TROPICAL BIOLOGY ASSOCIATION

COMMON MOTHS AROUND DANUM FIELD STATION

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This guide has been written by Rosie Trevelyan specifically for use on TBA courses and not for commercial purposes.

The Tropical Biology Association is a non-profit organization dedicated to providing professional training to individuals and institutions involved in the conservation and management of tropical environments. The TBA works in collaboration with African and South-East Asian institutions to develop their capacity in natural resource management through field courses, training workshops and follow-up support.

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Note: The order of families is taken from http://www.mothsofborneo.com/

INTRODUCTION TO MOTHS

The 150,000 species of butterflies and moths belong to the order Lepidoptera. There isn't a neat definition of a moth. While most moths are nocturnal, and most butterflies diurnal, the opposite is sometimes true. The most reliable way to tell a moth from a butterfly is if it is nocturnal, and/or has a distinct wing coupling apparatus, and/or does not have clubbed antenna. None of this information is very useful when looking at an adult on the moth light and certainly won't tell us what species we are looking at. The best way to start learning about moths is to become familiar with the families. As ecologists or conservationists it is also useful to know about the moth's adult and larval habitat – which means you need to get out into the field and find out.

How to use this guide

This guide gives you a glimpse into the spectacular array of moths you can see if you put up a "moth light" at the Danum Valley Field Station. Rather than overwhelm you with the thousands of species that live in the forest, I have included a selection of moths that are easy to identify and that are more or less in focus in my photographs. The aim of the guide is to help you get to know a few moths from different families so that it becomes easier for you to look up new species for yourself. Once you are familiar with the families, you will know where to start looking in a reference book when you find species that are not covered here. Even better, I hope you will take pictures of other moths so that we can add them to the guide for more people to enjoy.

MOTH FAMILIES COVERED IN THIS GUIDE

Cossidae (goat & carpenter moths)

They are usually heavy-bodied with a "cylindrical" shape. The head is large with large eyes. The forewings are long and narrow and the overall colour is often grey, brown or black with speckled patterns. Many, such as *Xyleutes strix*, do not have mouthparts in the adults. Larvae mostly bore into wood or roots of trees and caterpillars can take several years to develop. About 700 species have been described in this family.

Limacodidae (slug moths)

Small to medium moths with stout, hairy or thickly scaled bodies. Wings are rounded and usually have fringes. The larvae are rather fat and "slug like". They have reduced thoracic legs and no prolegs.

Lasiocampidae (eggar moths, lappet moths)

Heavy stout bodies which are often hairy. The hindwings are short and almost circular and often stick out beyond the forewings. Both sexes have comb – like antennae. Females are bigger than the males and some are flightless. Adults don't feed since they lack a proboscis. Caterpillars usually hairy, often gregarious and form tents.

Saturniidae (emperor moths, atlas moths)

This family contains the largest moths in the world. *Attacus atlas* is the world's largest moth in terms of wing area. (The prize for the largest wing span goes to the giant Agrippa moth which is a noctuid). Species in this family often have eye spots or transparent windows on their wings which may have hooked tips. The bodies are stout with short abdomens. Males have prominent comb-like antennae. Adults don't feed – the proboscis is vestigial or absent – and live only 3 to 5 days.

Sphingidae (hawk moths)

This family contains some of the heaviest moths. Their forewings are triangular in shape and relatively long. Eyes are prominent. They have a broad thorax and pointed abdomen. Most are powerful, fast flyers. Some species eat nectar and are important pollinators. Larvae are fat and smooth with a prominent horn at the end.

Notodontidae (prominent moths)

Brownish greyish nocturnal moths with large usually hairy heads and legs. Most have a prominent tuft of hair on the thorax and first abdominal segment (hence the family name). The proboscis is functionless. They are normally very cryptic and some species mimic twigs.

Lymantriidae (tussock moths)

Small to medium moths with broad, rounded forewings. They have small heads, stout abdomens and usually hairy legs. The proboscis is either reduced or absent. Larvae are arboreal and usually have protective hairs. There are 2,600 species in the family.

Uranidae

This is a tropical and sub-tropical family of both day and night fliers with about 100 species. They have tailed hindwings which in the case of *Lyssa* are very long. Antennae are thickened towards the middle.

Geometridae (earth measurers)

The forewings are broad in relationship to the rest of the body and are flattened horizontally against the surface on which they rest. They are often well camouflaged and generally are poor flyers. The thorax is narrow. Some south east Asian species are attracted on the secretions around the eyes of mammals or to sweat. The caterpillars are called inch worms or loopers because of the way they move. There are 20,000 pecies in this family.

Noctuidae

The largest, most widespread family of moths with 22,000 species. They are heavily bodied with dull and cryptically coloured forewings and often with eye spots on the hind wings. Members of this family have thoracic hearing organs which they use to detect and evade predatory bats. Many species are fruit eating and possess a saw-like proboscis that can pierce fruit.

PYRALOIDEA – Crambidae & Pyralidae

Crambidae

Similar to Pyralidae. The wings can be satiny or translucent and finely patterned. Have fringe of hairs on fore- and hindwings. Many species are long legged and generally quite delicate.

Pyralidae (snout moths)

Adults look like they have a nose or snout. Thread-like antennae. Relatively narrow forewings with broader hind wings both of which often have a fringe of hairs. The larvae feed on plants, often living in silken tunnels.

COSSIDAE

Xyleutes mineus

Xyletus strix

LIMACODIDAE

Nirmides basalis

LASIOCAMPIDAE

Trabala **sp.**

SATURNIIDAE

Antheraea jana

Attacus staudingeri

SPHINGIDAE

Acosmeryx **sp.**

Ambulyx **sp.**

Ambulyx canescens

Ambulyx pryeri

Daphnusa ocellaris

Elibia dolichus

NOTODONTIIDAE

Harpyla microsticta

Pararcerura **sp.**

LYMANTRIIDAE

Carriola ecnomoda

URANIIDAE

Lyssa zampa

GEOMETRIDAE

Antitrygodes divisaria

Borbacha **sp.**

GEOMETRIDAE

Celerene signata

Pomasia **sp.**

Tanaorhinus **sp.**

Thalassodes **sp.**

GEOMETRIDAE (ENNOMINAE)

Celenna festivaria

Craspedosis **sp.**

Hyposchrosis **sp.**

NOCTUIDAE

Episparis **sp.**

NOCTUIDAE

Ischyja **sp.**

Ranadasa parvo

Xanthodes transversa

CRAMBIDAE

Glyphodes stolalis

PYRALIDAE

Sacada **sp.**

Vitessa **sp.**