



## Caterpillar Collect and Care – Detailed Guide

### Help match caterpillars to adult moths



#### **Why do we need your help.**

There are thought to be around 22,000 species of moths in Australia, but the caterpillars of less than 1,000 species are known and pictured. This is because most of the naming and classification taxonomy of Australian moths was done over 100 years ago on specimens caught in Australia but taken to the British Museum in London, where the entomologists had no idea of the life histories of their specimens.

Because so few caterpillars of Australian moths are known, often the only way to identify the species of a caterpillar is to care for it, and rear it to an adult moth.

The following guide details how best to collect and care for caterpillars and how you can be the person that connects caterpillar to adult moth, essential information for understanding the species ecology and conservation needs.

#### **Photograph your chosen caterpillar**

If using a camera it is best to use macro close-up options or a zoom lens. If using a smartphone, then best results will result from use of a macro lens or macro lens attachment, such as OiloClip for iphone. The clearer the image the better, as this helps with identification as does providing photos from various angles (top, side, head + rear).

Unknown Caterpillar photographed from head and side



### **Photograph the plant or substrate that your caterpillar is on**

Caterpillars feed on particular plants. They can be more easily identified when the plant on which they are feeding is known. So, if the caterpillar is resting or feeding on a plant, take a photo of the whole plant and close-ups of leaves, and if present flowers and fruits.

### **Load images into Canberra Nature Map**

Load up to your five best caterpillar and up to your five best plant photographs as separate sightings into Canberra Nature Map. You will need to register as a user first.

<https://canberra.naturemapr.org/account/login>

<https://canberra.naturemapr.org/sightings/add>

In the public description box write “Moth Matchmaker Project”. If you also put the sighting number of the separate, but related caterpillar or plant recordings in the private description box that will help us link your plant and caterpillar sightings.

If you have any difficulties email [Michael.mulvaney@netspeed.com.au](mailto:Michael.mulvaney@netspeed.com.au)



A cup-moth caterpillar

An engrailed moth caterpillar



### **Collect the Caterpillar**

A suitable simple container for rearing most caterpillars is a clean glass jar or bottle, with a piece of fabric over the top held in place by an elastic band. In the bottle, it is a good idea to place some dry soil with some dead leaves, and a diagonal stick with algae and/or lichen on it. The soil and dead leaves are for caterpillars that pupate in the ground litter or under the soil. The diagonal stick is for the emerging adult moth to hang

on to while it expands its wings.

To transfer a caterpillar, say into a jar: put a leaf (from its host plant) in front of it, and then gently tickle the rear of the caterpillar with something to encourage it to walk forward onto the leaf, then you can put the leaf with the caterpillar on it into the jar. **It is wise never to touch a caterpillar as the hairs on many species break easily and can cause irritations and rashes.**



Photo by Alison Milton

In general, you have to capture caterpillars when you see them. Bear in mind that caterpillars can crawl at about half their length/second. For a caterpillar that is say 6 mms long, that equals about 10 metres/hour, so if it decides to seek somewhere nice to pupate or even vary its diet, during 10 hours overnight, it may have burrowed under the soil to pupate or it could be 100 metres away. Either way, you have little chance of finding it the day after you saw it first. So: I always carry a little plastic jar with me when I go out.

### **Won't collecting a caterpillar stop it from growing naturally?**

If nature is in balance, then every pair of adults will produce only 2 viable adults in the next generation. So if a female lays say 1,000 eggs, of which perhaps 500 hatch successfully into caterpillars, then on average 498 will

die before reaching maturity. The chances of your caterpillar surviving in the wild are very much slimmer than if you rear it carefully in captivity: protecting it from predators and parasites.

### **Care for the Caterpillar**

Do I need to feed the caterpillar? Many caterpillar species hide in the foliage of their foodplant while they are feeding and growing, but go walkabout when they are mature and need to pupate. So if a caterpillar is found walking about rather than on its foodplant, it probably does not need any more food.

There are two exceptions to this. If you notice a totally defoliated nearby plant, bush, or tree, in this case it may be seeking more sustenance. Or if was found on an old fence or wall, it may feed not on leaves, but on Algae and Lichens. So choosing a diagonal stick with algae and/or lichen on it may solve this possibility.

