# Order Lepidoptera

Butterflies and moths (lepis = scale, pteron = wing)



https://en.wikipedia.org/wiki/Lymantria \_dispar\_dispar



# Worldwide Diversity

About 180,000 species of butterflies and moths have been described so far. They are classified into 126 families and represent roughly 10% of all species of animals described to date. They have common defining traits of scales on their wings and a proboscis. Butterflies and moths are holometabolous (passing through life stages of egg, larva, pupa, and adult). While adults are important pollinators, the caterpillars are often major agricultural pests.

## Fun facts

The Death's-head hawk moth squeaks like a mouse. Source: <u>https://en.wikipedia.org/wiki/Death%27s-head\_hawkmoth</u>.

Many caterpillars have over 3,000 muscle groups. Humans have 650 named muscle groups.

### Illinois species

There are roughly 2,000 species of butterflies and moths known from Illinois; 150 butterfly species and 1,850 moth species. Source: <u>https://www.dnr.illinois.gov/education/Pages/WA</u> MothButterlfy.aspx





Anatomy of adult butterfly (source: <u>https://en.wikipedia.orq/wiki/Lepidoptera</u>)



Death's-head hawk moth (source: <u>https://en.wikipedia.org/wiki/Death%27s-head\_hawkmoth</u>)



Anatomy of caterpillar (source: <u>https://en.wikipedia.org/wiki/Lepidoptera</u>)

#### Classification

"Linnaeus in Systema Naturae (1758) recognized three divisions of the Lepidoptera: Papilio, Sphinx and Phalaena, with seven subgroups in Phalaena. These persist today as 9 of the superfamilies of Lepidoptera... ... While it is often found that DNA-based phylogenies differ from those based on morphology, this has not been the case for the Lepidoptera; DNA phylogenies correspond to a large extent to morphology-based phylogenies." Source:

https://en.wikipedia.org/wiki/Lepidoptera.

#### Diversity

"The Lepidoptera are among the most successful groups of insects. They are found on all continents, except Antarctica, and inhabit all terrestrial habitats ranging from desert to rainforest, from lowland grasslands to mountain plateaus, but almost always associated with higher plants, especially angiosperms (flowering plants). Among the most northern dwelling species of butterflies and moths is the Arctic Apollo (Parnassius arcticus), which is found in the Arctic Circle in northeastern Yakutia, at an altitude of 1500 m above sea level. In the Himalayas, various Apollo species such as Parnassius epaphus have been recorded to occur up to an altitude of 6,000 m above sea level." Source:

https://en.wikipedia.org/wiki/Lepidoptera.

#### **Geological history**

The earliest known Lepidoptera fossils are scales preserved from the Triassic-Jurassic boundary (roughly 201 million years ago). Source: https://en.wikipedia.org/wiki/Lepidoptera.

#### **Parasitism**

Only 42 species of parasitoid lepidopterans are known (1 Pyralidae; 40 Epipyropidae). The larvae of the greater and lesser wax moths feed on the honeycomb inside bee nests and may become pests; they are also found in bumblebee and wasp nests, albeit to a lesser extent. In northern Europe, the wax moth is regarded as the most serious parasitoid of the bumblebee, and is found only in bumblebee nests. In some areas in southern England, as much as 80% of nests can be destroyed. Other parasitic larvae are known to prey upon cicadas and leaf hoppers. Source:

https://en.wikipedia.org/wiki/Lepidoptera.



#### **Pollination**

"Most species of Lepidoptera engage in some form of ... pollination of flowers. Most adult butterflies and moths feed on the nectar inside flowers, using their probosces to reach the nectar hidden at the base of the petals. In the process, the adults brush against the flowers' stamens, on which the reproductive pollen is made and stored. The pollen is transferred on appendages on the adults, which fly to the next flower to feed and unwittingly deposit the pollen on the stigma of the next flower, where the pollen germinates and fertilizes the seeds.

Flowers pollinated by butterflies tend to be large and flamboyant, pink or lavender in color, frequently having a landing area, and usually scented, as butterflies are typically day-flying... The flowers have simple nectar guides, with the nectaries usually hidden in narrow tubes or spurs, reached by the long "tongue" of the butterflies." Source:

https://en.wikipedia.org/wiki/Lepidoptera.