

## A report on Oleander Hawk Moth (*Daphnis nerii*): A frequent visitor of our balcony

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### Abstract

Oleander hawk moth is one of the beautiful hawk moths widely distributed throughout the world due to its migratory nature, though it is susceptible to cold temperatures. The morphology exhibits pattern resembling army uniform hence called Army green moth. They exhibit clear sexual dimorphism. Life cycle involves four instars and finally adult emerges. They have developed a unique way of defence against predators by feeding on the poisonous plants.

**Keywords:** oleander hawk moth, morphology, lifecycle, ecological significance

### Introduction

*Daphnis nerii* is commonly called 'Oleander hawk moth' (the moth feeds on plant *Nerium oleander* hence, the name. (Jarvis (2009))<sup>[1]</sup>. It is a member of sphingidae family of moths. It is one of the beautiful hawk moths in the world and the most sought-after species amongst many lepidopterists, breeders and insect photographers. *Daphnis nerii* is a large hawk moth and is cosmopolitan in nature and widely distributed across the globe (Pittaway & Kitching, 2009)<sup>[3]</sup> due to its migratory behaviour. They live in warmer places and on host plants. It can't survive in the cold weather at any stage of its life cycle. It belongs to the phylum: Arthropoda; Class: Insecta; Order: Lepidoptera; Family: Shingidae; Genus: *Daphnis* and Species: *nerii*.



We observed the hawk moth in the balcony of our residential building. It was a frequent visitor of our balcony surrounded by different species of ornamental plants. It caught our attention and we were curious to know its taxonomy, morphological features, life cycle and its

ecological significance. Hence, we decided to study and report the description of oleander hawk moth.

### Morphology

Oleander Hawk moth has an extensive wing span of about 9cm to 13cm. Body has variable colours, their wings exhibit typical mosaic pattern of green and olive colours. This gives an appearance that resembles a military uniform, hence also called army green moth. They have visible eye spots on each of their wings with banded lines of brown and white all over. The body of army green moth is green with a black and tan belt across the center. The caterpillars are typically reddish brown to black with white dots all over their body. They can also be mint and lime green or blue. The larvae have large size eye spots on their body that can grow in size to scare off predators (Fig I). They also have fleshy horn on the rear end of their body, which can be either yellow or black.

### Sexual dimorphism

Male	Female
<ul style="list-style-type: none"> <li>Body length is short compared to length of forewings.</li> <li>They are smaller in size.</li> <li>They have setiform (bristle like) antenna.</li> <li>The posterior end of insect body has dark green patches on lateral sides as well as dorsal side.</li> </ul>	<ul style="list-style-type: none"> <li>Body length is almost equal to length of forewings. (i.e Body length is 45mm and forewings length is 45mm)</li> <li>They are larger in size compared to male insect of almost same age. They have slightly clubbed antenna.</li> <li>The posterior end of its body has dark green patches on lateral sides.</li> </ul>
 <p>Male</p>	 <p>Female</p>

## Life cycle

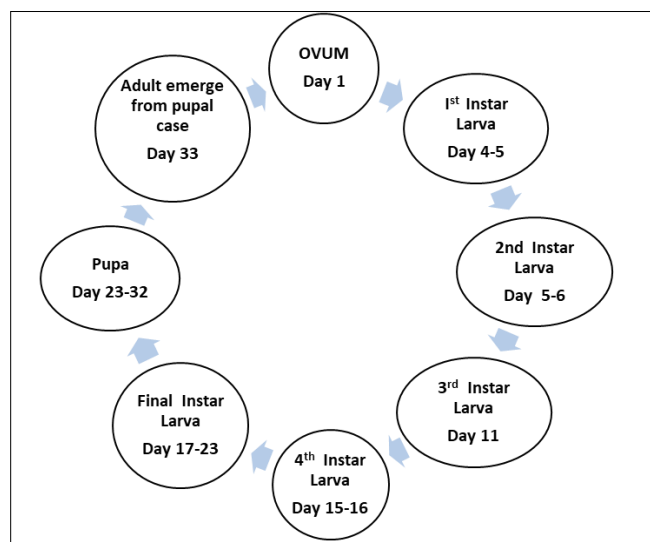


Fig 1

### Day 1

Eggs are almost spherical; 1.5 mm in diameter; pale green in colour; covered by chorion (secondary egg membrane). (Fig A)

### 1<sup>st</sup> Instar larva

- Caterpillars are 3-4mm in length; Bright yellow in colour.

