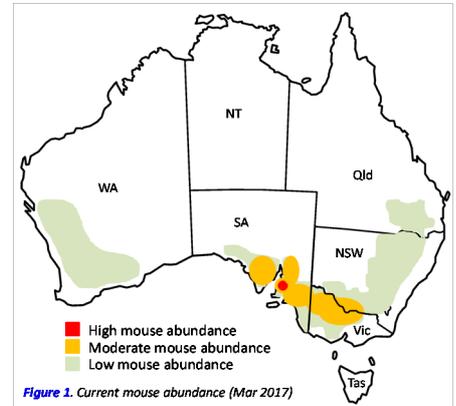


Monitoring mice in Australia – March 2017

Summary

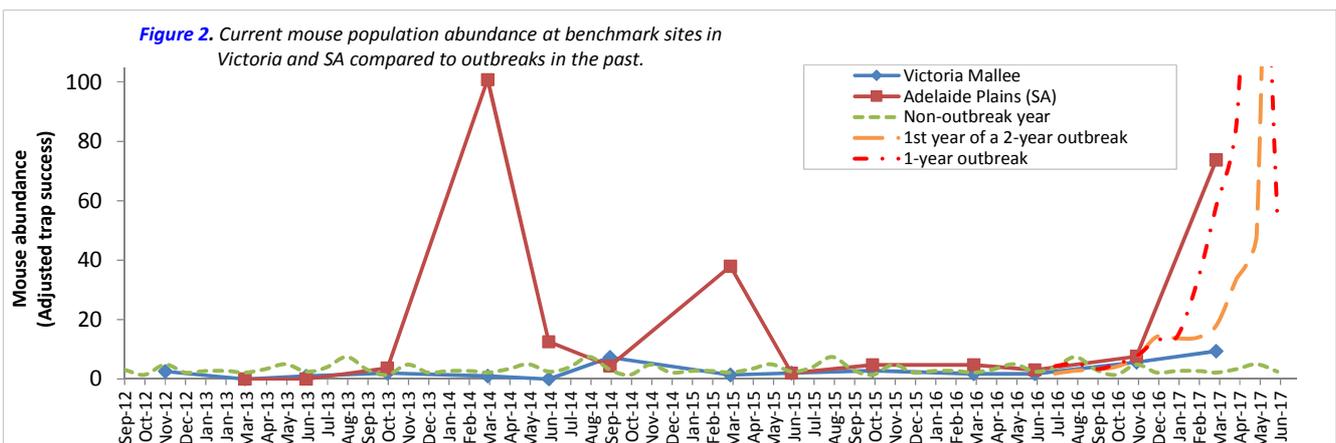
- **Mouse abundance is increasing across South Australia, Victoria and southern NSW, and remains low in all other regions** (see below) (Figure 1) – We expect significant damage at sowing in South Australia and parts of Victoria, as predicted in the previous update (Dec 2016).
- **Breeding has continued on trapping sites at Walpeup (Vic) and Mallala (SA).** Because of the bumper harvest last year, there is ample food and cover on most sites particularly in cereal stubbles.
- **Growers should look for evidence of mouse activity in their own paddocks.** Growers are advised to follow recommendations for monitoring mice and undertake baiting accordingly if appropriate (see Monitoring and Management).
- **Please continue to use *MouseAlert*.** Please report and map mouse activity using *MouseAlert* (www.mousealert.org.au) so other growers can see what mouse activity is being observed in their neighbourhood. Follow on twitter using @MouseAlert.



Current situation

Mouse abundance has increased in southern and eastern sites (South Australia, Victoria & southern NSW). Mouse abundance remains relatively low across all other monitoring sites (Figure 1). Because of the high rainfall in 2016 and the bumper harvest through much of southern and eastern Australia, there is still ample food and shelter available for mice. Mice are continuing to breed, and abundance will increase. Growers should check for mouse activity in their own paddocks: look for evidence of active burrows in paddocks, rather than relying on mouse chew cards (not as effective when abundant alternative food is present). Please report activity on *MouseAlert*.

