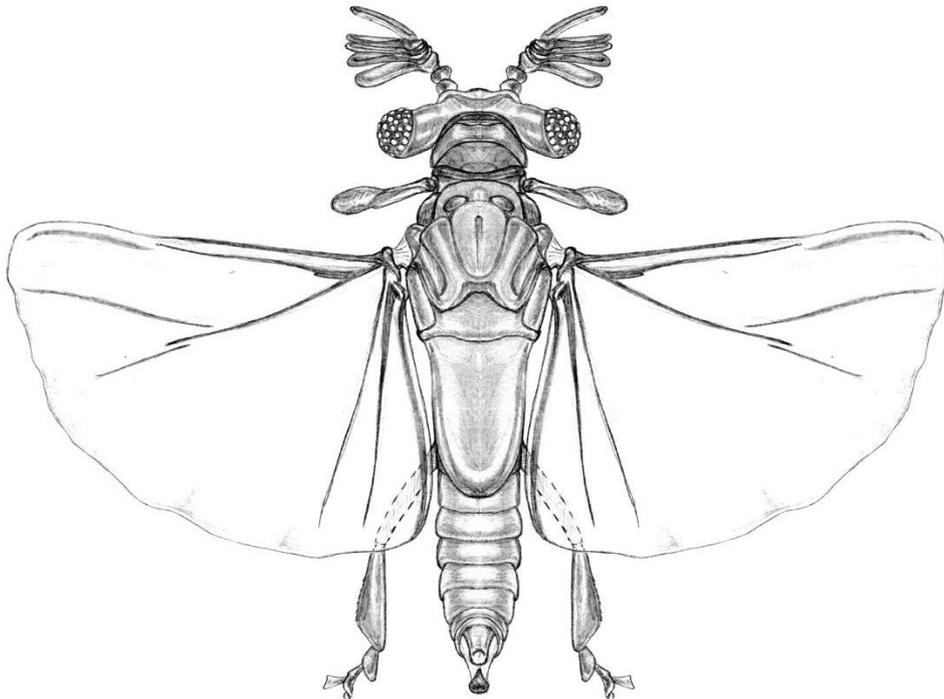


Order Strepsiptera



Common name: stylops

Simple diagnosis. Males and females are extremely different in appearance. Adult males are small slow-flying insects, with antennae like antlers (one or more segments elongately lobed), bulbous eyes, labial palpi missing, tiny paddle-like forewings, large membranous hindwings which lack crossveins, hind thorax much larger than the remainder, 10-segmented abdomen. . Adult Females are endoparasitic, partially inserted into the bodies of their hosts, with their head and thorax fused into a cephalothorax, and they lack eyes, antennae, legs and wings.

All larvae, except for the 1st and last instar, are inside the host, lacking discernible eyes, mouthparts, antennae, legs and wings. The first instar is minute (<0.3mm) and similar to a silverfish (*Zygentoma*) but without antennae and with 2 or 4 long apical abdominal hairs, which are unsegmented. The last instar bulges out of the integument of the host, and is like the female.

Technical diagnosis. Male Strepsiptera are small flying insects, which are rarely seen or collected. They are easily identified from their unusual morphology: antennae 4-7 segmented and shaped like antlers (one or more segments elongately lobed), eyes bulbous, labial palpi missing, tiny paddle-like forewings, large membranous hindwings which have 8 or less long veins and lack crossveins, metathorax much larger than the reduced pro- and mesothorax, 10-segmented abdomen. Other diagnostic features include: ocelli absent, reduced but mandibulate mouthparts, tarsi 2-5 segmented, with or without claws. Females are neotenic (= retain larval features) and live partly extruded from intersegmental membranes of the body of their hosts in the orders Blattodea, Diptera, Hymenoptera, Hemiptera, Mantodea and Orthoptera. Females are wingless, legless and their head and thorax forms a cephalothorax, which lacks antennae eyes and easily visible mouthparts.

The first larval instar is an active larva, similar in shape to a silverfish (*Zygentoma*), very small (<0.3mm), possesses eyes and legs, lacks antennae, and has 2 or 4 long caudal hairs which are unsegmented. The middle instars are similar to the female and live internally in the host body. The last larval instar is partly extruded from the host body, with either a bulbous head and pronotum (male), or a cephalothorax (female).

What can they be confused with? Males are similar to Diptera, Hymenoptera and some Hemiptera (male coccids), but are easily distinguished by antler-like antennae, bulbous eyes and reduced strap-like forewings. The female is partly extruded from the host body. The only other insect with similar biology and appearance is the partly extruded larva of Dryinidae, Hymenoptera. However these are globular, with the larva living in a shell of its shed skins.

The legless endoparasitic larvae may be confused with legless endoparasitic larvae of the orders Hymenoptera and Diptera. Most endoparasitic dipteran larvae have a pair of mouth hooks and large apical abdominal spiracles but endoparasitic hymenopteran larvae may not be easily distinguishable from endoparasitic Strepsipteran larvae.

Biology. Strepsiptera are known from many parts of the world, with about 500 described species. Males are rarely seen or collected. They are diurnal, free-living and non-feeding, with soft fluttering flight and probably only live for a few days. Females are commonly collected when collecting other insect orders, but may not be recognised until the specimens are curated. Strepsiptera are parasites of Blattodea, Diptera, Hymenoptera, Hemiptera, Mantodea and Orthoptera. They render their hosts infertile.

Diversity in Papua New Guinea. Some New Guinean species have been described but the fauna is likely to be much larger. Most specimens are known from unidentifiable females on other insect specimens.

Key references for Papua New Guinea.

There are no detailed reviews of the New Guinea fauna.

Kathirimamby, J. 1990. Strepsiptera. *Insects of Australia volume 2*. This refers to 2 families in New Guinea and by inference 3 other families.