

# BENEFICIAL INSECTS



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# THE BACK POCKET GUIDE

## Beneficial Insects

All insects and other invertebrates (such as mites and spiders) have specific roles in the environment. These may include seed dispersal, nutrient cycling and pollination of crops and native plants. Additionally, there are many naturally occurring species that keep pest insect populations in check. These beneficial insects (sometimes referred to as 'natural enemies') play a vital biological control role in many cropping systems.

Some species are **transient** – moving in and out of crops, often following the movement patterns of pests, while others are **resident** – permanently living within the system and usually having limited dispersal capabilities.

Beneficial insects can be encouraged by better targeting and reducing insecticide applications, as well as providing alternate food sources and refuge habitat on farms. This guide is designed to assist growers identify some of the most commonly observed beneficial insects found across the southern and western cropping regions.



# Carabid Beetle

## RESIDENT

### Description

Adults are variable in size and shape. They typically range from 5 to 25mm in length, but a few species can be larger. Adults have flattened 'hot-water-bottle' shaped bodies, large bulging eyes on the sides of the head and prominent mouthparts that protrude forward. They are nocturnal beetles that are flightless. Larvae can be confused with wireworms as they are similar in shape and soil dwelling. Both adults and larvae move rapidly.

### Pests Attacked & Distribution

Carabid beetles are found throughout Australia, particularly in undisturbed habitats. Carabid beetle adults and larvae are predatory and feed on ground dwelling soft-bodied prey such as caterpillars, aphids, wireworms, earwigs and slugs.

Larvae

COMMONLY OBSERVED IN GRAINS CROPS

JAN

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# Snout Mite

## RESIDENT

### Description

Adults have bright orange-red bodies with eight legs. They are 2 to 3mm long with a very pointed snout (mouthpart). Nymphs are similar but smaller and have only six legs. Snout mites are highly mobile and fast moving. They pass through several generations a year.

### Pests Attacked & Distribution

Snout mites are distributed throughout most of Australia and can be found in a variety of habitats. **Snout mites** are predators of earth mites, lucerne flea and other springtails (Collembola).

COMMONLY OBSERVED IN GRAINS CROPS

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# Native Earwig

## RESIDENT

### Description

Native earwigs are similar to European earwigs, but are reddish-brown with darker abdomens and pincers. They are widespread and feed on leaf litter as well as attacking other insects. There are many species in Australia. The most effective predatory species has an orange triangle behind its head on the wing case. They are nocturnal, probably have one generation a year and adults are approximately 35mm long.

### Pests Attacked & Distribution

Native earwigs are common over most of Australia, particularly in sandy habitats and can be found in colonies under timber, stones or mulch. **Native earwigs** are predators of soft-body insects, including caterpillars, earth mites and lucerne flea.

COMMONLY OBSERVED IN GRAINS CROPS

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# Spiders

## RESIDENT

### Description

There are at least six groups of spiders that are commonly found in grains crops. These include the wolf, huntsman, trapdoor, jewel, flower and jumping spiders. Most species live more than one year, with annual breeding cycles. Spiders have eight legs and vary in size from 1 to 120mm long.

### Pests Attacked & Distribution

Spiders are commonly found throughout Australia in urban, rural and cropping environments. **Spiders** are effective predators of most insects including flies, crickets, aphids, caterpillars and moths.

COMMONLY OBSERVED IN GRAINS CROPS

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# Ladybird Beetle

## TRANSIENT

### Description

There are numerous types, but three species commonly found are the white collared ladybird, the common spotted ladybird and the transverse ladybird. Adults are round to oval shaped, with black spots on red, orange or yellow shells. Larvae have grey/black elongated bodies with orange markings and may be covered in spines or white fluffy wax material. Egg to adult stage takes three to four weeks, while adults can live for several months.

### Pests Attacked & Distribution

Ladybird beetles are found throughout Australia. Both **ladybird adults** and **larvae** are predatory and feed on aphids, leafhoppers, thrips, mites, moth eggs and small caterpillars. Found in all crops.

Larvae

COMMONLY OBSERVED IN GRAINS CROPS

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# Hoverfly

## TRANSIENT

### Description

Adult hoverflies are 4 to 7mm long and have dark-coloured flattened bodies with black and yellow markings and have only one set of wings. As the name suggests they 'hover' over objects and look similar to bees or wasps. Larvae are legless, green in colour, 8 to 10mm long and appear grub-like. They are often mistaken for pest caterpillars such as diamondback moth.

### Pests Attacked & Distribution

Hoverflies are found throughout Australia. **Hoverfly larvae** attack a range of soft-bodied insects, but prefer aphids. Common in flowering crops such as canola, pasture paddocks and on some roadside flowering weeds.

