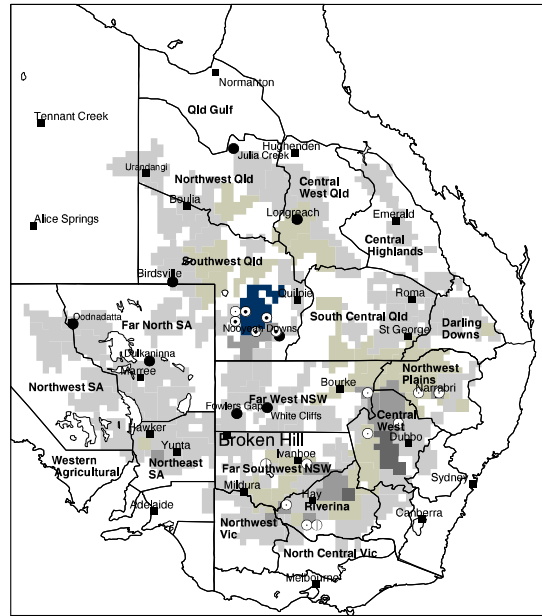
Previous distribution maps

Previous Australian Plague Locust Distributions

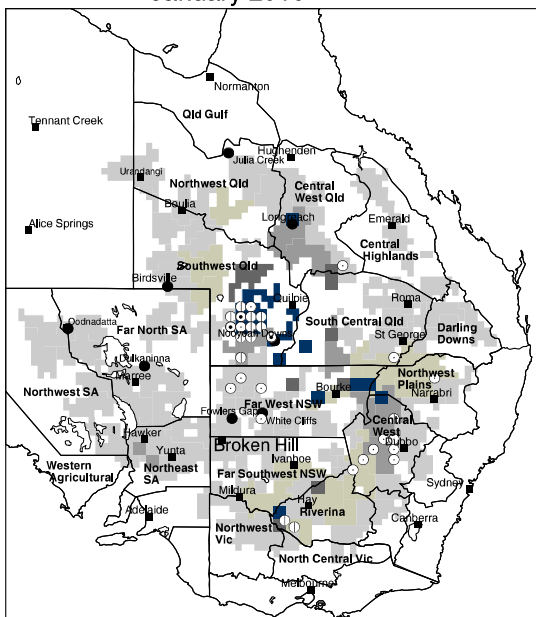
November 2009



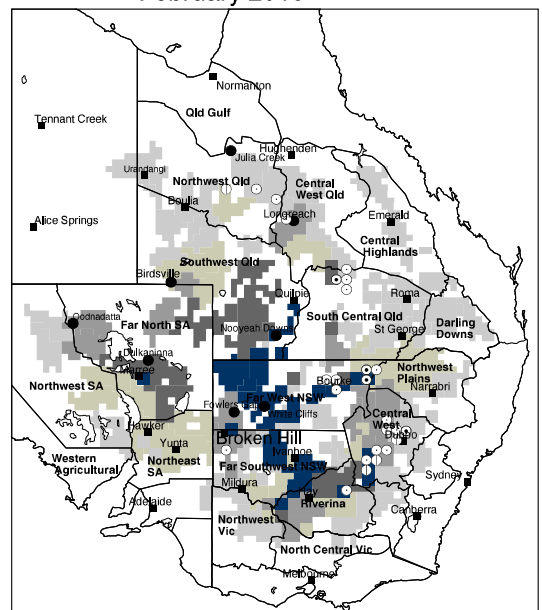
December 2009



