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# A NEW SPECIES OF *EUCOSMOMORPHA* FROM NORTH AMERICA (TORTRICIDAE)

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**ABSTRACT.** ***Eucosmomorpha nearctica*, new species,** is described from 19 adult specimens, 18 male and 1 female. It previously was misidentified in North America as *E. albersana* (Hübner). It differs from *E. albersana* in its more mottled forewing, smaller body size, more prominent male hindwing anal pouch, and in details of female genital anatomy. *Eucosmomorpha nearctica* occurs widely, having been collected in Kentucky, Michigan, Mississippi, North Carolina, and Saskatchewan. Although *E. nearctica* was thought to be an immigrant in North America when reported as *E. albersana*, it now seems more likely that it is a native insect that escaped earlier recognition.

**Additional key words:** *E. albersana*, *E. a. ussuriana*, *E. nearctica*, Olethreutinae, Eucosmini.

*Eucosmomorpha*, up to now comprising four Palaearctic species, is a structurally distinct but poorly known genus tentatively included in the olethreutine tribe Eucosmini (Horak & Brown 1991). The new species described here already has a publication history in North America. I reported one male, captured in Michigan in 1961, as the Palaearctic *E. albersana* (Hübner) (Miller 1983). I noted that it might prove to be *E. albersana ussuriana* (Caradja); Caradja's (1916) description was insufficient to permit a more definite determination. Additional reports of the insect followed from Saskatchewan, Kentucky, and Michigan (Dang & Parker 1990, Gibson 1993). Because of recent unpublished finds in North America, as well as increased interest in immigrant insects, I undertook to resolve the insect's identity.

## MATERIALS AND METHODS

Forewing length was measured under a binocular microscope at nominal 10× magnification to within 0.2 mm with an eyepiece micrometer. Wing venation was examined in reflected light under a binocular microscope after touching xylene to wings. Genitalia slides were prepared by standard methods, and genitalia double stained with chlorozole black E and saffranin. Specimens mentioned without genitalia slide number are undissected.

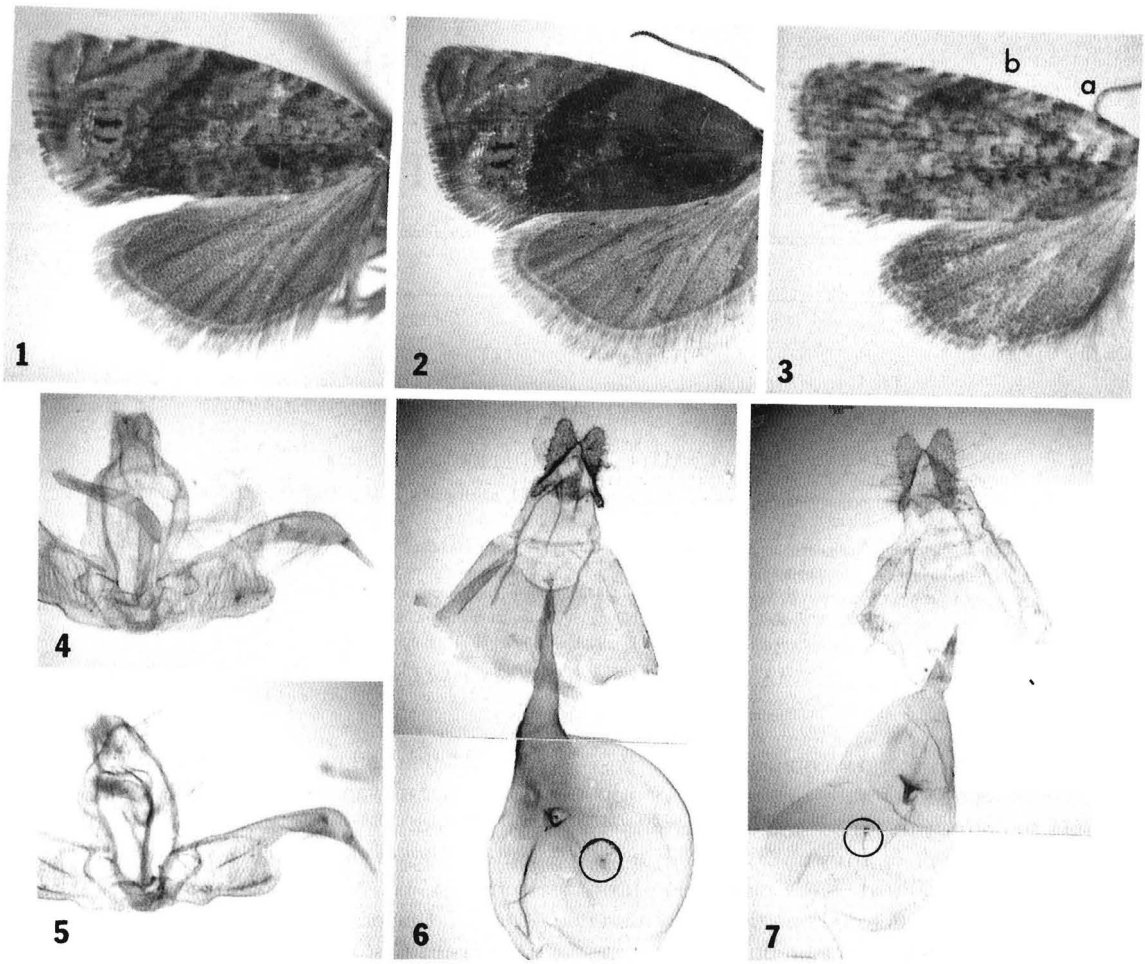
Character states are included in the description which place the new species in the genus *Eucosmomorpha* as defined by Obraztsov (1961).

