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A generic level review of *Eupithecia* Curtis and some closely related genera based on the Palaearctic, Nearctic and Oriental fauna (Lepidoptera, Geometridae, Larentiinae)

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Abstract

The history of the genus *Eupithecia* Curtis is reviewed, and a preliminary redescription of the genus is proposed on the basis of the Palaearctic, Nearctic and Oriental fauna. Several Asian species previously placed in *Eupithecia* have been found to be anomalous. These are examined and some are placed in related genera, two of them new (*Pareupithecia* and *Girida*). A further group (the ‘*subrubescens*’ group) is retained within *Eupithecia* as a separate species group. The genus *Eva* Vojníts is redescribed. A new species is described in the genus *Mesoptila* Meyrick. Descriptions are given of all genera involved, and full lists of taxa included within them, with the exception of *Eupithecia* itself. Selected adults and genitalia are illustrated. Taxonomic changes proposed in this paper include: new genera *Pareupithecia*, *Girida*; new species *Mesoptila murcida*; new synonymies, *Emmesocoma* Warren, 1907 of *Mesoptila* Meyrick, 1891 and *Horisme sterneckeri* Prout, 1938 of *Chloroclystis chingana* Wehrli, 1926; new combinations *Mesoptila melanolopha* Swinhoe, 1895, *Mesoptila unitaeniata* Warren, 1906, *Mesoptila deviridata* Warren, 1907, *Mesoptila excita* Prout, 1958, *Mesoptila festiva* Prout, 1916, *Eupithecia eurytera* Prout, 1938, *Eupithecia chingana* Wehrli, 1926, *Pareupithecia spadix* Inoue, 1955, *Girida rigida* Swinhoe, 1892, *Girida sporadica* Prout, 1932; reinstated taxon *Eupithecia brevifasciaria* Leech, 1897; and status change *Girida sporadica* Prout, 1932.

Key words: Lepidoptera, Geometridae, *Eupithecia*, *Mesoptila*, *Pareupithecia*, *Girida*, *Eva*, *Mesoptila murcida* sp. n., taxonomy, morphology, distribution, revision

Introduction

The genus *Eupithecia* is placed in the tribe Eupitheciini (collectively known as the pugs) and the subfamily Larentiinae in the Geometridae. The genus occurs world-wide, but is represented in Australasia by only one species from Seram and New Guinea. This is perhaps rather unexpected given its success and richness in north-temperate latitudes. *Pasiphila* seems to fill that niche, particularly in New Zealand.

In temperate zones it is found at all levels, but in the tropics, with a few exceptions, mainly in the highlands. The genus is one of the largest in the Lepidoptera, with somewhere around 1500 described species at the present time. Adults of *Eupithecia* are small in size compared with other Geometridae, usually without sexual dimorphism in wing size, shape and pattern. The wingspan of the majority of species ranges from 12 to 35 mm. Most species are cryptically coloured in greyish or brownish hues, but some species have more striking coloration ranging from snowy white to ochreous and even green. Most *Eupithecia* are nocturnal. The biology is unknown for the majority of species, but where it is known, mainly for western Palaearctic, Japanese and Nearctic faunas, the caterpillars usually feed on the generative organs of plants: flowers and seeds in the fruits and seed-capsules.

The genus has been augmented considerably since its original establishment in 1825, and we give below a history of its development, and in particular of various attempts to split up the genus. The purpose of this paper is to give a preliminary redefinition of its boundaries based on the Palaearctic, Nearctic and Oriental fauna, and to deal systematically with a number of problem species in Asia which fall either close to but within, or outside what we consider should be the boundaries of the genus.