3.ORDER Neuroptera: Owl flies, lacewings & antlions

Holometabola i.e. complete metamorphosis

The order Neuroptera includes the lacewings, antlions, mantisflies, and owlflies along with several other minor groups.

- Neuroptera is divided into two suborders: Hemerobiiformia (lacewings, mantisflies) and Myrmeleontiformia (antlions, owlflies)
- Except for larval spongilla flies (family Sisyridae) which feed on fresh-water sponges, all members are terrestrial.
- Antlion larvae live in the soil and construct pitfall traps to snare prey.
- Lacewing larvae are usually found in vegetation where they typically feed on aphids, mites, and scale insects. In most cases, the adults of these insects are also predators — the non-predatory species usually feed on nectar, pollen, or honeydew.
- The larvae of antlions and lacewings have specialised mouthparts with large, sickle-shaped mandibles and maxillae that interlock to form pincers.

Antlion pits in sand

Spongilla fly cocoon

(Source: https://naturallycuriouswithmaryholland.wordpress.com/tag/sisyridae/)

Owlfly larva

Aphidlion larvae

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Owlfly adult

By Mathias Krumbholz - Own work, CC BY-SA 3.0
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Antlion adult

By Gilles San Martin from Namur, Belgium - Mantispa styriaca
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Green lacewing

Mantid lacewing

Economic Importance:

Lacewing larvae are beneficial as predators of agricultural pests (aphids, whiteflies and scale insects). Some species are reared and sold commercially as biocontrol agents.

Major Families:

Chrysopidae (Green lacewings) — aphid predators

Hemerobiidae (Brown lacewings) — aphid and mite predators

Mantispidae (Mantidflies) — parasitoids and predators

Myrmeleontidae (Antlions) — doodlebugs, ant predators

Ascalaphidae (Owlflies) — similar habits to antlions

Interesting Facts

- A lacewing's egg sits atop a slender stalk secreted by the female's reproductive system. For many years, biologists thought these eggs were the fruiting bodies of a fungus they called *Ascophora ovalis*. The true nature of these eggs was first discovered in 1737 by Rene Reaumur, a French physicist, biologist and inventor.

Source: https://www.bbc.co.uk/bitesize/articles/z3r8ywx

- Some lacewing larvae camouflage themselves by attaching the dead bodies of their prey to spines on their back. Other species use bits of bark, moss, etc.

Image Source: https://naturallycuriouswithmaryholland.wordpress.com/2013/09/19/green-lacewing-larvae-use-corpses-as-camouflage/

- Adult lacewings in the subfamily Chrysopinae can detect the sound of bats with auditory organs in the large veins of their front wings.
- As larvae, lacewings and antlions do not have a complete digestive system. Waste materials accumulate throughout larval development and expel near the end of the pupal stage. The accumulated faecal material is called a meconium.
- Antlion larvae are sometimes known as doodlebugs. The name is apparently derived from the squiggly trails these insects make when they move around in the sand.
- Silken cocoons of Neuropterans are spun from Malpighian tubules (excretory organs) and through the anus, in contrast to other insects.