

Observations and Notes on Donovan's Day Moth (*Cruria donowani*)
From Mt Crosby, Brisbane Queensland
By Paul Grimshaw 19th March to 2nd of May 2020

Some of this text and these photos are from a diary and study of the Donovan's Day Moth that I carried out over a few weeks in March/April this year.

The identity of this day flying moth species is *Cruria donowani*, (Boisduval, 1832) now with the common name of Donovan's Day Moth.

Apparently Boisduval, the author of its scientific species name, used the French spelling of the name of the English naturalist Donovan (i.e. *Agarista donowani*) in his original description, and after the species was moved from *Agarista* to the new genus *Cruria*, that name (correctly!) persisted. It is not clear if it was Donovan who originally collected the specimen or a French naturalist with the first Dumont D'Urville South Seas Expedition.

We have had up to five day flying moths of the same species patrolling our bitumen driveway for more than 2 weeks. Their flight territory is approximately 10 to 12 metres long and 3 metres wide and includes four various sized trees on either side of the driveway, on the trunks of which they sit in head down position. They fly and patrol constantly just like some butterflies do, but regularly return to rest on the tree trunks.

There are three of these moths left patrolling here now. I have been able to get some decent photos of one of the dominant moth individuals with a small piece missing from its right hindwing. I am not keen to capture the moths as specimens, so I will continue to photograph them, observe, and document their behaviour.

The Donovan's Day Moth with the small piece (notch) missing from its right hindwing has been patrolling up and down and around my bitumen driveway regularly for at least five days. This individual moth often flies up to me and even tries to land on my face, but it does land on my shoulder or chest and occasionally on my back. It also lands on the same two tree trunks while it is patrolling in the driveway, but mostly on its favoured large Spotted Gum. It nearly always rests on the trunks with head facing downward with the rear of its wing tips resting on the trunk surface. This individual aggressively chases off any other day moths (Probably males of the same species) and butterflies much larger than itself. I have nicknamed this individual 'Notchy' due to the small notch missing from the right hind wing. The first time I photographed 'Notchy' was the 19th March. 'Notchy' was still patrolling its territory on the 24th March as I could tell it from the photos I took of it resting on the same large tree. 'Notchy' lands on its favoured tree trunk facing upwards, but quickly rotates to face downward in its resting position, as I have observed all its individuals do. It is only when a Donovan's Day Moth settles in this downward position on a tree trunk with its tail and wing tip resting on the tree and head and thorax raised that you are able to see the pattern and the colours of the body from side on.



Cruria donowani – Donovan's Day Moth 'Notchy' in typical resting position on favoured Spotted Gum trunk



Cruria donowani - Donovan's Day Moth showing pattern and colours of body

I have only seen and photographed an adult Donovan's Day Moth feeding once. This was on the 24th March on the flowers of *Alphitonia excelsa* - Red Ash or Soap Tree. Also I have only seen and photographed this moth species once resting on plants close to the ground and on a leaf of a low shrub. All the Donovan's Day Moths I have been observing appear to prefer resting on tree trunks at least during the daytime and on the sides of the trunks facing the sun. This is most likely to benefit from the warmth of the sun. The height of perching on trunks is mostly between 0.6 of a metre and 1.7 metres.



Cruria donowani partly showing underwing pattern while feeding on *Alphitonia excelsa* – Red Ash flowers



Cruria donowani perched on plant and logs close to ground level showing fully open wing pattern and abdomen pattern. Note bright orange abdomen tip

Today 31st March, I went up the driveway to see if there were any day flying moths patrolling. I could not believe it when I saw 'Notchy' flying up and down the driveway and landing on its favourite tree. 'Notchy' then flew around me several times and attempted to land on my nose. According to Dr Don Sands, retired CSIRO entomologist, adult day flying moths in the *Cruria* genus can live up to one month. Just imagine the number of kilometres a Donovan's Day Moth would clock up during its lifetime.

Here are some further interesting behavioural observation notes on the *Cruria donowani* – Donovan’s Day Moths that patrol our driveway.