Larvae

COMMONLY OBSERVED IN GRAINS CROPS

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# Brown & Green Lacewing

## TRANSIENT

### Description

Adult brown lacewings are mottled brown in colour and 6 to 10mm long, while adult green lacewings are 15 to 20mm long and pale to bright green in colour. Both have prominent eyes and long antennae. Their clear membranous wings are typically folded in an upside-down v-shape and are large with numerous veins giving a lacy appearance. Larvae lack wings, have protruding sickle-shaped mouthparts and a body that is long and varies from thin to stout in shape.

### Pests Attacked & Distribution

Lacewings are found throughout Australia and in almost all habitats. Lacewings attack aphids, thrips, mites, caterpillars and moth eggs. **Brown lacewings adults and larvae** are both predatory, while only **green lacewing larvae** are predatory.

Brown lacewing larvae

COMMONLY OBSERVED IN GRAINS CROPS

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# Damsel Bug

## TRANSIENT

### Description

Adults are 8 to 12mm long, and have a slender light brown body, with a narrow head, large protruding eyes and long antennae. The snout is fine, curved and carried under the body when not feeding. Damsel bugs move quickly when disturbed. Juveniles are similar but smaller in size.

### Pests Attacked & Distribution

Damsel bugs are common throughout Australia and generally found in the canopy of crop plants. **Damsel bugs** are predators of caterpillars, moth eggs, aphids, leafhoppers, mites and mirids.

COMMONLY OBSERVED IN GRAINS CROPS

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# Predatory Shield Bug

## TRANSIENT

### Description

There are several species that vary in size and shape. Adults are 10 to 15mm long and have shiny, shield-shaped bodies, often with patterns and spikes. Nymphs are dark red and brown with the early instars being bright red. There are multiple generations per year and adults usually live for several months.

### Pests Attacked & Distribution

Predatory shield bugs are found throughout Australia, most often in the canopy of crops. **Shield bug adults and larvae** are predators of soft-body insects, particularly caterpillars, moth eggs and aphids.

COMMONLY OBSERVED IN GRAINS CROPS

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

# Aphid Parasitic Wasps

## TRANSIENT

### Description

There are many wasp species that attack pest aphids. Adult wasps are quite small (2 to 3mm long), very slender and brown to black in colour. They lay their eggs into the bodies of live aphids, where the developing wasp larvae feed inside, eventually killing the aphid. The bronze-coloured swollen bodies of aphids (referred to as 'mummies') are all that remain, and are often the first sign of parasitic wasp activity.

### Pests Attacked & Distribution

**Aphid parasitic wasps** are specialists, usually attacking just a single pest species. They can only live where and when their host occurs. Adults live several weeks and pass through many generations a year. Aphid parasitic wasps are found throughout Australia.



Aphid mummy

COMMONLY OBSERVED IN GRAINS CROPS

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# Caterpillar Parasitic Wasps

## TRANSIENT

### Description

There are many wasp species that attack pest caterpillars. Adults usually range in size from 2 to 80mm long. They are highly variable in colour, have elongated and slender bodies and possess long antennae. They lay their eggs inside moth eggs or larvae (depending on species), where the developing wasp larvae feed inside. The parasitised egg or larvae turns black and fails to develop.

### Pests Attacked & Distribution

**Caterpillar parasitic wasps** are specialists, usually attacking just a single pest species. They can only live where and when their host occurs. Adults live several weeks and pass through many generations a year. Caterpillar parasitic wasps are found throughout Australia.

COMMONLY OBSERVED IN GRAINS CROPS

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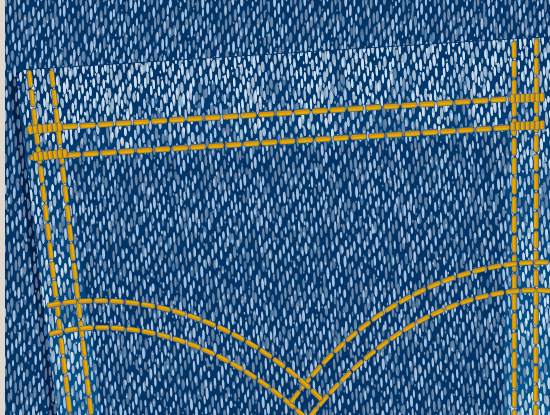
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#### USEFUL RESOURCES

##### NATIONAL

■ IPM guidelines, <http://ipmguidelinesforgrains.com.au>

■ cesar, [www.cesaraustralia.com/sustainable-agriculture](http://www.cesaraustralia.com/sustainable-agriculture)

■ *Integrated Pest Management for Crops and Pastures* (2008), Paul Horne and Jessica Page, Landlinks Press, copies available at [www.ipmtechnologies.com.au](http://www.ipmtechnologies.com.au)

##### SOUTHERN REGION

■ *Crop Insects: The Ute Guide (Southern Region Grain Belt edition)*, copies available at [Ground Cover Direct](#)

##### WESTERN REGION

■ *Crop Insects: The Ute Guide (Western Region Grain Belt edition)*, copies available at [Ground Cover Direct](#)

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