

American Museum Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 1959

SEPTEMBER 11, 1959

On the Systematic Position of *Tortrix nigrivelata* (Lepidoptera, Tortricidae)

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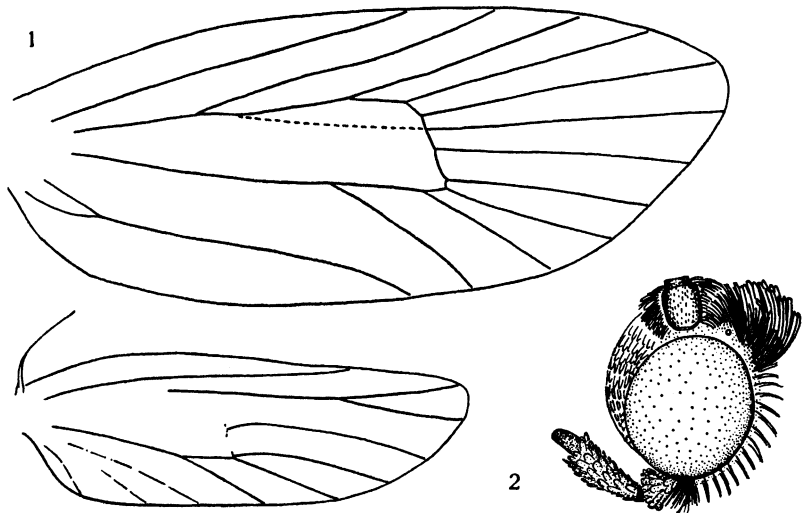
Meyrick (1923, *Exotic Microlepidoptera*, vol. 3, p. 55) was inclined to place the Panamanian species *Tortrix nigrivelata* Walsingham in his genus *Deltobathra* (type species, *D. platamodes* Meyrick). The present author examined the above species and the type of the genus *Deltobathra* and cannot approve Meyrick's point of view. Each of these species has wings of very dissimilar shape, and, although the wing venation of each shows some similarity, other important characters require the establishment of a new genus for *Tortrix nigrivelata*. There is no necessity to redescribe *Deltobathra* in this paper, as the original description of this genus and the illustrations of the morphology of its type species by J. F. Gates Clarke (1958, *Catalogue of the type specimens of Microlepidoptera in the British Museum described by Edward Meyrick*, vol. 3, p. 92, pl. 46) give a complete idea of *Deltobathra*. The following comparison of the new genus *Ecnomiomorpha* (ἐκνομίος, unusual; μορφή, appearance), proposed below for *Tortrix nigrivelata*, and the genus *Deltobathra* shows their distinction.

Forewing veins R_1 and R_2 in *Deltobathra* are much nearer each other than in *Ecnomiomorpha*, and veins R_2 and R_3 are correspondingly more widely spaced. Veins M_3 and Cu_1 in *Deltobathra* are

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closely approximated at their origin and arise from the lower angle of the middle cell. Vein Cu_2 originates from about two-thirds of the middle cell and runs into the upper part of the tornus; A_1 is distinguishable in its basal part, and vein A_{2+3} is longer than the middle cell. In *Ecnomiomorpha* forewing vein Cu_1 is well separated from M_3 and originates from before the lower angle of the middle cell. Vein Cu_2 arises from shortly before the third quarter of the middle cell. Vein Cu_1 reaches the tornus at about where in *Deltobathra* vein Cu_2 ends; vein Cu_2 runs into the basal part of the tornus. Vein A_1 is lacking completely in *Ecnomiomorpha*, and vein A_{2+3} is shorter than the middle cell. The male genitalia of *Deltobathra* have no uncus and are typical of the tribe Tortricini. In *Ecnomiomorpha* the uncus is well developed, the valvae are strongly modified, and the entire structure of the male genitalia is quite different from that of the Tortricini.

It is very strange that, in spite of the many characters of *Ecnomiomorpha* that are typical of the family Tortricidae, this genus has vein Cu_2 of both forewing and hind wing originating much closer to the



FIGS. 1, 2. *Ecnomiomorpha nigrivelata* (Walsingham). 1. Wing venation. 2. Head.

lower angle of the middle cell than has usually been observed in this family. In combination with certain characters of the male genitalia, the above feature may indicate a relationship of *Ecnomiomorpha* to the family Copromorphidae, but the members of this family have an

acute terminal joint on the labial palpi, no caulis on the aedeagus, and no socii. From Phaloniidae the genus *Ecnomiomorpha* differs through the presence of a well-developed gnathos; from Chlidanotidae, through the presence of the ocelli. There is therefore no choice but to leave *Ecnomiomorpha* in the family Tortricidae, to which the type species of this new genus has previously been referred.