- They possess long, thin black horn on their posterior end. (Fig B)

### 2<sup>nd</sup> Instar larva

- After first moult, a pair of dorso-lateral line starts to appear on 1<sup>st</sup> abdominal segment to last.
- Larva gains apple-green colour and tail horn gains white tip.
- Eye spots starts to appear on 3<sup>rd</sup> thoracic segment. (Fig C)

### 3<sup>rd</sup> Instar larva

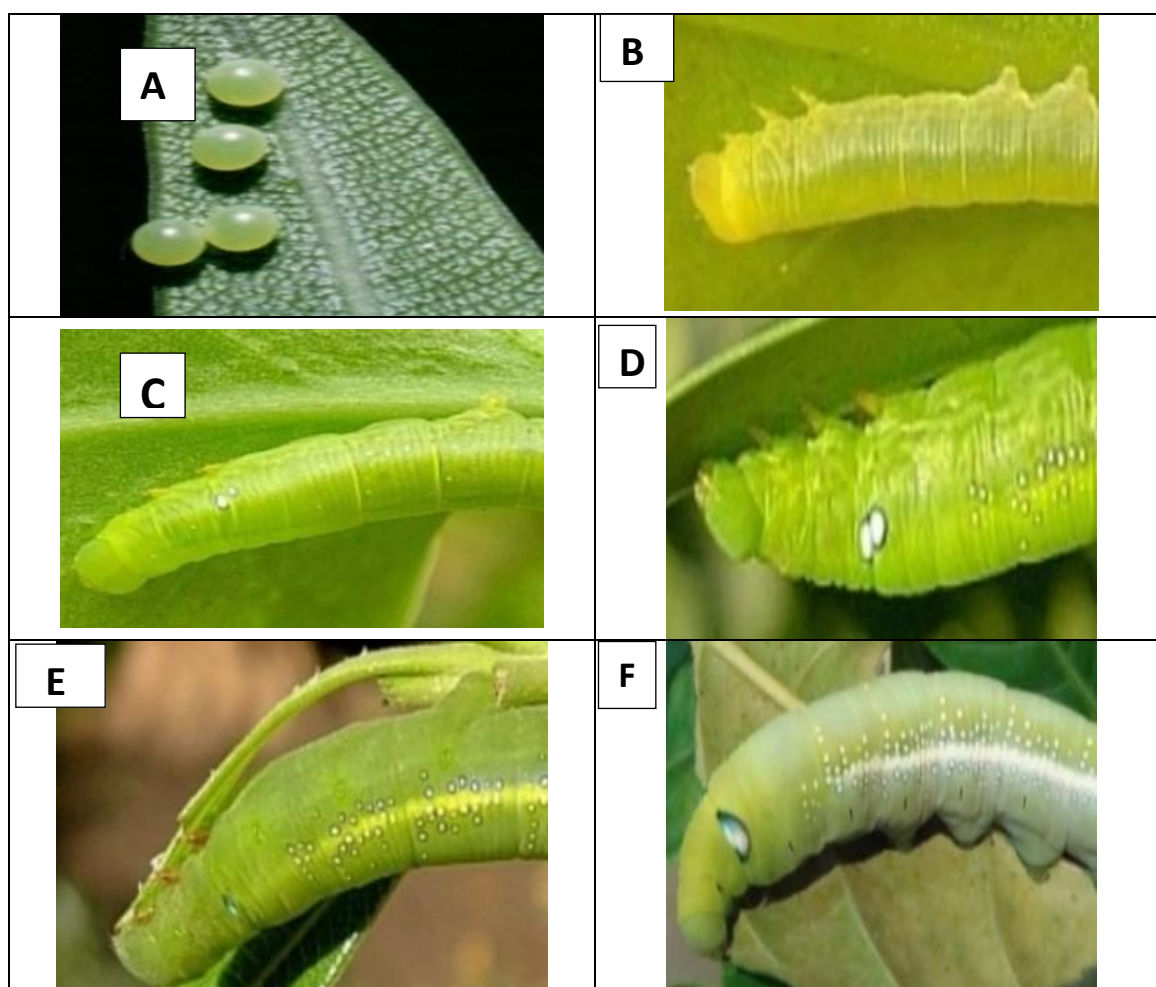
- Eye spots become more pronounced.
- The white lateral lines separate into circles with pale blue ring with a white centre, outlined by black.
- The spiracles became an obvious black. (Fig D)

