

Unusual Egg Laying Strategies of some Lepidoptera

Anyone who has observed Birdwings laying eggs has probably wondered “When is she actually going to lay an egg?”. It is a bit like watching grass grow. What I think she is doing is mapping the location of the Aristolochia vine amongst the foliage of the plants over which the vine is scrambling. This of course would mean that the butterfly has some sort of intelligence, and I am sure they have. I have been breeding butterflies for more than forty years and observing them for longer than that and have noticed that females soon learn what their host plant looks like. Beginners test every plant when they get near the host plant but experienced ones go straight to it or to something that looks very similar. For instance if the host plant has red new growth they will zip around testing all the plant that match.

Birdwings usually lay their eggs from 30 to 50 cm from the vine but at times up to 1 m or even more. I have never observed these eggs hatching to see how many tiny larvae actually find the plant. Who has the time? This laying away from the vine is a good survival strategy because the eggs will then not be accidentally eaten by the larvae. For Birdwings it is double insurance as most Aristolochia vines react to the glue on the egg and exude sap that encourages mould to grow, so killing the egg.

When my wife and myself had the butterfly farm at Mt Tamborine I noticed Australian Rustic (*Cupha prosopae*) butterflies often laid their eggs in spider webs that were on the host plant. These were mostly webs that were not occupied by spiders but not always so. When the larvae hatch they drop on a silken thread till they hit the plant then crawl up to the new growth to start feeding.



As well as in spider web they also lay on dead twigs of the plant and on dead leaves on the ground around the base of the plant.

The Australian Vagrant (*Vagrans egista*) has identical laying habits and seems to lay even more eggs at ground level than the Rustic does.



Australian Vagrant feeling for spider web to lay on.



The image on the far left shows a female feeling for the web and the small image immediately to the left shows the egg laid on the web.

As well as laying on web and off the plant the larvae of both the Rustic and Vagrant often use their own web to hang from at night. This probably protects them from roaming predators.



The image above shows Australian Vagrant eggs laid beneath a small *Xylosma* plant. Neither the Rustic or the Vagrant lay on the new growth as the larvae of both these species can eat only the very soft new growth of the plant and the eggs would be eaten by the larvae.



Australian Vagrant larva at night hanging from silk thread.

When I was breeding Fritillary butterflies (*Argyreus hyperbius*) at Tolga I noticed they often laid their eggs on the ground beside the Violet, as in the image below.



Australian Fritillary eggs laid on small stone near the Violet plant.

The prize goes to the Zodiac Moth for the most way-out egg laying habits. In the late sixties we used to come to north Queensland butterfly hunting each year in about May and stay with friends at McDonnell Creek (near Babinda). At that time the host of the Zodiac Moth was not known and we were always searching for larva. One year we observed a female laying eggs on a *Nephrolepis* fern. This is a robust fern that often forms large colonies in the rainforest. We thought we had finally cracked it and collected eggs and the fern. When the eggs hatched the larvae were not interested in the fern and spent five days racing around the container till they finally died.

The Zodiac host plant in this area is *Omphalea queenslandica*, a huge vine that spreads across the canopy of the rainforest. The stem of the vine was probably growing near the ferns but the nearest foliage could have been twenty metres or more above, and of course the tiny larvae would have to find this stem first before they could climb to the foliage.

In our garden at Tolga we have a tree of *Omphalea celata* growing in an open area with a few small plants underneath. The Zodiac Moths that come to this plant lay most of their eggs on the small plants that grow underneath.



This is a typical batch of Zodiac Moth eggs.



The image on the right is a wide view of a batch laid on a seedling *Homalanthus* which was growing under the *Omphalea*.

The next image shows the layout of the *Omphalea* tree and the seedlings growing underneath. From my observations very few of the larvae ever find the host plant. Sometimes there are six to ten batches hatching but the majority die without ever getting to the *Omphalea*. From time to time the female will lay single eggs on the host plant and then the survival rate is very high.

I have never had a parasitised pupa of the Zodiac so perhaps this wastage of eggs is just population control. Even with these losses they can occur in huge numbers at times.



Like the Rustic and Vagrant they also lay in spider web.



These eggs were laid on spider web stretching between a branch of the Omphalea tree and the ground.



Zodiac Moths