

Gaining knowledge about some of our most under-studied pest and beneficial invertebrates

Predicting when and where invertebrate pests will reach high densities and cause damage to result in yield loss in grain crops is a challenging task. This is partly due to a lack of fundamental knowledge on where each species is common, when they are likely to attack crop plants, and the seasonal factors that influence outbreaks. This project will generate new knowledge about the life-cycle and biology of pest and beneficial species across southern and western regions, to better manage these species into the future. We aim to deliver recommendations around timing of monitoring and management for certain pest species, and scenarios where beneficials are likely to provide a real benefit to pest management.



The black Portuguese millipede, *Ommatoiulus moreletii* first appeared in Australia in 1953, yet still know relatively little about how to control outbreaks of this pest (credit: CSIRO).

The main questions we are addressing are:

1. When do I need to watch out for these pest species?
2. When do I need to control them?
3. What can I do on my farm to protect and support beneficial invertebrates?

What has happened so far?

We have spent the last year conducting a detailed review of information for 44 important pests and 22 beneficial species that consisted of 1509 pieces of information. From this process we have determined what some of the most under-studied species were in our grain production landscapes. We then developed a series of high priority research questions (see box on right) that includes these species. We are currently selecting sites, conducting initial field sampling, and planning experiments that will be conducted over the next four field seasons. If you would like further information, or have sites you think might be useful please contact us.



The European earwig, *Forficula auricularia* uses its forceps as a protective weapon but also to capture prey (credit: DAFWA).

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RESEARCH QUESTIONS

1. Which are the common earwig species present in grain production systems, and should they be considered pests or beneficials?
2. What is the potential for crop damage by common slater and millipede species?
3. What is the distribution, life-cycle, and host plant preferences of common pest *Bryobia* species?
4. How effective are parasitoid wasps in controlling pests in different grain production regions?
5. Can we measure the impact of beneficials on pests in grain production systems?