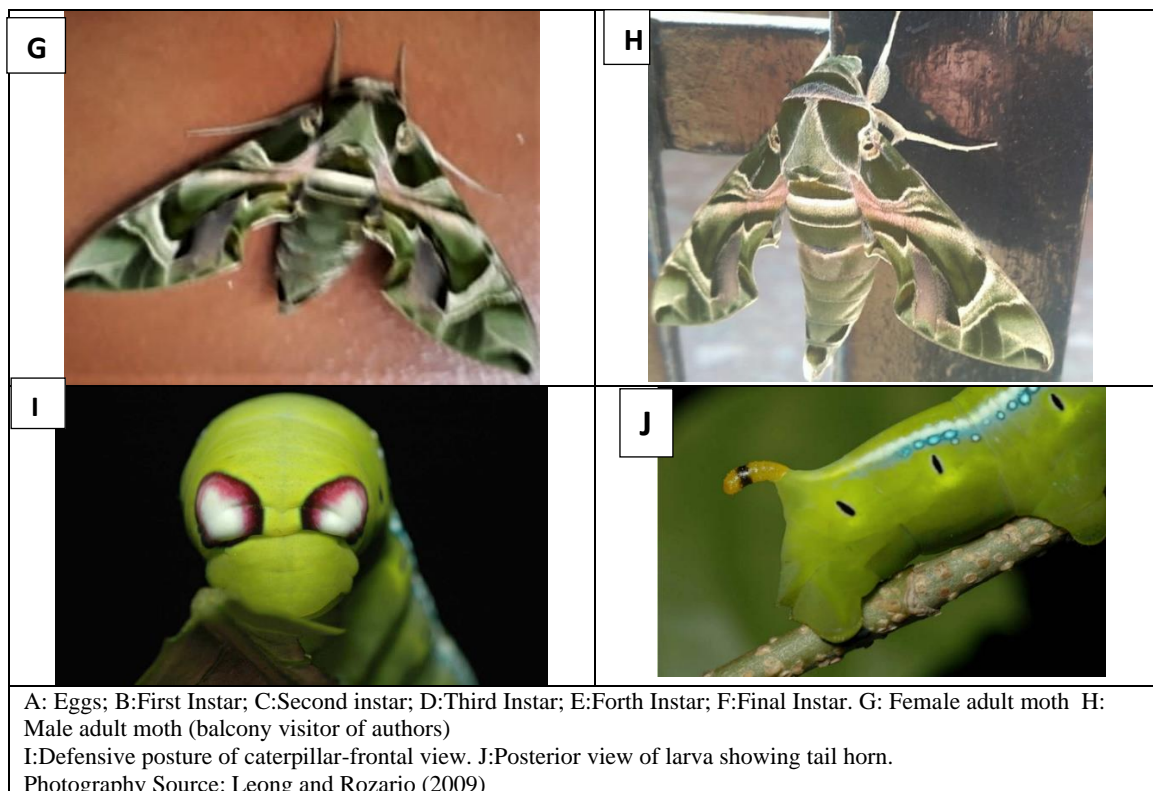
### 4<sup>th</sup> Instar larva

- The walking legs begin to turn pink and tail horn becomes yellow.
- Lateral lines consist more dorsal band of yellow and below that a band of blue with a ringed circle as in earlier instar. (Fig E)

### Final instar

- It is closer to pupating the larva, changes from green to brown.
- Tapered horn becomes round and bulbous with bright yellow colouration (Fig J).





### Pupa

- Pupae are cream in earlier stage but eventually darker to wood brown colour; 60-75mm in length.

Adult emerges from pupal case (G: Female adult moth; H: Male adult moth).

### Ecological significance

Oleander hawk moths do not play significant role in pollination of food crops, but still they are vital for survival of many native plant species in varied locations. A most probable advantage of consuming potentially poisonous plants (Family: Apocynaceae) by the moths would be the chemical defense that larvae would be able to derive from them. The leaves and other parts of the oleander contain potent concoction of cardiac glycosides (Stewart 2009) [4], such as 'oleandrin', which can cause nausea, vomiting, weakness, irregular pulse and decreased heart rate (Leong and Rozario 2009) [3] hence, they are not preferred by many predators. Zagorinskii *et al* (2013) [5] reported that the females of this species exhibit a unique behaviour during mating. Males and females feed actively during evenings and mating were observed between 2-4 am. The duration of attractive behavior was prolonged significantly, if the female remained unmated (virgin). Though mating was observed and confined only during nights, the unmated females which have not been fertilized by 10<sup>th</sup> day of their life, they emit pheromones even during day time.

### Conclusion

Oleander moth is worldwide in distribution but sensitive to cold temperatures. They exhibit morphological features with unique colour patterns. Life cycle consists of four instar larvae and finally adult emerges. Their growth rate is fast compared to other hawk moths. Sexual dimorphism is evident. Their defensive mechanism is very interesting in which they feed on poisonous plants thereby they help in protecting native plant species by the predators. They even

feed on *Nerium oleander* plant which is poisonous and dangerous to humans. By retracting its head and arching up the swollen anterior body sections the eyes appear startlingly larger than original size to scare off the predators. Thus oleander moths were found interesting to explore and report.

### References

- Jarvis C. The Linnaean Plant Name Typification Project. The Natural History Museum, London, 2009.
- Leong TM, D'Rozario V. Final instar larvae and metamorphosis of the oleander hawkmoth, *Daphnis nerii* (Linnaeus) in Singapore (Lepidoptera: Sphingidae: Macroglossinae). *Nat Singap*, 2009;13:2:297-306.
- Pittaway AR, Kitching IJ. Sphingidae of the eastern Palaearctic, 2021. [https://tpittaway.tripod.com/china/h\\_vel.htm](https://tpittaway.tripod.com/china/h_vel.htm). 2009.
- Stewart A. Wicked Plants: The Weed That Killed Lincoln's Mother and Other Botanical Atrocities. Algonquin Books, 2009.
- Zagorinskii AA, Gorbunov OG, Sidorov AV. An experience of rearing some hawk moths (Lepidoptera, Sphingidae) on artificial diets. *Entomological review*, 2013;93(9):1107-15.