



The type species of *Eucosma* Hübner (Lepidoptera: Tortricidae: Eucosmini)

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Abstract

Eucosma Hübner is the largest genus in the Tortricidae with more than 290 named species. Historically, there has been confusion about the assignment of species to *Eucosma* and related genera, a problem which is perpetuated by the lack of a type specimen for the type species, *E. circulana* Hübner. Here we designate a neotype for *E. circulana* following analysis of eight North American species having similarities with that taxon. *Eucosma circulana* and *E. gemellana* Heinrich are redescribed, the latter being elevated from subspecies to species status. *Eucosma paragemellana*, new species, is described from specimens previously confused with *E. gemellana*, and *E. fraudabilis* Heinrich is reviewed.

Key words: *circulana*, *fraudabilis*, *gemellana*, Olethreutinae

Introduction

Eucosma Hübner is the largest genus in the Tortricidae, consisting of some 290 named species (Gilligan *et al.* 2012). It has a Holarctic distribution, with the highest species diversity occurring in western North America. Several authors have provided descriptive accounts of the genus (e.g. Heinrich 1923; Obraztsov 1968; Razowski 1989, 2003; Gilligan *et al.* 2008), but no synapomorphies have been discovered that consistently separate *Eucosma* from closely related genera such as *Pelochrista* Lederer. The resulting ambiguity, which has persisted for nearly two centuries and has resulted in different interpretations of these taxa in the Palearctic and Nearctic, is due in part to the lack of a type specimen of the type species of *Eucosma*.

Eucosma first appeared in the literature with the description of *E. circulana* in the second volume of Hübner's *Zuträge zur Sammlung exotischer Schmettlinge* [sic] (1823). The "Zuträge" was published in five parts (the last two authored by Carl Geyer) between 1818 and 1837 as a supplement to *Sammlung exotischer Schmetterlinge*, Hübner's (1806–[1832], [1819–1832]) prominent work on exotic (non-Palearctic) Lepidoptera (Hemming 1937a, b). The description of *E. circulana* consists of a short paragraph of text (Fig. 1) and hand painted illustrations numbered 363 and 364 of dorsal and ventral views, respectively, of a female from Pennsylvania (Fig. 2). The fate of the illustrated specimen is unknown, and consequently the identity of *E. circulana* has never been satisfactorily established. The Hübner types were acquired by Vincenz Abbate Edler von Mazzola in the early part of the 19th century, and the European material was deposited in the "Hof-Naturalien-Kabinet" at the Hofburg Imperial Library in 1823 (Calhoun 2003). There is no record of the deposition of the North American material. If it also went to Hofburg, then the type of *E. circulana* may have perished in a fire during the Vienna Rebellion of 1848 that destroyed many of the Hübner types (Calhoun 2003). The surviving Hübner specimens currently reside in the Naturhistorisches Museum Wien in Vienna (NMW). In response to an inquiry to NMW, we were informed that there are no specimens labeled "*Eucosma circulana*" in their collections (S. Gaal, pers. comm. 2012), so we conclude that the *E. circulana* type is lost or was destroyed.

There was no consensus among 19th century authors as to the application of *Eucosma* and related generic names (such as *Paedisca* Treitschke). Apart from the description of *E. circulana*, the earliest literature references to *Eucosma* are Hübner ([1816–1825]), who listed *E. circulana* in his *Verzeichniss bekannter Schmettlinge* [sic], and Geyer (1832), who described *Eucosma tuberculana* (determined by Fernald (1882) to be a pyralid) in the fourth