- **South Australia:** Mouse numbers are increasing in North Adelaide Plains, Yorke and Eyre Peninsulas (Figure 2). Trap success at Mallala (north of Adelaide) was 75% in March (very high) and is on track for an outbreak. **Density estimates were 250-320 mice/ha** (anything over 200 mice/ha will cause economic damage at sowing). Growers should remain vigilant and act accordingly if damage is likely (see Monitoring and Management, Figure 3). Mouse signs and activity were very high in some paddocks, but only moderate in others (from active burrow counts). Because of this unexplained variability, growers are advised to monitor across multiple paddocks to gauge mouse numbers and inform their management decisions.
- **Victoria:** Mouse abundance is increasing in all locations. Mouse numbers are moderate across Mallee and Wimmera regions (Figure 2). Trap success was 10% in March (density estimates of 30-50 mice/ha; some damage possible). Growers should remain vigilant and act accordingly if damage is likely. Mouse sign and activity was moderate in some paddocks, but low in others (from active burrow counts). Because of this unexplained variability, growers are advised to monitor across multiple paddocks to gauge mouse numbers and inform their management decisions.



- **Queensland: Mouse activity remains low:** Live trapping, chew cards and active burrows were all nil in monitoring conducted in December/January. Mice are not likely to be a problem, but if growers observe any activity, they should report it on *MouseAlert*.
- **Northern, Central & Southern NSW: Mouse numbers are increasing in Southern NSW and low in Central and Northern locations.** Mouse numbers have increased in Southern NSW. There is evidence of active burrows on banks around rice crops and in soybeans around Coleambally. Mouse sign and activity was moderate in some paddocks, but low in others (from active burrow counts). Because of this unexplained variability, growers are advised to monitor across multiple paddocks to gauge mouse numbers and inform their management decisions. Low activity in Central West and around Moree. Data for Central NSW were collected as part of the Central West Farming Systems “Rain Grain and Stubble” GRDC project.
- **Western Australia: Mouse activity is low in all locations.** Ravensthorpe and Geraldton: Nil or low activity reported. Many sites affected by severe flooding.

Monitoring and Management Recommendations

How to monitor mouse activity in your paddocks:

At this time of year, active burrows are a better sign of mouse activity than using mouse chew cards. To look for active burrows, walk about 30 metres in from the edge of the field and set a 100 m (x 1 m wide) transect through a crop (following the furrows). Walk slowly along the transect scanning for evidence of mouse burrows (be strict about keeping within the 1 m transect width). Take note of any mouse burrow that looks active (Figure 3). Record the number of burrows per 100 m transect. Repeat across 2 or 4 transects (to cover a large area). If there are more than 2-3 active burrows per 100 m, then you have a mouse problem! You can use corn flour to mark potentially active burrows, but then you have to revisit the transect the following day to see if it is active or not.



Figure 3. Signs of active mouse burrows in sandy and clay soils. Corn flour was used to mark potentially active burrows.

Recommendations for zinc phosphide baiting:

- Apply bait according to label (1 kg/ha).
- Apply baits 6 weeks prior to sowing if there is sufficient evidence to bait (more than 3 active burrows per 100x1 m transect), then re-assess prior to sowing (if baiting only once, then bait at sowing).
- Allow at least 4-6 weeks before re-application of baits to minimise the chance of bait aversion. This allows mice that have previously tried the bait to try it again (overcome bait aversion), and also targets new animals in the population that are susceptible to the bait (through immigration or a new generation of mice).
- If baiting at sowing: apply directly after sowing (e.g. bait spreader on back of the seeder). Mice increase foraging activity after sowing because of the soil disturbance. If a novel food is available on the surface they will eat that in preference to digging up the planted seed. Baiting more than 24 hours after sowing will not be as effective.
- Bait over large areas. Encourage your neighbours to bait at the same time if they also have a mouse problem. The larger the area treated, the lower the chance of re-invasion post treatment.

If zinc phosphide treated wheat grain is spread at 1 kg/ha (as per label requirements), it should reduce the mouse population by at least 95%. One grain of zinc phosphide bait should be one lethal dose. If bait is spread according to label requirements, then there should be 3 grains per square metre (equivalent to 30,000 lethal doses per hectare). A mouse plague is defined as a mouse population density of around 800-1,000 mice/ha, so even if there is a mouse plague, there are up to 30 lethal doses per mouse available. Even if a mouse eats 10 grains, there is still ample bait available for the population. Reduced efficacy occurs when bait is applied at higher rates, or when bait is re-applied at close intervals.