If the caterpillar is immature and needs food, the easy choice of what to feed it, is leaves of the plant species it was found on. Most caterpillars are fussy eaters. They can tell from the smell, taste and texture, whether a leaf is good for them to eat or not. Most caterpillars will just refuse to eat anything that they think is poisonous to them.

Over the last 100 million years : there has been a silent but escalating war and arms race: between plants and caterpillars. Various plants have evolved into over 100 different plant families, each producing different poisons to stop caterpillars eating them. Meanwhile the caterpillars have co-evolved into over 100 different families, each developing different metabolisms, each equipped to cope with the poison typically from one plant family.

The five basic common Australian caterpillar foods are:

- Gum leaves,
- Wattle leaves,
- Herbaceous plant leaves,
- Grass, and
- Lichen.

If an unknown caterpillar rejects all five, then rose petals and thinly sliced apple are good standbys. Apparently plants in the Rose family have developed very few poisons.

Many caterpillars are fussy about their humidity: some like dry conditions, some wet. The sand or soil helps control this. Many caterpillars get quite thirsty: if your animal looks a bit dry: try dipping



new food leaves in water before giving them to the caterpillar. Too much water: then mould attacks the caterpillar. Too little: the caterpillar can die of dehydration. Every species has a different balance point.

In due course, with any luck, the caterpillar will pupate in a silk cocoon. Pupation is usually signaled by it ceasing to feed. It may form a cocoon on the side of the container, or under the covering, or in a curled leaf of the food plant, or on a twig, or in the sand/soil. It is best not to disturb the animal while this is happening. In pupating, excess fluid is expelled. Dry sand or soil in the container is good to absorb that away from the pupa.

A pyralid caterpillar preparing a cocoon



When pupation is complete (maybe several days), gently (the pupae bruise easily) take out any loose droppings and excess food plant, which would otherwise go mouldy. You should provide some twigs for the new adult, when it does emerge, so that it can hang upside down, as most moths need to do this for their wings to expand properly.

You then have to wait. Some adults emerge in 2 weeks, some in 2 years, so this may require some patience. The time depends on the species, the season, the weather, how much food it ate, and just how it feels.

### **Photograph the adult moth**

Once you have an adult moth (or butterfly), make sure it does not beat itself to a frenzy (butterflies and moths basically do not like being kept in jam jars): a spell in the refrigerator at five degrees Celsius (not freezing which kills them) is a good way of putting them to sleep. Then you

should be able to photograph it. Again take multiple photographs from head on, side and underneath positions and post images on Canberra Nature Map (CNM). **Include the original CNM caterpillar sighting number in the public description box of the new record.**



Sparshall's Moth



Lawson's Night Moth



Green Blotched Moth

### **How is my moth identified?**

A group of moth experts will seek to identify your moth from the photos you provided. You will be sent an email once identification has occurred. You may also receive an email requesting further information or providing you with information on the species and whether you have created a first re moth and caterpillar connection. It may be requested that your moth become a museum specimen. Only half of Australia's moths have been described while there is a chance that your species could be new to science. If your moth is not need as a specimen it should be released at the site you collected the caterpillar.



**What if my caterpillar is attacked by wasps or flies?**

Rearing caterpillars is a skill, and one learns by trial and error. Do not get upset if you do not succeed the first time.



Southern  
Old Lady  
Moth

Your patience may also go unrewarded: a high proportion of caterpillars get infected with parasitoids. These are usually fly or wasp species that lay their eggs on or in the caterpillar, and when they hatch, the fly or wasp grub eats the caterpillar from the inside. This tends to make the caterpillar upset and wander about instead of hiding on its food plant: and so these are the caterpillars that are most often found. So if a bunch of flies or wasps come out the *pupa*, do not be too surprised. These flies and wasps are actually very important in preventing caterpillar plagues. If that is what you get: please photograph the wasps or flies and post the images on Canberra Nature Map and place the original caterpillar sighting number in the public description box. Knowledge of the species of wasp or fly that parasitise a species of caterpillar is valuable information.



Coprosma Hawk Moth

**Good Luck and good moth hunting – thank you for helping to further our knowledge of the local moth fauna.**