January 2010



February 2010



Densities estimated for areas of locust habitat, based on survey and reports

nymphal density

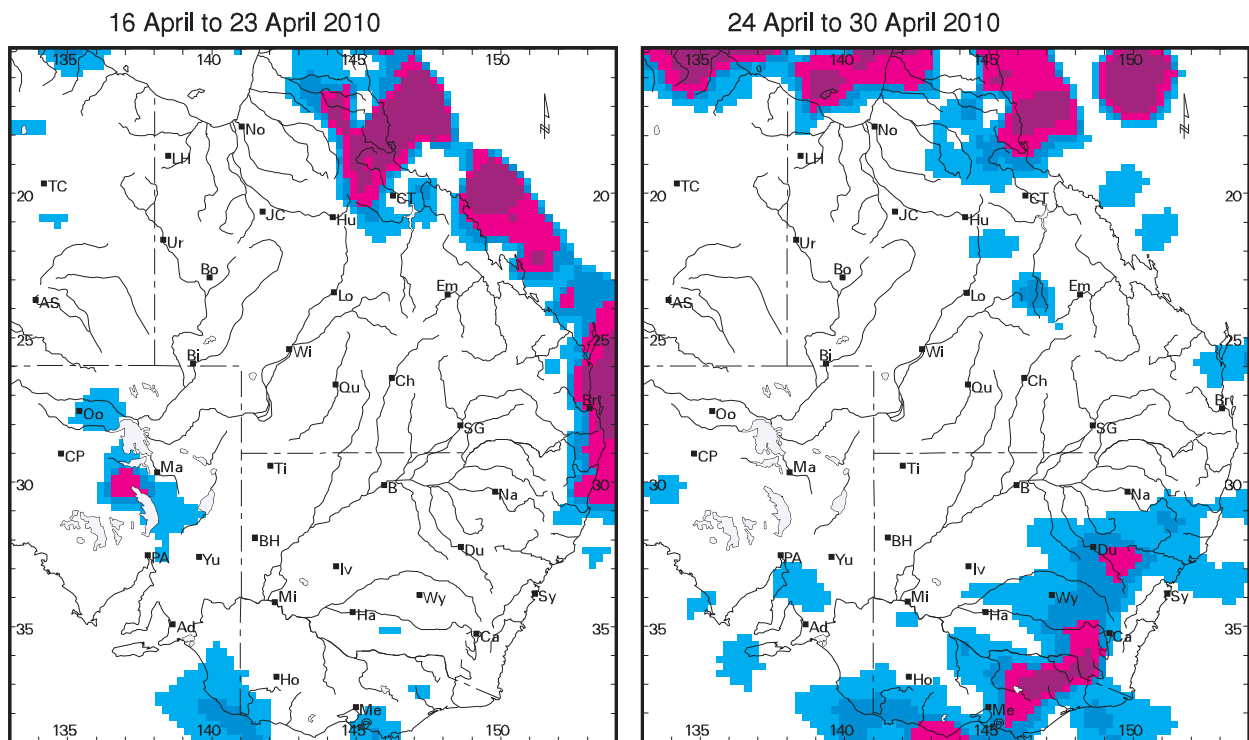
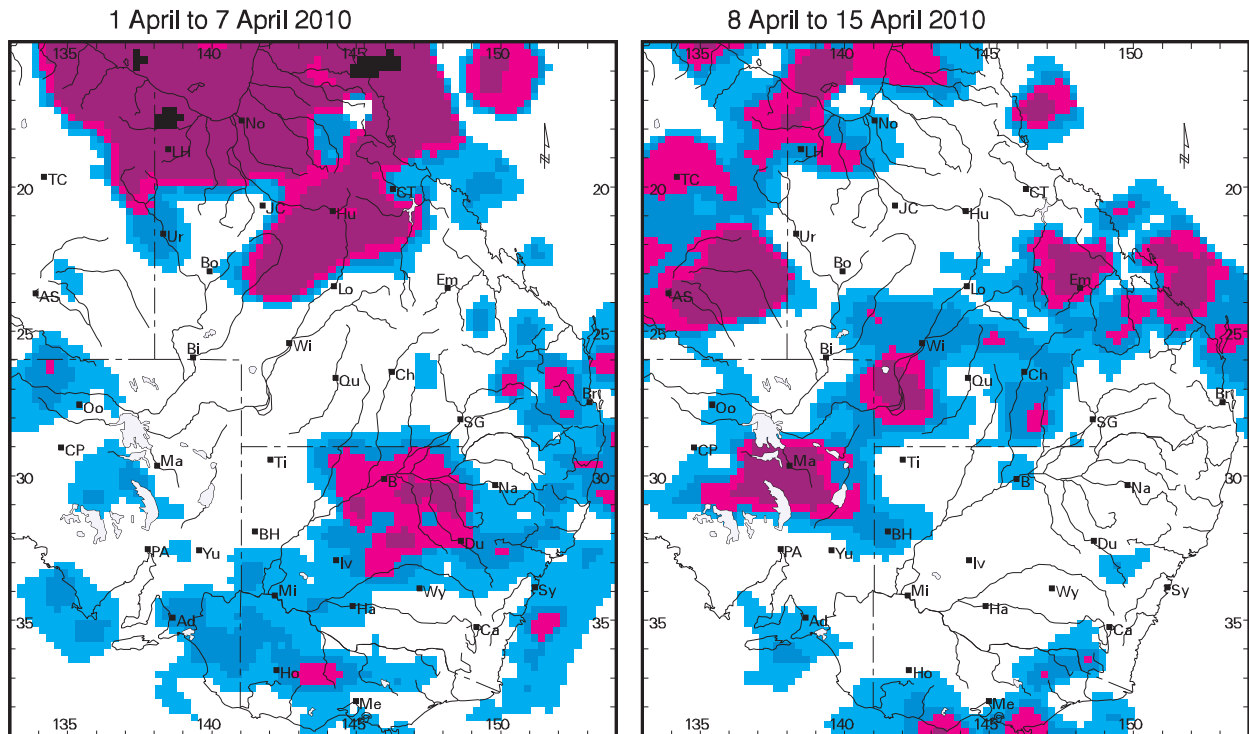
adult density

