



**TRABALA GANESHA**, male, of the Lasiocampidae family. A lappet moth.

# Bow out, butterfly

Moths are suddenly acquiring a different reputation for themselves as the world begins to take notice of them in all their grandeur. Moth-watching is seen as a potential addition to ecotourism initiatives, especially in north-eastern India.

Text & photographs by GEETHA IYER



*a candle has been lit  
inside me,  
for which  
the sun  
is a moth.*

– *Maarif*<sup>†</sup> by Bahauddin Valad

THEY are a favourite metaphor for Fana in Sufi literature. The Bible, on the other hand, treats them in a

derogatory manner. Agriculturists study them in depth; sericulturists farm them. Their diversity fascinates taxonomists and the general public is beginning to take more notice of them. Moths are suddenly acquiring a different reputation for themselves. For long they suffered a lowly position, while their siblings, the butterflies, shone as the beauties of the

world. Not any more as the world begins to take notice of them in all their grandeur and majesty. They outnumber the butterflies—not in just numbers but in colours, styles and diversity. Moth-watching, or mothing, is the new hobby on the horizon.

Moth night is an annual celebration throughout Britain and Ireland, and its main goal is to raise awareness



**TRABALA  
VISHNOU,**  
female.  
Lappet moth.



**MOTHS BEAT  
BUTTERFLIES** not just  
in numbers but in colours,  
style and diversity. (Right,  
top) *Cadarena pudoraria*,  
grass moth; (centre)  
*Osteosema sanguinilineata*,  
geometrid moth;  
(bottom) *Zamarda* sp.,  
geometrid moth.



about moths. Since 2012, the National Moth Week is celebrated every year in July in different parts of the world. In 2013, several people were part of this event in India. Mothing is slowly beginning to be seen as a potential addition to ecotourism initiatives, especially for communities in north-eastern India. For the cash-strapped north-eastern communities, this is an incentive to conserve wildlife to generate income. Moth-watching is easy.

Moths are among the successful and diverse groups of organisms to have evolved on earth. Worldwide, there are close to 200,000 species of Lepidoptera of which only 15,000 are

butterflies, the rest being moths. Scientists believe that there should be an equal, if not far greater number of them yet to be discovered and estimate close to five lakh species existing both in the wild and in urbanised areas. From the lowly position of a pest to a creature that is now “cool” and “fun” to watch, what has changed and what is fascinating about them?

#### **BEWILDERING SHADES**

Visual beauty is a great attractant. The butterfly should bow in front of the moth. It will take several generations for the butterfly to come anywhere close to the bewildering shades and hues of every possible colour moths display. From gaudy to bright,

**ACTIAS MAENAS,**  
male, the moon  
moth.

multicoloured to white, moths could be a designer’s inspiration. It is not merely adult moths that are colourful, their caterpillars are equally lively and display rich and vibrant patterns, imaginatively so. These images are more eloquent than words.

Moths redefine the notion of mimicry and take it to a totally new level. The hook-tip moth, *Macrocilia maia*, sports on its wings a painting of a fly feeding on bird droppings. On a white background, this entire picture



**AGATHIA LAETATA**, emerald moth.



**NYGMIA SP.**, commonly known as tussock moth.



**APSARASA RADIANS**, belonging to the Noctuidae family.

takes prominence, and its predators are fooled into thinking that there is a fly.

The recently discovered Lygodium spider moth, *Siamusotima*, has patterns that make it look like a spider with orange legs. Tiny details, such as the hair on the legs of spiders, are not left out of this composition. The atlas moth is so designed that from a distance it would appear as two creatures (like a snake or an eagle, the choice is yours) and not a single moth. No other creature in the animal world mimics with such elan as moths do, the details have to be seen to be believed. Some moths such as *Lebeda nobilis* or *Syntypistis pallidifascia* would give the African shaman a run for his money. Are the wings of the moth the canvas

for showcasing nature's art? It would not be an exaggeration to say that there is poetry in their wings.

