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## Revised world catalogue of *Eucopeina*, *Eucosma*, *Pelochrista*, and *Phaneta* (Lepidoptera: Tortricidae: Eucosmini)

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### Abstract

A revised world catalogue of *Eucopeina*, *Eucosma*, *Pelochrista*, and *Phaneta* is provided. Assignment to genus is based on generic redescrptions by Gilligan et al. (2013). A total of 709 names (including subspecies and synonyms) are listed, including 251 new combinations and 52 revised combinations.

**Key words:** Olethreutinae, Lepidoptera, Tortricidae, Eucosmini

### Introduction

The olethreutine lineage containing *Eucosma*, *Pelochrista*, and *Phaneta* is one of the largest in Tortricidae, with more than 500 described taxa. Its taxonomic history is a classic example of the confusion that results from a lack of clarity regarding generic concepts (Gilligan & Wright 2013, Gilligan et al. 2013). Here we present, in the form of a revised catalogue, the taxonomic implications of a phylogenetic analysis of the group by Gilligan et al. (2013). That study produced revised definitions of *Eucosma* and *Pelochrista* based on female genital morphology, concluded that nearly all North American *Phaneta* belong in the redefined *Eucosma*, and described *Eucopeina* as a new genus of Pinaceae-feeding species that previously had been placed in *Eucosma*. The changes primarily affect the North American taxa, with nearly all Palearctic species retaining the generic assignments of Razowski (1999, 2003). The new catalogue includes 709 names (including subspecies and 188 synonyms), with 251 new combinations and 52 revised combinations: 12 *Eucopeina* (+2 synonyms), 231 *Eucosma* (+96 synonyms), 226 *Pelochrista* (+85 synonyms), two *Phaneta*, 47 unplaced species (+4 synonyms), and three species (+1 synonym) assigned to other genera. A total of 396 updates or corrections are made to the current world catalogue (Gilligan et al. (2012).

Gilligan et al. (2013) identified three types of sterigma-sternum 7 structure within the *Eucosma-Pelochrista-Phaneta* lineage, Type 1 being associated with revised *Eucosma*, Types 2 and 3 with revised *Pelochrista*. The generic placements of species in the catalogue are based, whenever possible, on dissections or published illustrations of the female genitalia. In cases where a female was unavailable, we sometimes made an assignment for a Nearctic species based on other characters (usually male genitalia) but retained the assignments of Razowski (1999, 2003) for most Palearctic species. Redefined *Eucosma* includes nearly all Nearctic *Phaneta*, approximately half of the Nearctic species previously assigned to *Eucosma* or *Pelochrista*, and all Palearctic species previously assigned to *Eucosma* except *guentheri* and *lugubrana*, which are transferred to *Pelochrista*. Redefined *Pelochrista* includes the remaining Nearctic species previously assigned to *Eucosma* or *Pelochrista* and all Palearctic species previously assigned to *Pelochrista*. *Phaneta cinereolineana* is placed in *Pelochrista* because of the large spiniform seta on the male cucullus, and *Phaneta pylonitis* is placed in *Eucosma* because of the typical *Eucosma* male genitalia illustrated by Clarke (1958). *Epiblema symbolaspis* is transferred to *Pelochrista* based on male genitalia, *Eucosma liturana* is transferred to *Zeiraphera* based on male and female genitalia, and *Eucosma fulminana* is transferred to *Sonia* based on male and female genitalia and fusion of veins R<sub>4</sub> and R<sub>5</sub> in the forewing. *Eucosma*

*mandana* and its replacement name *amanda*, previously considered synonyms of *Eucosma* (now *Pelochrista*) *comatulana*, are transferred to *Epiblema* based on forewing appearance and genitalia of the *E. mandana* lectotype, a female that is possibly conspecific with *Epiblema abruptana*.

Species that could not be confidently assigned to one of the revised genera are listed under “Eucosmini unplaced” following Brown (2005) and Gilligan et al. (2012). This includes some species for which no female is available, those with atypical male or female genitalia (e.g. *E. gomonana* and *E. excerptonana*), those outside of the Holarctic, and those listed as “unplaced” by Razowski (1999, 2003). Four former *Phaneta* are tentatively assigned to “Eucosmini unplaced:” *delphinooides*, *delphinus*, and *sublapidana* due to their atypical genitalia, and *autochthones* because it occurs outside the Holarctic.

Catalogue format follows Brown (2005) as modified by Gilligan et al. (2012). Species entries are listed alphabetically under each genus and include author, year of publication, original genus (or genus and species for infraspecific taxa) in parentheses, abbreviated reference to original publication, type locality, notes and/or status, type designation, institution of deposition for the type, and sex of the type (where known). Changes in generic placement are indicated by **comb.n.** or **comb.rev.** following the species name. Synonyms and misspellings are indented and listed alphabetically under each species. Misspellings are separated from their author by a semicolon. Valid subspecies (according to Brown 2005) are not indented and listed with both the species and subspecies names. Institution and reference abbreviations follow Brown (2005) and Gilligan et al. (2012). Notes regarding the assignment to genus are included in brackets for some species. Records that contain updates or corrections to the most recent online world catalogue (Gilligan et al. 2012) are indicated by an asterisk at the end of the record. A simple list of names in the revised genera is provided in Appendix 1.

