1. Phylogeny, subfamily definition and generic classification

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Phylogenetic relationships within the megadiverse superfamily Gelechioidea are poorly understood, consequently the family-level classification has been confused. The Gelechioidea have usually been considered to belong to the more 'primitive' Ditrysia, together with the Tineoidea, Gracillarioidea and Yponomeutoidea. Recent studies, however, suggest that the Gelechioidea belong to the Apoditrysia on the basis of morphology (Kaila 2004) and on evidence derived from DNA (Regier *et al.* 2009; Mutanen *et al.* 2010). The latter study suggests that the Gelechioidea could belong to the Obtectomera in Minet's original definition (Minet 1986); the morphological scheme of Kaila (2004) does not contradict this placement.

The group here presented as the subfamily Elachistinae has, since the publications of Busck (1909) and Walsingham (1909), often been treated at family level (Braun 1948; Common 1970; Brock 1971; Dugdale 1971; Traugott-Olsen and Nielsen 1977). The present concept of the Elachistidae is much wider than in the past, with several groups from other families, e.g. the Oecophoridae, transferred to this family. Minet (1990) proposed a reassessment of the Elachistidae and included the Depressariinae, Ethmiinae, Agonoxeninae, Stenomatinae, Cryptolechiinae and Hypertrophinae in the Elachistidae. Sinev (1993) ended up with a similar delimitation of the family, although proposing superfamily status for the assemblage. He included the Elachistinae, Stenomatinae, Depressariinae, Ethmiinae, Agonoxeninae and Blastodacninae in his superfamily Elachistoidea. Hodges (1998) included the subfamilies Stenomatinae, Ethmiinae, Depressariinae, Elachistinae, Agonoxeniinae, Hypertrophinae, Deuterogoniinae and Aeolanthinae. Kaila (2004) presented a cladistic analysis of interrelationships within the Gelechioidea. This analysis, based on a considerably wider array of morphological characters from larvae, pupae and adults than any of the other studies, suggested a basal division of the Gelechioidea into the informal 'gelechiid' and 'oecophorid' lineages. The Elachistidae in broad concept are within the oecophorid lineage. This placement is in agreement with Passoa's (1995) results.

Kaila (2004) defined the Elachistidae in a similar way to Minet, the only difference being the position of the Stenomatinae. The main characteristics of the Elachistidae of Minet (1990) and Kaila (2004) are the presence of a spinose mesial knob in the male gnathos and the modifications in the pupa. In the scheme of Kaila (2004), the Elachistidae belong to the oecophorid lineage of the Gelechioidea, which includes such taxa as the Oecophoridae, the xyloryctid family assemblage which includes Blastobasinae, the heterogeneous autostichid family assemblage comprising Autostichinae, Lecithocerinae, Holcopogoninae and several groups with weakly supported status, the Chimabachidae and Amphisbatidae.

The generic classification of the Elachistinae was explored by Kaila (1999a). He suggested, based on a phylogenetic analysis, that the subfamily contained three genera – *Perittia*, *Stephensia* and *Elachista* – synonymising many generic names. Since that publication many further species of Elachistinae have been discovered, notably from Japan and the Oriental region and, above all, from Australia. To incorporate these newly recognised species into a phylogenetic framework, characters were coded for a large number of further species, showing differences in their character combination from those of Kaila (1999a). Hence, the data matrix presented by Kaila (1999a) was entirely revised. This led to the reconsideration of the character states of some characters, the exclusion of seven characters, the addition of a number of new characters and the correction of some errors found in the matrix of Kaila (1999a). Based on the results of Kaila (2004) further groups were added as outgroups, to better test the monophyly of the Elachistinae. Some changes in the species selection were also made: *E. hedemanni* Rebel was replaced by the closely related *E. pollinariella* Zeller, for which the data set is more complete, and *E. sinevi* (Sruoga) was excluded as only the adult male of this species was known, and was not available for the re-evaluation of the characters. The characters and character state definitions are presented in Table 1. The revised data were re-analysed using principally the same algorithms as in Kaila (1999a), using TNT