Collection and museum abbreviations are as follows: JBS, J. B. Sullivan, Beaufort, North Carolina; LDG, L. D. Gibson, Florence, Kentucky; MEM, Mississippi Entomological Museum, Mississippi State, Mississippi; MGAB, Muzeul de Istorie Naturala "Grigore Antipa," Bucharest, Romania; MSU, Michigan State University, East Lansing, Michigan; UMSP, University of Minnesota Entomology Museum, St. Paul, Minnesota; USNM, National Museum of Natural History, Washington, DC.

## IDENTITY OF *EUCOSMOMORPHA ALBERSANA USSURIANA*

As the identity of *E. a. ussuriana* was unclear from Caradja's (1916) description, I obtained the holotype for study. Examination showed that it did not differ structurally from typical *E. albersana*, and that its forewing scale pattern differed only trivially (Figs. 1, 2). Thus *E. a. ussuriana* seems to represent no more than individual or geographic variation. Moreover, Caradja (1916) mentioned a specimen intermediate in scale pattern between *E. a. ussuriana* and the typical form. These observations confirm the appropriateness of Kuznetsov's (1989) treatment of *E. a. ussuriana* as a synonym of *E. albersana*.

The early stages of what Caradja described as *E. a. ussuriana* are unknown, but *E. albersana* is univoltine, overwintering as a mature larva, the larva feeding on *Lonicera* and *Symphoricarpos* (both Caprifoliaceae) (Bentinck & Diakonoff 1968, Bradley et al. 1979, Hannemann 1961, Kuznetsov 1987, 1989, Razowski 1987).




FIGS. 1–7 Wings and genitalia of *Eucosmomorpha* species. **1,** Wings of *E. albersana ussuriana* holotype ♀. **2,** Wings of *E. albersana* ♀ from Potsdam, Germany. **3.** Wings of *E. nearctica* paratype ♂ from Franklin Co., Mississippi. a, subbasal fascia. b, medial fascia. **4,** Genitalia of *E. albersana* ♂ from "Geelskov" (genit. slide WEM 299993). **5,** Genitalia of *E. nearctica* paratype ♂ from Jones Co., North Carolina (genit. slide WEM 55995). The aedeagus appears shorter than actual because of angle of mounting. **6,** Genitalia of *E. a. ussuriana* holotype ♀. The smaller signum is circled. **7,** Genitalia of *E. nearctica* paratype ♀ from Boone Co., Kentucky (genit. slide WEM 1310991). The smaller signum is circled. The ductus bursae and corpus bursae became severed during dissection and are out of their natural positions.

Published forewing lengths, after conversion from spans by an empirically derived equation (Miller 1977), range 5–7 mm, averaging 6 mm (Bentinck & Diakonoff 1968, Bradley et al. 1979, Hannemann 1961, Kuznetsov 1987, Razowski 1987).