Because of the somewhat complicated structure of the male genitalia and the absence of any typical characters in the female genitalia, it is quite difficult to ascertain the systematic position of the genus *Ecnomiomorpha* in the family Tortricidae. Some indirect indication can, however, be found in the wing venation. The displacement of the end part of vein Cu_2 of the forewings, and its curving in a direction opposite to what is normal, perhaps represent an extreme degree of development of a similar modification in some Cnephasiini genera, e.g., *Exapate* Hübner and *Propiomorpha* Obraztsov. The same applies also to forewing vein A_1 lacking in *Ecnomiomorpha*, as in many Cnephasiini this vein is often obliterated and undeveloped in its tornal part. The hind wing venation of *Ecnomiomorpha* differs very little from that of the genus *Acroplectis* Meyrick, which could be considered as another proof of a relationship between the new genus and the tribe Cnephasiini. The shape of the aedeagus and the female genitalia of *Ecnomiomorpha* have also more in common with those of this tribe than with any other tribe of the Tortricinae. The (?glandular) sacs in the region of the eighth abdominal segment of the female of *Ecnomiomorpha* are perhaps homologous with those of the cnephasiid genus *Paraptila* Meyrick. Only the valvae of *Ecnomiomorpha* arouse some suspicion about the placement of this genus among the genera of the Cnephasiini, as they have a brachiola, a character of the genera of the *Acleris* group of the tribe Tortricini. Although valvae of this shape have never before been observed in any genus of the Cnephasiini, it seems permissible to surmise that structures of this kind could develop in both of the closely related tribes, the Tortricini and the Cnephasiini. For these reasons, the present author decided to place the genus *Ecnomiomorpha* in the tribe Cnephasiini of the subfamily Tortricinae of the family Tortricidae, in which the new genus has a somewhat isolated position.

ECNOMIOMORPHA, NEW GENUS

Figures 1-5

TYPE SPECIES: *Tortrix nigriovelata* Walsingham, 1914.

Head appressed scaled. Antennae simple, minutely ciliated in male,

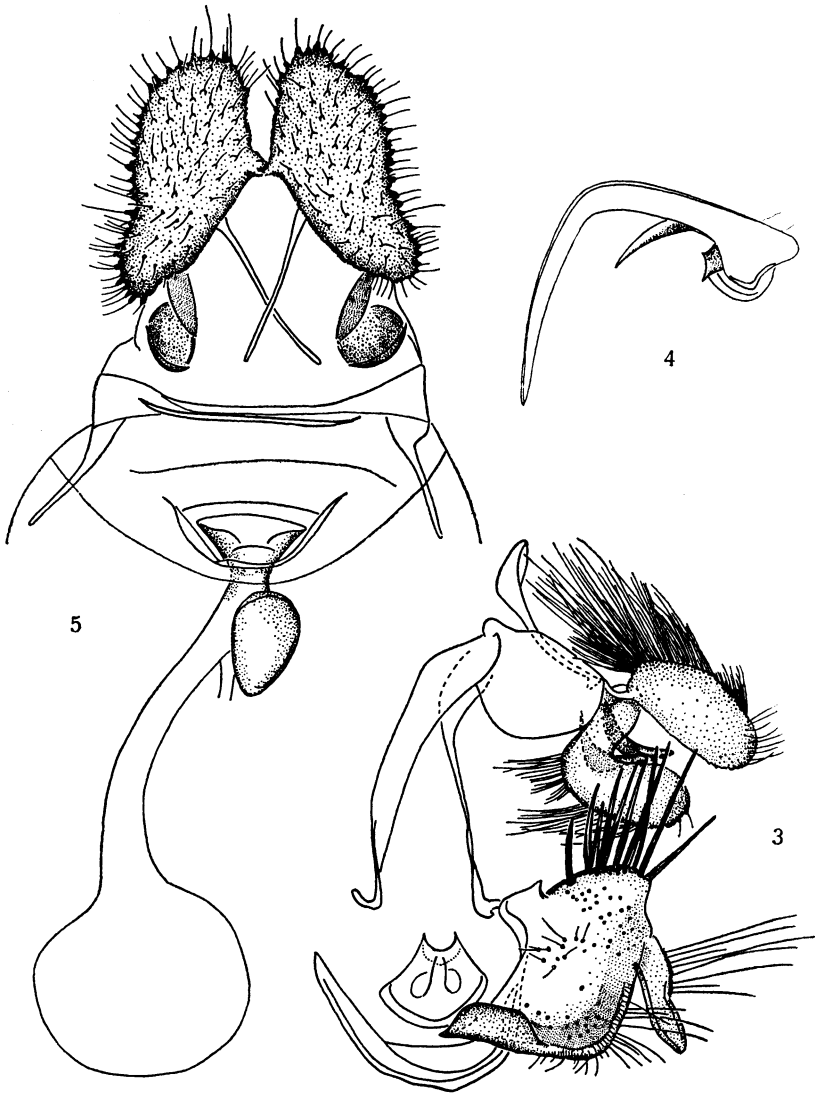
with short setae in female. Labial palpi ascending; basal joint thickened by scaling; second joint slightly dilated apicad; terminal joint rather long, cylindrical, obtuse. Proboscis rudimentary. Thorax without crest.