#### **SIZE AND SHAPE**

Quaint, intriguing, unusual and full of character, moths come in all shapes and sizes. They may be as small as a pinhead and as large as a human hand. The atlas moth is the largest one, and it occurs in South-East Asia and India. The hawkmoths, or Sphingids, are among the most aerodynamically shaped ones and an important pollinator among moths. The hummingbird hawkmoth hovers and sips nectar from flowers just like the bird after which it takes its name. The hook-tip moths have hooked wing ends, while the swallow-tailed moths





**HAMODES PROPITIA**, Catocalinae moth.

have tailed wings. The emerald moths of the family *Geometridae*, in dazzling shades of green, are both graceful and exquisite. Geometrids come in other colours, too. The prominent moths—named as such because they have a tuft of hair at the trailing edge of their wings that stands up during rest—may not be as dazzling as the rest of their brethren, but their caterpillars are extraordinary mimics. The caterpillars of arctiid moths are perhaps more familiar to us. Children call them itchy *poochi* (insect), a reference to the itching caused if its hairs acci-

dentally brush against your body. There are goat moths, leopard moths, tiger moths, jasmine moths and owlet moths, but such common names are rare, most of them being known by their, often tongue-twisting, biological names. This and the lack of resources such as field guides and books are the reason why we do not discuss them the way we discuss butterflies. But all that is set to change soon.

#### **FASCINATING LIFESTYLE**

In most cases, it is not adult moths but caterpillars that are destructive, even

in the case of the infamous clothes moth which likes to feed on your wardrobe. But then one would understand why the caterpillar needs to be such a voracious eater. Most adult moths do not eat all. They do not possess any mouth parts or elaborate organs of the digestive system. Hence, the total energy needed for the caterpillar to transform itself into a pupa, build the silky cocoon, metamorphose into an adult and then find a mate to procreate has to come from the food eaten at the caterpillar stage. The caterpillar must eat, and when it does,



**BAORISA HIEROGLYPHICA.**

humans have a problem. But like plants and other creatures that have adapted to survive their onslaught, humans, too, are finding ways to do so; except that in the process (by using chemicals) we end up harming our own species.

Moths are clever creatures. When the conditions are unfavourable they remain within their cocoon for extended periods of time until the environment becomes suitable for the adults to emerge.

Looking for moths is not difficult at all. They come to light easily. Taxo-

nomists use light traps, pheromone traps or sticky fermented solutions to attract them. Tie a white cloth and hang a bright white light over it. This is your moth screen. Draw up a chair and watch them as they come to the screen. Once settled on the screen, they do not leave soon and you can look at them for a long time. White light, shining over a light-coloured wall will serve the purpose quite well. Very soon, you will delight in the drama unfolding on the light screen. Insect predators soon arrive on the screen. Praying mantises, pompilid

wasps and driver ants are common visitors to a moth screen as they gorge on them. Some arrive to find their mates under the light. Yet others come to bask in the warmth.

#### **MOTHS AND LIGHT**

Why are moths attracted to white light? There are several hypotheses. The standard explanation relates this to navigation. Moths evolved when there were no artificial lights. Like humans, they too relied on the rays of light from celestial objects for navigation. In a phenomenon described as





**ATTACUS ATLAS.**  
Atlas moths are  
considered the largest  
moths in the world.



**BRIHASPA ATROSTIGMELLA**, snout moth.



**NEOCHERA MARMOREA**, noctuid moth.



**MACROCILIX MAIA.**



**IT IS NOT** merely the adult moths that are lively. Their caterpillars too display rich and vibrant patterns.

transverse orientation, moths and other insects fly maintaining a constant angle relative to the closest source of light. Not all agree though the explanation is accepted for migrating moths. What about moths flying towards the campfire or a candle flame? Says Dr Irengbam Mohendra Singh: “A moth flying to a candle flame maintaining the same angle will hit the flame sooner or later because the candle is not at optical infinity... the moth will keep the light at the same angle, start circling and spiralling in. An incandescent flame creates hot air above and the moth will fry and drop dead, even if it is not trapped by the flame.” The entomologist Philip Calhan, who discovered luminescent pheromones, had a different hypothesis. He maintained that the infrared spectrum of a candle flame had frequencies similar to those emitted by the pheromones from a female moth. This meant that male moths were dying trying to mate with the candle flame. Did the Sufi poets get it

right? Western science, though, does not accept Calhan’s view, as it cannot explain the moths’ greater attraction to ultraviolet rays. For the spiritual minded, a moth’s self-annihilation has a totally different meaning.