The 'Mouse Forecast'

Northwest Victoria: The models forecast a **high likelihood of an outbreak in autumn 2017 (probability of 0.58, similar to 2010).** We are on track for economic damage at sowing in South Australia and some minor damage at sowing for Northwest Victoria.

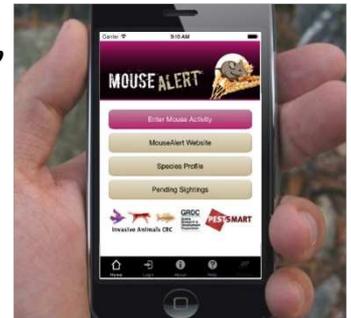
Central Darling Downs (QLD): The density index for the mouse population is currently very low (<1%). The probability of High density in May 2017 is 0.03, for Moderate density is 0.34 and **Low density is 0.55.** The Darling Downs model has achieved a 78% success rate from these long-term predictions over the period of 1989 to 2003.

MouseAlert Smartphone app
www.mousealert.org.au

Future activities

There is one more scheduled monitoring of mice set for June 2017 for the current project. Please continue to report mouse abundance on your farm (presence and absence!) using **MouseAlert** (www.mousealert.org.au) on your smart phone, tablet or computer and to check what other mouse activity is being reported locally and regionally. There are now 430 records despite low mouse numbers. We welcome any information at any time. You can also follow progress on **Twitter** (@MouseAlert).

You can now download the App for **MouseAlert** from [iTunes app store](#) or [Google play](#) (click on hyperlink to download).

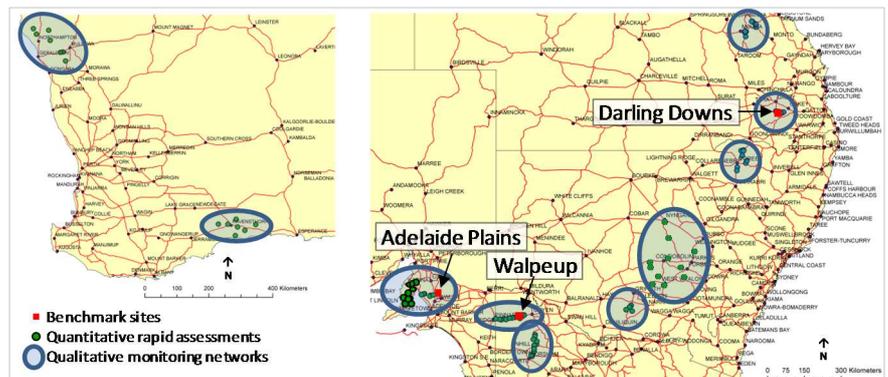


Background

This is an update on surveillance of mice across the grain-belt of Australia for March 2017. Mouse populations were monitored in typical grains farming systems in WA, SA, Vic, and southern and central NSW during early autumn 2017 (March). Monitoring in northern NSW and Queensland was conducted in December/January. The monitoring provides data on the size (abundance) of mouse populations, their breeding status and overall activity. This information is used in models that have been developed progressively over the last 20-30 years to predict mouse outbreaks. Monitoring was conducted on (Figure 4):

- **Benchmark sites:** live trapping data collected for use in models in Adelaide Plains (SA), Walpeup (Vic) and the Darling Downs (Qld).
- **Quantitative rapid-assessment sites:** using mouse chew cards and active mouse burrows assessments on 110 transects across 11 sites.
- **Qualitative monitoring networks:** using data from farmers and agronomists in 11 local areas.

Figure 4. Approximate locations of mouse monitoring occurring in WA, SA, Vic, NSW and Qld.



This is part of an 18 month extension to a 3-year study funded by the GRDC to monitor mouse populations and forecast the likelihood of mouse outbreaks. The project is a collaboration between Landcare Research (New Zealand), CSIRO Agriculture & Food and the Invasive Animals Cooperative Research Centre. The project will finish in June 2017, so the final monitoring will be conducted in June 2017 across all sites.

Further information

For further information about the monitoring or models, or if you have observed mouse activity in your area, please contact the people below, or see www.mousealert.org.au.

Dr Peter Brown
CSIRO Agriculture & Food, Canberra
Peter.Brown@csiro.au

Simon Humphrys
Invasive Animals CRC, Adelaide
Simon.Humphrys@invasiveanimals.com

Steve Henry (@MouseAlert)
CSIRO Health & Biosecurity, Canberra
Steve.Henry@csiro.au