**Specimens examined.** *E. a. ussuriana:* Holotype ♀ [sex incorrectly given as ♂ in original description and on pin], Kasakewitch, Ussuri R., E. Siberia, Korb, 5729 Wlsm. 1908, *Grapholitha albersana* var. *ussuriana* Car., forewing length 6.0 mm, genit. slide WEM 289995 (MGAB); *E. a. albersana:* 1 ♂, "Geelskov," 4 May 1895, *P. albersana* Hb., V. Kuznetsov det., genit. slide WEM 299993 (MGAB); 1 ♀, Potsdam [Germany], Z. 18/388, *Lonicera*, Henneby, genit. slide WEM 289994 (MGAB); 1 ♂, 25.5.1882, Hamfelt Coll. [of known European origin], genit. slide WEM 299991 (USNM); 1 ♂, Kent [England], 6.1913, H. C. Hayward, genit. slide WEM 299992 (USNM). At other times I have examined additional specimens not recounted here.

### OTHER *EUCOSMOMORPHA* SPECIES

Review of the literature reveals three other described species of *Eucosmomorpha* besides *E. albersana,* all Asian: *E. multicolor* Kuznetsov, *E. magnifica* Kuznetsov, and *E. figurana* Kuznetsov (Kuznetsov 1964, 1997). Nothing is known of these species beyond their taxonomic descriptions. However, it is evident from the published descriptions and illustrations that all differ in forewing scale pattern and genital anatomy from both *E. albersana* and the new species described here. For example, unlike the valvae of *E. albersana*

and the new species, that of *E. multicolor* has a distinct pollex, that of *E. magnifica* is parallel sided, and that of *E. figurana* tapers gradually between the sacculus and cucullus (Kuznetsov 1964, 1997).

### *Eucosmomorpha nearctica* W. E. Miller, new species

*Eucosmomorpha albersana* (not Hübner, 1822); Miller (1983, 1987), Dang and Parker (1990), Gibson (1993).

**Male** (n = 18). Head. Middle front and vertex brownish orange, lower front white with shorter scales, a band of brown scaling crossing vertex; antenna brownish dorsally, darker ventrally, flagellar scales no longer than flagellomere, pecten apparently absent; labial palpus white basally and ventrally, terminal segment short, ≈ 0.25 length of second segment, brown, second segment expanded distally, subequal in length to vertical eye diameter, scaled with patches of orange and brown, brown distally; proboscis subequal in length to labial palpus. Thorax. Mesonotum and tegulae brownish orange, sternum shining white, legs shining white between coxa and tibia, tibia and tarsi banded white and grayish brown, paler on inner sides. Forewing (Fig. 3). Costal fold absent; upper side mottled brown and orange; subbasal and median fasciae (a, b, respectively, in Fig. 3) brown, angling outwardly from costa, expressed mainly on costa, the median fascia distinct also on dorsum near tornus; 6 to 10 short white costal strigulae angling outwardly, separated in outer one-third of wing by sinuate orange striae; speculum consisting of three blackish brown longitudinal dashes; fringe brownish orange distally, paler basally; underside of wing grayish brown. Hindwing. Veins $M_3$ and $Cu_1$ connate, base of $M_2$ slightly closer to base of $M_3$, all three subparallel; upper and under sides grayish brown, fringe paler except for a grayish brown line near base; basal two-thirds of anal angle with wing edge thickened and bowed, forming a pouch that appears aligned with the hind tibia when the wing is spread. Abdomen. Shining brown dorsally, shining white ventrally. Genitalia (n = 7) (Fig. 5). Sacculus broad basally; a long, thick seta at apex of cucullus; uncus absent; socii pulvinate and directed upwards in an uncus position; aedeagus with two sinuous cornuti.

**Female** (n = 1). Exterior essentially as described for male, except for absence of the hindwing anal pouch. Genitalia (n = 1) (Fig. 7). Lamella antevaginalis absent; apophyses anteriores and posteriores subequal in length; ductus bursae short, encircled at the opening to the ductus seminalis by a sclerotized ring subequal in width to ductus bursae diameter; two unequal sized signa on corpus bursae, the larger one cone shaped.

**Diagnosis.** I found no consistent differences in male genitalia between *E. albersana* and *E. nearctica* (Figs. 4–5). The taxa are distinguishable by other characters detailed below. In brief, *E. nearctica* has a distinctive forewing scale pattern, is smaller in body size, the anal area of the male hindwing is more extensively modified, and the female genitalia differ in length of the ductus bursae and other structural details.