The previously noted and much photographed ‘Notchy’ Donovan’s Day Moth is no longer patrolling our driveway. The last time I noted ‘Notchy’ patrolling the driveway was the 31st of March. Notchy’s territory is now being shared by two other Donovan’s Day Flying Moths. When I say shared, it is a constant battle between the two to see who dominates the territory. Both these moth’s wings are fully intact, unlike ‘Notchy’s’ with the bit missing on the rear of the right hindwing.

When I stand in the middle of the driveway patrol territory both individuals take it in turns to circle around me just like ‘Notchy’ did, with each moth landing on my chest or shoulder in turn. Maybe they do not see me as a threat, but just a large object to land on that suddenly appears in the middle of their territory.

Curiously these two new individuals land and rest on the same two trees as ‘Notchy’, at roughly similar heights and mostly on the same side of the tree facing the driveway. Unlike ‘Notchy’ when they are in the resting position, both individuals fold their wings closer together. This means that the white bars on the hindwings are not as exposed. I do not know why this should be, but maybe to be less obvious to predators.

Visual Mimicry

Cruria donowani – Donovan’s Day Moth is said to mimic the Common Crow Butterfly - *Euploea core* (now *E. corinna*). In some instances it has been commonly called the Crow Moth. For the Donovan’s Day Moth this would be a defence against predation because the Common Crow Butterfly is toxic and distasteful to predators. To me the black and white wing patterning of the Donovan’s Day Moth is also reminiscent of the look-alike Common Aeroplane Butterfly – *Phaedyma shepherdii*. I do not believe the Common Aeroplane is toxic though, so like the Donovan’s Day Moth it is probably mimicking the Common Crow Butterfly for protection from predators.



**Common Crow butterfly – *Euploea corinna* toxic and distasteful to predators.
Donovan’s Day Moth mimics this butterfly species as a defence against predators**



Common Aeroplane butterfly - *Phaedyma shepherdii* like Donovan's Day Moth has a white band on the hindwings and white spots on the forewings also like the toxic and distasteful Common Crow – *Euploea corinna*. Note the clubbed Antennae, which is one feature that indicates it is a butterfly not a moth

Today is the 30th April, 43 days since I first photographed my first Donovan's Day Moth 'Notchy'. There are still two Donovan's Day Moths patrolling the driveway. They still prefer the same large Spotted Gum trunk to land on as 'Notchy' did. While these two individuals fight over who lands on the preferred tree they are not as intent on patrolling the driveway territory as earlier moths did. They sometimes wander off to more distant places and do not come back for some time. Perhaps its something to do with shortening cooler days and increasingly cooler nights.

Since the 30th of April there do not appear to be any Donovan's Day Moths patrolling our driveway. There is a possibility that they have succumbed to the much colder temperatures in recent nights (as low as 8 degrees Celsius). The only evidence of their existence would be that somewhere there are eggs and or pupae in a dormant state (diapause) waiting over winter for the next warm season with ample rainfall when they will metamorphose into flying adults.

I read that the larvae of this moth species feed on *Boerhavia* spp. -Tar Vines and *Cissus & Cayratia* spp. – Native Grapes or Water Vines. It has also been reported that it feeds on *Hibbertia* spp. – Guinea Flowers. The only plant species on our property that hosts the Donovan's Day Moth larva is *Cayratia clematidea* – Slender Grape. I have not found any sign of the use of this vine by Donovan's Day Moth.

As winter draws on I may not be able to enjoy the presence of Donovan's Day Moth any longer. However, I will certainly be on the lookout for this engaging little moth next season and hopefully will be able to discover further information about its behaviour and life history!

I hear you saying that I have far too much time on my hands, which is true. One of the good things to come out of this awful CORVID-19 threat and self-isolation and social distancing is that it gives me much more time to study nature on our property and have fun with it.

