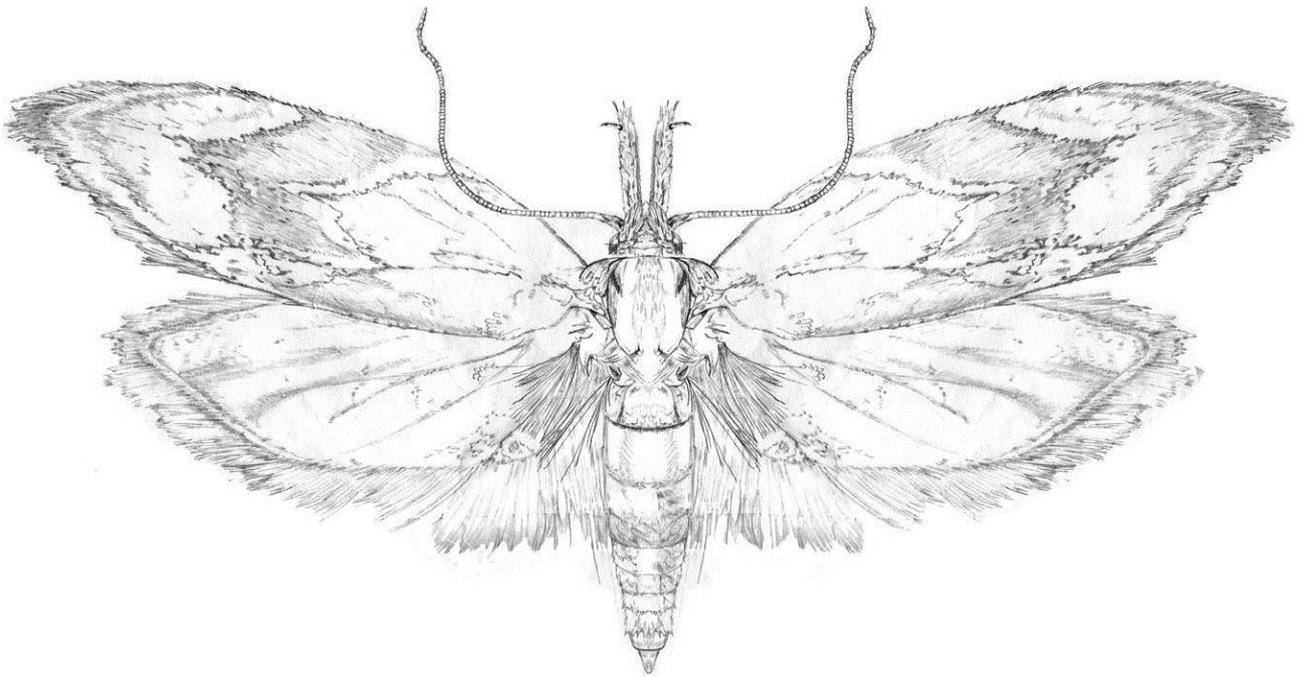


Order Lepidoptera



Common names: moths, butterflies, caterpillars, loopers, bagworms, cutworms

Simple diagnosis. Lepidoptera are recognised by having both surfaces of the wings and often other parts of the body densely covered with overlapping scales, most often with tubelike sucking mouthparts elongate and coiled at rest (= haustellate). Larvae and a few small adult moth species have mandibulate (= biting and chewing) mouthparts.

Technical diagnosis. The Lepidoptera can be recognised by both surfaces of the wings and often other parts of the body being clothed with scales, often coloured, although some species have scale-less wing patches. The wings at rest can be held variously, horizontally, vertically, flat or tent-like. The hindwing can be similar to or smaller or larger than the forewing. The forewing has a Y-shaped anal vein and with M veins having three branches. The wings can be reduced or absent (some females). The mouthparts of many lepidopterans form a unique coiled proboscis at rest (= haustellate), however, there are minute species with mandibulate (= biting and chewing) mouthparts (e.g. Micropterigidae). Other characters important for identification include: large compound eyes, ocelli paired or absent; pronotum desclerotised; prothorax usually small, mesothorax and metathorax both well-developed, with mesothorax larger; legs well-developed, cursorial, five segmented tarsi, foretibiae with a single or no spur; and abdominal cerci absent.

