

The Difference Between Moths and Butterflies

My interest in moths has grown from trying to identify an unknown butterfly, which led me to day-flying moths, and this in turn led to the other moths. I was surprised to learn that there are between 20,000 and 30,000 species of moth in Australia (compared with around 400 butterflies), and that, as a result, there are no complete identification guides. Also, unlike butterflies, moths do not all have common names and when they do, the name sometimes refers to the larvae or caterpillar.

The question most asked is ‘what’s the difference between moths and butterflies?’ They are closely related, both members of the insect order Lepidoptera, from the Greek *lepidos* meaning scale and *pteron* meaning wing. While differences exist, and these are detailed below, there are exceptions to the rule:

1. Butterflies have clubbed antenna, like the Splendid Ochre below, and moths generally have feathery (pectinate) or plain, thread-like antenna. The Tinged Tussock Moth below has a fine set of pectinate antenna, while the Mistletoe and Tiger Moth shown in point two below have thread-like antenna. There are exceptions: Sun Moths from the family Castniidae have clubbed antenna, fly during the day and are quite colourful.



Clubbed antenna of a Splendid Ochre butterfly



Pectinate antenna of a Tinged Tussock Moth

2. Moths fly at night and butterflies, apart from one, do not. However, there are day flying moths from a number of moth families, including Castniidae, Noctuidae and Arctiidae. The Mistletoe Moth (Noctuidae) and Tiger Moth (Arctiidae) are day flyers and are pictured below. Moths are also seen during the day when they are disturbed from their resting places.



Mistletoe Moth, note the thread-like antenna



Tiger Moth, also has thread-like antenna

- The flight differs because of the wing structure and the degree of overlap between the fore and hind wings. As their wings do not overlap greatly, moths have a hook and bristle system, called a retinaculum and frenulum, which allows their wings to function together in flight. This gives the appearance of a more frantic style of flight, the wings creating almost a circular appearance in motion. The wings of butterflies overlap sufficiently so this mechanism is not required, and their flight style appears more relaxed and elegant. There is the inevitable exception, a male Skipper that has a hook and bristle.
- The position of wings at rest differs too. Moths hold their wings over the body or pressed flat on either side of the body, as shown in the photos of moths above. Upon landing, butterflies hold their wings vertically above the body then open them to capture the sun. The Orchard Swallowtail butterfly below lands on a Scotch Thistle, with its wings held up. However, there are a few moths which hold their wings vertically upon landing, including *Epyaxa subidaria* below.



The Orchard Swallowtail butterfly, wings held up upon landing



The moth, *Epyaxa subidaria* also holds its wings up at times

The differences between moths and butterflies need to be considered together, so if it is flying at night and has feathery or thread-like antennae, it is a moth. If it is flying during the day, examine its antennae, flight style and the position of the wings on landing. Learning about moths and butterflies is interesting but the differences are not cut and dried; the more familiar you are with butterflies, the better your chances of recognising a moth.



Moths: Common Anthelid



Banded Porela



Snowy Footman

Further information:

Paul Zborowski and Ted Edwards, *A Guide to Australian Moths*, 2007 ; Ian Common, *Moths of Australia*, 1990; Pat and Mike Coupar, *Flying Colours*, 1992; Michael Braby, *The Complete Field Guide to Butterflies of Australia*, 2004.

Websites to assist in moth identification, CSIRO <http://www.ento.csiro.au/gallery/moths/albums.php> and <http://australian-insects.com/lepidoptera> that deals with larvae, butterflies and moths.