

Insects and other Invertebrates

Overview

Insects and other invertebrates are a vital part of any healthy garden. They help in many ways:

- help keep the soil fertile by breaking down dead plant and animal material,
- pollinate many plants,
- a major food source for birds; even honeyeaters eat insects when breeding, as a source of extra nutrients
- a significant food source for frogs and lizards
- the primary food source for our microbats

A garden without invertebrates is a green desert.

Invertebrates are those myriad animals that don't have a spine, or backbone. They include bees, beetles, flies, spiders, dragonflies, butterflies, praying mantis, worms, cicadas, grasshoppers and many, many more.

Many "baby" invertebrates look very different to the adults. A caterpillar is probably the best known example, but there are lots of soil-based grubs and water-based nymphs that transform into often beautiful insects such as dragon flies and lacewings.

If your garden has a healthy mix of invertebrate species, it will attract many other native animals. Expect more birds, frogs, and lizards once your invertebrate-friendly garden is established.

Shelter

A healthy garden has a good mix of many types of invertebrates. Just like the macro world we are used to, the invertebrate world has its herbivores, carnivores and scavengers. There are those that like open areas, and those that need jungle-like surroundings. Some breed on, or even under the ground, others breed in trees. Some need moist or even wet surroundings, others prefer dry, open areas.

A diverse group of invertebrates is self-balancing. The predators keep the prey numbers in check, ensuring the vegetation is not over-consumed. In turn, the predators are themselves preyed upon. Just like the bigger world we are familiar with.

For a healthy invertebrate population, your aim should be diversity. You want a range of different habitats. Try to have:

- clumps of flowers
choose a range of species that flower at different times. Aim to always have at least one plant in flower, and try to include a range of different flower shapes.
- long grass that is seldom trimmed
try a mix of native species

- grass that is regularly cut
your traditional lawn can be a part of this, or you might like to try some native species, especially in low traffic areas
- climbers
- shrubs
include a few different heights. Consider a few with thorns, if children are unlikely to be nearby.
- trees
- damp areas
- dry areas
- dead wood
a few logs and branches of varying sizes scattered through the garden are a good start, but also consider a log pile that is never disturbed. Include different sizes of dead wood from different species, with bark where possible.
- areas of deep leaf litter
- compost heaps
open heaps are very good, but compost bins that hold the compost in contact with the ground are also good. Consider an open heap for garden waste only, and a bin-based heap for mixed kitchen and garden waste
- rocks and broken bricks, especially those bricks with holes
- terracotta and similar dishes partially buried, perhaps upright as water sources or upside down for shelter. Broken dishes are particularly good, as are PVC pipes.
- plant local indigenous plants as much as possible: some invertebrates have body parts designed for specific sized and shaped plant parts, and may not be able to utilise hybrid or non-local species

If your garden has a history of pesticide use, it may take a little longer for the natural balance to re-assert itself. At first, the resident, pesticide-resistant species may seem to take over. But once the natural predators are allowed to take up residence, they will soon bring the numbers back into line.

Artificial Houses

There are many designs available for artificial houses that you can build to attract insects to your garden.

A simple option, aimed specifically at native bees, is to simply bundle together a bunch of bamboo canes and hang them in a tree.

If you want to help other insects as well, you can build an *Insect Hotel*. You can follow a published plan, or make up your own design. The key design criteria are:

- non-toxic material. Be particularly cautious with things like glue and paint.
- some sort of roof to keep the rain out. This may be an old roof tile, some corrugated iron, or similar.
- locate it out of strong sun, with some shelter from rain and the prevailing wind
- holes. Most commonly created by drilling multiple times into (not through) logs or other wood. Slope the holes slightly upwards, so they don't fill with water. The holes should vary between 5 and 10mm wide, and 15 to 80mm deep. Bamboo canes and similar dead plant material can also be used.

- some people fit out sections of their hotel with rolled up cardboard, dry grass, straw or coir matting
- a bigger hotel can include bricks with holes, bundles of twigs and sticks, and rotting logs
- consider straw or rolled cardboard, protected from rain inside an open-ended plastic bottle, as cosy home for lacewings

An insect hotel can be made more attractive to its guests by ensuring the hotel is close to vegetation and leaf litter.

Consider more than one insect hotel, in different parts of the garden, to cover as many needs as possible. Native bees, for example, prefer a warm position, while many other insects prefer a damp area.

Solitary native stingless bees and wasps will be attracted to holes in wood, and rotting logs are perfect for wood-boring beetles. The leaf litter is great for millipedes and woodlice, as well as for predators such as centipedes.