Larvae are usually eruciform (= caterpillar shaped), usually fleshy and thick, often having warning, aposematic or cryptic colouration. Some larvae are modified for tunnelling in wood (cylindrical with reduced appendages) or leaf-mining (flat with reduced appendages). The head is usually heavily sclerotised, with an adfrontal area, but the head capsule may be retractable; eyes are usually present in group of six stemmata or less, often forming a semicircle. The mouthparts are mandibulate, maxillae with a 2-3 segmented palp, labium often modified into silk spinneret, and



Papilio ulysses

always with two-segmented palpi. The antennae are usually short and three segmented. The legs are short, bearing a single claw, and often with less than the maximum five pairs of prolegs, bearing crochets; prolegs are commonly present on abdominal segments II-VI and X, and larvae are sometimes apodous.

What can they be confused with? Lepidopteran adults can be distinguished from all other insects by having scales on both surface of the wings and they usually proboscis-like mouthparts that are coiled at rest. The moths with mandibulate (= biting and chewing) mouthparts can be confused with Trichoptera (= caddis flies), but the latter differ in having hair-like setae and not scales on the wings.

Lepidopteran larvae are similar to those of Hymenoptera, Mecoptera, and Coleoptera, in having a similar body shape, mandibulate (= biting and chewing) mouthparts, and often have prolegs. However, in the three latter orders the adfrontal area of the head is absent. In Sawfly hymenopterans the prolegs are present on segments II-VIII and X (6 or more pairs; except in pergids, where some without or with only one pair), without crochets, and a spinneret is most often absent. In Coleoptera a spinneret is absent except in a few aquatic Hydrophilidae.

Biology. Lepidoptera is one of the most diverse orders of insects and they are found in most terrestrial ecosystems of the world. Larvae are usually terrestrial. Lepidoptera mostly feed on plants, with adults usually having liquid food (nectar) and larvae feed mostly on leaves. There are a few parasitic and carnivorous species.

Diversity in Papua New Guinea. Lepidoptera are cosmopolitan, with 175,000 species. The New Guinea fauna is well-known for butterflies but poorly described in other lepidopteran groups (Miller 2007).



Aqathodes callixantha

Key references for Papua New Guinea.

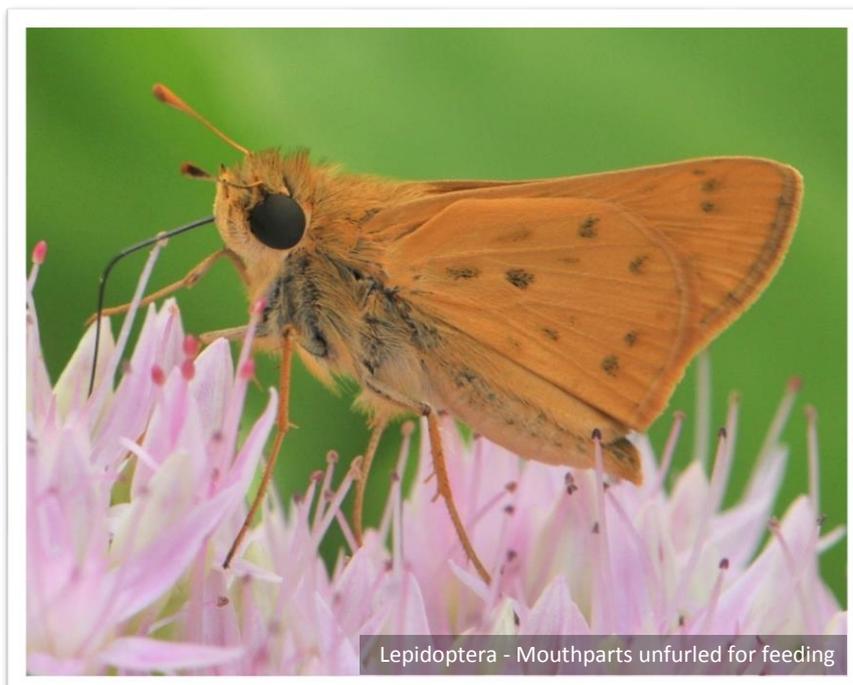
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Lepidoptera - Mouthparts unfurled for feeding

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