For many of the Nearctic species, there are instances in which a specimen has been selected as a lectotype but the requirements considered necessary for a valid designation have not been met. This applies to many of the species described by Walsingham in the late 1800s. Obraztsov studied the Walsingham material in the 1960s, dissecting and labeling specimens he chose as lectotypes, but he died before those designations could be published. A somewhat different problem arises in the case of the species described by Kearfott in the early 1900s. Referring to Kearfott’s “Types”, Heinrich (1923) often stated “*Type*. – In American Museum” together with “*Type locality*. – ...,” comments which in many cases are insufficient for identifying a particular specimen. However, Klots (1942) reported lectotypes in the American Museum of Natural History for these Kearfott species and attributed the designations to Heinrich (1923). Many of those specimens bear a green “LECTOTYPE” label attached by Klots. In instances such as those described here, we list in the catalogue the data for the putative lectotype and alert the reader to the problem of validity by writing “Lectotype” in quotes.

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## Catalogue

### *EUCOPINA* Gilligan & Wright 2013

*bobana* Kearfott 1907 (*Eucosma*); *Trans. Am. ent. Soc.* 33: 26. USA: Colorado, Salida. Lectotype (USNM); female.\*

*antichroma* Meyrick 1912 (*Eucosma*); *Ent. mon. Mag.* 48: 35. unnecessary replacement name for *bobana*; no type.

*cocana* Kearfott 1907 (*Eucosma*); *Trans. Am. ent. Soc.* 33: 26. USA: North Carolina, Tryon. Holotype (AMNH); male.\*

*rhodopaea* Meyrick 1912 (*Eucosma*); *Ent. mon. Mag.* 48: 35. unnecessary replacement name for *cocana*; no type.

*crymalana* Powell 1968 (*Eucosma*); *Hilgardia* 39: 27. USA: Arizona, Coconino Co., Grand Canyon, South Rim P.O. Holotype (CAS); male.\*

*franclemonti* Powell 1968 (*Eucosma*); *Hilgardia* 39: 16. USA: Arizona, Coconino Co., Hochdoffer Hill. Holotype (CUIC); male.\*

*gloriola* Heinrich 1931 (*Eucosma*); *Proc. ent. Soc. Wash.* 33: 196. USA: Connecticut, Stamford, B.T.R. lab colony. Holotype (USNM); male.\*

*monitorana* Heinrich 1920 (*Eucosma*); *Proc. U.S. natn. Mus.* 57: 58. USA: Pennsylvania, Danville. Holotype (USNM); male.\*

*monoensis* Powell 1968 (*Eucosma*); *Hilgardia* 39: 17. USA: California, Mono Co., Crooked Creek Lab., White Mountains, 3 airline mi N Inyo Co. line. Holotype (CAS); male.\*

*ponderosa* Powell 1968 (*Eucosma*); *Hilgardia* 39: 13. USA: Oregon, Lake Co., Embody's Mill, near Silver Lake. Holotype (USNM); male.\*

*rescissoriana* Heinrich 1920 (*Eucosma*); *Proc. U.S. natn. Mus.* 57: 58. USA: Oregon, Sprague River. Holotype (USNM); male.\*

*siskiyouana* Kearfott 1907 (*Evetria*); *Can. Ent.* 39: 77. USA: California, Siskiyou Co. Lectotype (AMNH); male.\*

*sonomana* Kearfott 1907 (*Eucosma*); *Trans. Am. ent. Soc.* 33: 27. USA: California, Sonoma Co. Lectotype (AMNH); female.\*

*tocullionana* Heinrich 1920 (*Eucosma*); *Proc. U.S. natn. Mus.* 57: 59. USA: Connecticut, Lyme. Holotype (USNM); male.\*

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### *EUCOSMA* Hübner 1823

*abacana* Erschoff 1877 (*Grapholitha*); *Horae Soc. ent. Ross.* 12: 342. Russia: Siberia, Irkutsk. Holotype (Unknown); female.

*abascana*; Kurentsov 1950 (*Semasia*); *Soobshch. Dalnevost. Akad. Nauk SSSR*: 30. misspelling of *abacana*; no type.

*aemulana* Schlager 1848 (*Grapholitha*); *Ber. Lepid. Tauschver.*: 38. Germany. Holotype (Unknown); unknown.

*laticornana* Herrich-Schäffer 1851 (*Tortrix* (*Semasia*) *aemulata* var.); *Syst. Bearbeitung Schmett. Eur.* 4: 248. Germany. Syntype(s) (Unknown); unknown.