For poets, artists and philosophers, moths’ attraction for the

flame is symbolic of romance, self-transformation or ultimate search for the truth. The story in verse from Farid ud-Din Attar’s Persian epic *Maqamat-ut-Tuyur* (The Conference of the Birds) goes like this:

One night moths gather to find out the truth about the candlelight. They decide that one among them must investigate this light. A young moth flies until he notices from a distance a candle burning inside a palace. He comes back to report. The elderly moth—their mentor—dismisses his report, claiming it to be of no value. Another moth then goes in to see this candle flame, finds it, circles around the aura of the light, returns to relate his experience. The mentor shakes his head and tells the moth that he bore no signs of having fathomed the nature of the flame’s shine. A third moth then takes off, dances around the flame in such frenzy that soon the flames

**TROTOCRASPEDA  
DIVARICATA,**  
Geometrid moth.





**LYGODIUM, SPIDER MOTH.**



**LOPHARTHURUM COMPRIMENS.**



**CALLAMBULYX RUBRICOSA RUBRICOSA, male hawkmoth.**



**THYMISTIDA CF. TRIPUNCTATA, hook-tip moth.**



**MOTHS OF THE GEOMETRIDAE FAMILY** come in dazzling shades of green and other colours. (Top left) Tanaorhinus, (top right) Pseudeuchlora kafebera, (above left) Thinopteryx crooptera, and (above right) Lotaphora iridicolor.



**PHANTOM MOTH.**



**LEBEDA NOBILIS,**  
lappet moth.



**SYNTYPISTIS** pallidifascia,  
prominent moth.



**OURAPTERYX MARGINATA,** swallow-tailed moth.



**ASOTA TORTUOSA.** A  
forest scene on the wings.



**YPONOMEUTIDAE,**  
Attera species.



**BRAHMAEA HEARSEYI,** brahmids moth.



**DEATH'S-HEAD**  
hawkmoth.



**BARSINE FLAMMEALIS,**  
arctiid moth.



**MOTHS BELONGING TO THE ARCTIIDAE FAMILY.** Cyana cf effracta, Cyana gazella, Cyana sp., and Cyana adita.



**CATERPILLARS** are voracious eaters. Most adult moths do not eat at all.



engulf his entire body. Noticing the candle's sudden extra blaze, the mentor comments that the third moth, by surrendering himself to the flame, had found the truth they were seeking.

Historically, moths are not known for inspiring poets, for making or eating silk, or for their romance with the light bulb. The term “debugging”



**CIFUNA LOCOPLES**  
**EMERGING** from its cocoon. Moths are clever creatures. When the conditions are unfavourable, they remain in the cocoon for extended periods of time until the environment becomes suitable for the adult to emerge.

came into common parlance thanks to a moth and the computer scientist Grace Murray Hopper, a Rear Admiral of the United States Navy, who popularised the term “debugging the system”. When the Mark II Aiken Relay Calculator (a very primitive computer) was being tested by her team at Harvard University on September 9, 1947, a moth was found trapped in

one of its panels. It was removed and affixed to the log, with a note that this was the first case of an actual bug being found and that the “machine has been debugged”. This moth, with the log entry, is now on display at the Smithsonian Institution’s National Museum of American History in Washington<sup>2</sup>. They are pests but so are butterflies, birds and other beauti-

es of the animal kingdom. They are pollinators, a fact rarely known to the layman. They are not easily spotted during daytime, but when spotted are mistaken for butterflies. Theirs is a secretive nightlife. Why then this vibrancy, colour and design? If an adult in all its magnificence emerges only for procreation, it is surely among nature’s intriguing creations. Maybe,



**OCINARA SP.**, bombycid moth.



**AUZEA RUFIFRONTATA**, swallow-tailed moth.



**EUDOCIMA SIKHIMENSIS**, fruit-piercing moth.



**RAPDALUS PARDICOLOR**,  
Cossid or goat moth.



**CELERENA SIGNATA**, female, geometrid moth.

but the moth may have a different point of view:

...our attitude towards life  
is come easy go easy  
we are like human beings  
used to be before they became  
too civilised to enjoy themselves...  
—“The lesson of the moth”<sup>3</sup>.

July 19-24 is the National Moth week. Be part of it.

#### References

1. From the translated version of *Maarif* by Coleman Barks and John Moyne.
2. [http://www.jameshuggins.com/h/tek1/first\\_computer\\_bug\\_large.htm](http://www.jameshuggins.com/h/tek1/first_computer_bug_large.htm). Photo of the log with the moth.
3. From *The Lives and Times of Archy and Mehitabel* by Don Marquis; page 96.