The forewing of *E. nearctica* is more or less mottled throughout (Fig. 3 here, and Fig. 1 in Miller 1983), whereas that of *E. albersana* is dark purplish on the basal two-thirds, and mostly pale orange or yellowish on the distal one-third, a combination that creates an overall bicolored appearance (Figs. 1, 2 here and illustrations in Bentinck & Diakonoff 1968, Bradley et al. 1979, Hannemann 1961, Razowski 1987).

Forewing length in *E. nearctica* of the combined sexes ranges 3.8–5.5 mm, averaging 4.6 mm (n = 19). The 4.6 average is three-fourths the corresponding 6 mm value derived from the literature for *E. albersana,* but translates into only one-half of the *E. albersana* body mass (Miller 1977).

The anal edge of the *E. nearctica* male hindwing is thicker and more bowed than that of *E. albersana,* thus creating a more prominent hindwing anal pouch in *E. nearctica*. The apparent difference between the taxa in aedeagus length in Figs. 4 and 5 is an artifact of slide mounting absent in other preparations.

The ductus bursae in *E. nearctica* is only half as long as that in *E. albersana,* is ringed with a sclerotized band at the opening to the ductus seminalis which *E. albersana* apparently lacks, and the smaller signum of *E. nearctica* is larger than that of *E. albersana* (Figs. 6, 7). The smaller signum of *E. albersana* is but a speck and is easily overlooked.

**Types.** Holotype ♂: Mississippi, Franklin Co., Trib. of McGehee Crk., T6N, R4E, Sec. 26 SW, 31 Aug. 1992, J. MacGown, T. Schiefer, forewing length 4.9 mm, genit. slide WEM 299995 (USNM). Paratypes: KENTUCKY: 1 ♀, Boone Co., Big Bone Lick State Park, 4 Aug. 1989, L. D. Gibson, genit. slide WEM 1310991 (LDG); 1 ♂, same data, except 9 July 1991, genit. slide LDG 102 (LDG). MICHIGAN: 1 ♂, Midland Co., 2 June 1961, R. R. Dreisbach, genit. slide PJ 163 (MSU); 1 ♂, Otsego Co., 13 June 1988, L. D. Gibson, genit. slide LDG 095 (LDG). MISSISSIPPI: 1 ♂, Scott Co., Bienville Natl. For., Caney Crk. Wildlife Mgt. Area, 2 mi [3.2 km] E. Pulaski, 10 June 1988, D. & M. Hildebrandt, genit. slide WEM 299994 (MEM); 1 ♂, same data as

holotype (MEM). NORTH CAROLINA: 3 ♂, Jones Co., N. of Stella, Haywood Landing, Croatan Natl. For., hardwoods, 15-watt U-V trap, 18 July 1998, J. B. Sullivan (JBS, UMSP, USNM); 2 ♂, same data as preceding, except 2 Aug. 1997 (JBS, UMSP); 1 ♂, same data as preceding, except genit. slide WEM 59995 (JBS); 1 ♂, Jones Co., Island Walk, Croatan Natl. For., hardwoods, 15-watt UV trap, 17 June 1998, J. B. Sullivan (JBS); 1 ♂, same data as preceding, except 30 April 1997 (JBS); 1 ♂, Craven Co., Croatan Natl. For. Rd. 167, 21 June 1993, J. B. Sullivan, genit. in vial on pin (JBS); 1 ♂, same data as preceding, except Rd. 3046, Gum Branch Rd., 25 April 1998 (JBS); 1 ♂, Pender Co., Holly Shelter gamelands, 15-watt UV trap, pine savannah, 26 August 1997, J. B. Sullivan (USNM). SASKATCHEWAN: 1 ♂, Saskatoon, pheromone trap, 1984, Chisoholm (USNM).

## DISCUSSION

Specimen and literature records of *E. nearctica* are widely distributed: Kentucky, Michigan, Mississippi, North Carolina, and Saskatchewan. Capture dates from combined localities range from 25 April to 31 August, suggesting one to two generations per year. Larval foodplants are unknown.

It is possible that *E. nearctica* is an immigrant in North America as supposed when it was reported as *E. albersana* (Miller 1983). However, a more straightforward interpretation of the information assembled here is that it is a native American species that escaped previous recognition because of low population densities, sparse collecting, and diminutive size. The species is not known anywhere else than in North America, and collection localities are inland, away from commercial ports where immigrants usually are detected first.

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