

2. Morphology

Morphological structures are described and discussed not only to diagnose the Elachistinae and facilitate their identification from other smaller moths, but also from a taxonomic point of view. The emphasis is on Australian taxa – features that occur only in species reported elsewhere have sometimes been omitted. The genus *Stephensia*, not found in Australia, is omitted in these diagnoses. A detailed account of these groups has been given by Kaila (1999a) and references therein.

Larva

Figs 1–5.

Elachistine larvae are invariably leaf-miners or stem-borers. They are structurally more or less adapted to this mode of life, often being dorsoventrally flattened with very flat prognathous head (Figs 1–3). They may also have specialisations in their spiracles (Bradley 1974; Sugisima 2005; Sugisima and Kaila 2005). However, not all elachistine larvae are so specialised; some are nearly cylindrical and semiprognathous (Fig. 4). Elachistine larvae can usually be recognised by the absence of the P2 seta on the head, though detection of this absence requires high-quality equipment and remains to be verified for many species. A more easily observable character, which is universal in the Elachistinae and nearly unique among the Lepidoptera in general, is the presence of a pair of sclerotised prothoracic shields ventrally. The larvae also have a prothoracic shield dorsally; its shape is often characteristic of species groups or even species and is a good guide in the identification of the larvae (Fig. 3). Many elachistine larvae are more or less ornamented, and commonly are easier to identify to species than the adults by using the coloration of the head and body and the shape of the prothoracic shields. The apex of the abdomen is often tapered into an extension, which is also species-specific in shape, and apparently equivalent to the pupal cremaster (Fig. 1). The usual pattern in the larvae of the *Elachista gerasmia* group, which is currently the best known group among the Australian Elachistinae, is a pale dorsal line on the thorax only or extended along the abdomen, and the pale

subdorsal and lateral lines on the abdomen. The larvae often have paired, conspicuous, unpigmented fleshy areas dorsally on the second and third thoracic segments (Figs 1–3), which might represent tonofibrillary platelets or other structures perhaps

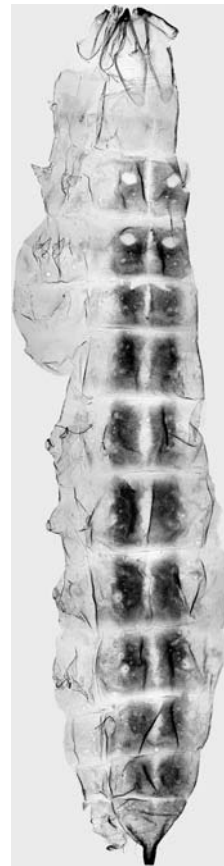


Fig. 1: A macerated larva of *Elachista crumilla*. The larval skin has been cut laterally, and the head capsule accordingly split along the lateral margin. The thoracic legs are short but fully developed; abdominal prolegs of A3–6 have crochets arranged as a uniserial, uniordinal ring; those of A10 as a transverse band. On the second and third thoracic segments the pale patches are fleshy unpigmented areas, typical of many *Elachista* larvae. Abdominal segment 10 has a distinctive dorsoposterior extension, corresponding to the cremaster of the pupa.