General Information About Day Flying Moths

The day flying moths referred to here are in the Agaristinae subfamily and are now considered to belong to the Noctuoidea superfamily. The subfamily Agaristinae is well represented in Australia by 40 species in 21 genera. Most species fly during the day, although one or two species come freely to lights at night, while others do occasionally. The adult moths are distinctively marked and brightly coloured, usually in orange, black and white. Some Agaristinae day flying moth larvae are also brightly coloured and striped. A most colourful day flying moth, which many people are familiar with, is the Joseph's Coat Moth – *Agarista agricola*. It even has a couple of other colours, red and blue, that most other day flying moths do not have. There are other day flying moths such as Bee-hawk Moths in the genus *Cephonodes* and Sun Moths in the genus *Synemon*, but these are in completely different superfamilies.



Agarista agricola - Joseph's Coat Moth (Female)



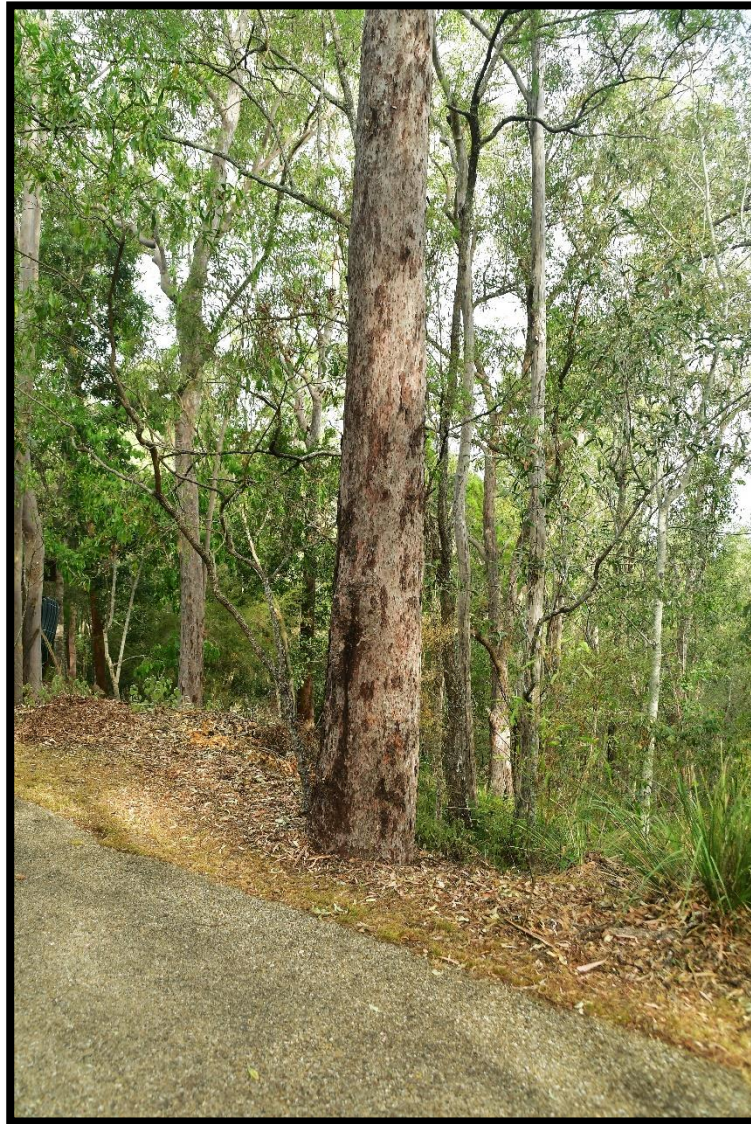
Agarista agricola – Joseph's Coat Moth brightly patterned larvae on one of its favoured food plants *Clematocissus opaca* – Small-leaf Grape



The author observing *Cruria donowani* on favoured Spotted Gum tree trunk



Cruria donowani – Donovan's Day Moth driveway patrol territory flanked by trees of various species and girth dimensions. There is nothing special about the driveway from a human standpoint. However it appeared to suit the Donovan's Day Moths purposes ideally.



The large Spotted Gum – *Corymbia citriodora* subsp. *variegata* preferred by the majority of Donovan’s Day Moths for settling and resting on in driveway

References

Coffs Harbour Butterfly House web site - lepidoptera.butterflyhouse.com.au/moths.html

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