Forewings elongate-ovate; costa equally gently arched; apex rotundate; termen oblique, forming a common arch with tornus and dorsum. No costal fold in male. Twelve veins, all separate; S almost straight; R_1 from before middle of the middle cell; R_2 almost three times as close to R_3 as to R_1 ; R_3 , R_4 , and R_5 equidistant, widely remote; R_4 and R_5 locking the apex from both sides; internal vein of the middle cell obliterated, from between R_1 and R_2 , nearer the former, running to the origin of vein R_5 ; middle cell strongly dilated externad, its lower angle prominent; M_1 remote from R_5 but somewhat closer to it than to M_2 ; this latter and M_3 separate, although closer to each other than any other veins of the forewings; M_3 from lower angle of the middle cell; Cu_1 distinctly from before this angle; Cu_2 from shortly before three-quarters of the middle cell, running into dorsum and bent externad; basal fork of vein A_{2+3} about one-sixth as long as the entire vein; this vein is shorter than the middle cell.

Hind wings elongate, much narrower and shorter than the forewings; costa gently curved, slightly sinuate before the end of vein S; apex rotundate; termen convex, forming a common curve with tornus; dorsum flat, rounded basad only. No cubital pecten. Eight veins; S gently curved, reaching the costa slightly behind two-thirds; R and M_1 long stalked; middle cell open; M_2 parallel to M_3 , slightly bent downward at origin; M_3 and Cu_1 from lower angle of the middle cell; Cu_2 from three-quarters of the middle cell; A_1 , A_2 , and A_3 obliterated.

MALE GENITALIA: Tegumen broad; pedunculi long, narrow; saccus semicircular. Valva short, subrectangulate; costa short, bearing long, strong spines; external margin rather straight, oblique, with a long, narrow brachiola; sacculus thickened at base, then narrow, ending diffusely at the middle of the external margin of the valva; processus basalis of the valva short, conical, situated on a subrectangulate projection. Uncus spatulate, on a long, thin stalk; gnathos of two lateral arms ending in a common, pointed, middle process; socii large, ovate; no fultura superior. Fultura inferior subtrapezoid, rounded at lower edge, sinuate dorsad; caulis double, consisting of a short basal and a longer, narrow external part. Aedoeagus long, strongly curved, thin, especially in its distal part, dilated at base; coecum penis small; no cornuti.

FEMALE GENITALIA: Papillae anales large, weak, dilated caudad.



FIGS. 3-5. Genitalia of *Ecnomiomorpha nigrivelata* (Walsingham). 3. Male genitalia. 4. Aedeagus. 5. Female genitalia.

Sinus vaginalis weak, moderate, situated in a wide membranous area. Antrum funnel-shaped; ductus bursae short, with a blind, lateral, ovate appendage. Corpus bursae membranous, round; cervix bursae rather long; no signum. Eighth abdominal sternite narrow, not inter-

rupted at the middle; apophyses anteriores relatively short. Two round (?glandular) sacs at sides of the membranous area between the eighth and ninth abdominal segments. Apophyses posteriores longer than the apophyses anteriores.

***Ecnomiomorpha nigrivelata* (Walsingham),**
new combination

Tortrix nigrivelata WALSINGHAM, 1914, *Biologia Centrali-Americana*, Lepidoptera Heterocera, vol. 4, p. 283, pl. 8, fig. 23. MEYRICK, 1923, *Exotic Microlepidoptera*, vol. 3, p. 55.

SPECIMENS EXAMINED: One male, Tabernilla, Canal Zone, Panama (genitalia on slide, prepared by A. Busck on March 20, 1924); one female, Trinidad Bay, Panama, May, 1911, A. Busck (genitalia on slide, prepared by A. Busck on March 10, 1928). Both of the above specimens are in the United States National Museum.

RANGE: Panama.