- present
- ⊙ numerous-subband
- ⦿ band

- nil-isolated
- isol-scattered
- scat-numerous
- num-concentration
- SWARMS present

Rainfall maps

Rainfall Distribution

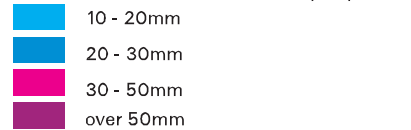


Shows major rainfall events during previous forecasting period

Source: Bureau of Meteorology- National Climate Centre (SILO)

Base: Geoscience Australia TOPO-10M Reference: geographic

Rainfall total to 9:00am on last day of period



Place name key for rainfall distribution map

Queensland

Bo	Boulia
Br	Brisbane
Bi	Birdsville
Ch	Charleville
CT	Charters Towers
Em	Emerald
Hu	Hughenden
JC	Julia Creek
LH	Lawn Hill
Lo	Longreach
No	Normanton
Qu	Quilpie
SG	St. George
Ur	Urandangi
Wi	Windorah

Northern Territory

AS	Alice Springs
TC	Tennant Creek

South Australia

Ad	Adelaide
CP	Coober Pedy
Ma	Marree
Oo	Oodnadatta
PA	Port Augusta
Yu	Yunta

Victoria

Ho	Horsham
Me	Melbourne
Mi	Mildura

New South Wales

B	Bourke
BH	Broken Hill
Du	Dubbo
Ha	Hay
Iv	Ivanhoe
Na	Narrabri
Sy	Sydney
Ti	Tibooburra
Wy	West Wyalong

Aust. Capital Territory

Ca	Canberra
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Glossary of locust density terms and abbreviations used in the Locust Bulletin

Where higher densities occur, a large proportion of the regional population is concentrated in 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 ²	
Present	1 -	5
Numerous	6 -	30
Sub-band	31 -	80
Band	>	80

Adult Densities

	Number per m ²		Number per hectare
Isolated	-	0.02	< 200
Scattered	0.03 -	0.1	>200 – 1000
Numerous	0.2 -	0.5	>1000 – 5000
Concentration	0.6 -	3.0	>5000 – 30,000
Low Density Swarm	4.0 -	10	>30,000 – 100,000
Medium Density Swarm	11 -	50	>100,000 – 500,000
High Density Swarm	>	50	>500,000

General density classes

very low, occasional
low
medium
high

Nymph densities

Nil-Present
Present-Numerous
Numerous-Sub-band
Bands

Adult densities

Nil-Isolated
Isolated-Scattered
Scattered-Numerous
Concentration-Swarms

Reporting locust infestations

It is important that all locust activity is reported as soon as possible to your nearest Department of Primary Industries office or to the Australian Plague Locust Commission.

State	Authority to report locust infestations to
New South Wales	Livestock Health & Pest Authority (LHPA) or Primary Industries, Industry and Investment NSW.
Queensland	Biosecurity Queensland (Primary Industries & Fisheries).
South Australia	Primary Industries & Resources South Australia (PIRSA) (Plant Health: 1300 666 010)
Victoria	Department of Primary Industries, Victoria.

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

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

Fax (Canberra): (02) 6272 5074

E-mail: aplc@daff.gov.au

Internet: <http://www.daff.gov.au/aplc>

Forecasting Regions used in the Bulletin