Bundles of sticks provide a haven for ladybirds, as well as the predatory beetles which eat some of the insects we consider pests. Watch also for hoverflies: the adults are pollinators, while the larvae are predators.

Water

Many insects start their life in the water. Some of the best known are dragonflies and damselflies.

By providing a small pond or two, you'll increase the diversity of invertebrates in your garden. A side benefit is you'll be supplying a vital resource to other native animals, and that's water.

There are only a few things you *must* do for an invertebrate-friendly pond:

- You can make a pond out of almost anything. Even an old sink or similar container.
- Avoid UV-resistant and anti-fungal materials. Anything suitable for drinking water will be safe for your pond.
- Make sure you provide a sloping side so animals with tiny legs can climb in and out.
- Do not add fish
- Do not pump the water

If you want to, there are a lot of other things you can do to enhance your pond.

- locate it in a partly sunny, sheltered position. Full shade and full sun should both be avoided.
- not too many overhanging trees, to avoid too much leaf litter in the water.
- vary the depth: either a bigger pond with both shallow (a few cm) and deep (30cm or more) sections, or multiple smaller ponds at different depths.
- an adjoining boggy area
- place some stones, logs, and leaf litter nearby for cover

- plant grasses and similar plants around some (not all) of the edge, to provide shade and places to hide
- allow rainwater to fill the pond. If that's not practical, let tap water sit in a bucket for at least five days before adding to the pond, to reduce the chlorine content.
- restrict plant cover of the water to about one third of the surface area
- if plant cover grows to cover more than two thirds, remove some
- a few uneven stones or broken bricks placed under the water can help provide safety, especially in ponds that are too small for water plants. They can also help vary the depth of a small pond.
- cutting bays in the vegetation edging the pond creates a wavy edge, which is favoured by aquatic invertebrates such as young dragonflies
- include a log or large stick or two partly in and partly out of the water. This provides a place for invertebrates to rest, plus a path to safety.

Algal blooms may be a problem with new ponds, but your pond should soon reach a natural balance. Remember a small amount of algae is good, as it is a food source for many species.

Recommended Plants

There are so many different species of insect that there's sure to be something that likes any given native plant. Diversity is more important than any specific list of plant species. If you lack diversity, you risk favouring a few insect species which may lead to an unbalanced invertebrate population.

To get you started, here are a few general purpose species to consider planting:

Small-leaved Clematis *Clematis microphylla*

Running Postman *Kennedia prostrata*

Austral Cranesbill *Geranium solanderi*

Native Violet *Viola hederacea*

Weeping Grass *Microlaena stipoides*

Flax-lilies *Dianella spp*

Tussock-grasses *Poa spp*

Rushes *Juncus spp*

Multi-flowered Mat-rush *Lomandra multiflora*

Hop Goodenia *Goodenia ovata*

Slender Velvet-bush *Lasiopetalum bauri*

Hop Wattle *Acacia stricta*

Scented Paperbark *Melaleuca squarrosa*

Silver Banksia *Banksia marginata*

Coast Tea-tree *Leptospermum laevigatum*

Maintenance

When maintaining a traditional garden, we tend not to think about our invertebrate friends. Here are some tips for helping them survive:

- tidy a small area of your garden at a time, not the whole lot at once
- don't cut back everything at once

- if you do trim plants near a pond, leave the trimmings on the ground nearby for a few days before moving to the compost. This allows the invertebrates on these trimmings to make their way back to the safety of the pond.
- tall grass and leaf litter may be used for hibernation, so try not to disturb it any more than necessary
- avoid stirring up the sediment in a pond

Threats in Bayside

Insecticides

Insecticides and other pesticides are not specific. They typically kill all insects, not just the one species that prompted their use.

If you do have a problem with one species, try helping their predators. It may take a little longer, but it can be a permanent solution. Even better, it will cost less and be easier in the long run, and will be safer for your family and pets.

If you need to act more quickly, try non-pesticide options that target one species. The traditional beer trap for slugs and snails is a well-known example.

Be sparing even with "natural" insecticides. It's possible they are safer for humans, but they generally target all invertebrates, not only the ones you want gone.

Lack of shelter

"Clean" gardens with little understory or leaf litter and carefully mown grass provide little shelter for most invertebrates. A few species may flourish in these conditions, but many will not.

A diverse mix of invertebrate species (predator and prey) is what you want, and that is best achieved by diverse habitat.

Further Information

<https://www.bayfonw.org.au/g4ws/insects>