

G. Lamas for comments on the manuscript; M. Moreno, G. Esteves, and S. Figueroa for formal support in the Museo Ecuatoriano de Ciencias Naturales and Ministerio de Agricultura Y Ganadería. A grant from the Institute for Latin American studies made the research possible.

#### LITERATURE CITED

- BROWN, K. S. 1979. Ecologia geográfica e evolução nas florestas Neotropicais. Vols. 1 & 2. Tese de Livre Docência, Universidade Estadual de Campinas, Campinas, SP, Brazil.
- . 1981. The biology of *Heliconius* and related genera. *Ann. Rev. Entomol.* 26: 427–456.
- VANE-WRIGHT, R. I., P. R. ACKERY & J. J. SMILES. 1975. The distribution, polymorphism and mimicry of *Heliconius telesiphe* (Doubleday) and the species of *Podotricha* Michener. *Trans. Royal Entomol. Soc. (London)* 126:611–636.
- CARLA M. PENZ, *Department of Zoology, University of Texas, Austin, Texas 78712, USA.*

*Received for publication 25 May 1994; revised and accepted 21 January 1995.*

*Journal of the Lepidopterists' Society*  
49(3), 1995, 250–252

#### BERINGIAN TORTRICIDAE: A NEW SYNONYMY IN *EPIBLEMA* AND A RECOUNT OF HOLARCTIC SPECIES

**Additional key words:** *Epiblema arctica*, *E. simplonianum*, nearctic, palearctic.

Beringia consists of Alaskan, Yukonian, and Siberian lands next to the Bering and Chukchi seas. Its east and west boundaries are inexact, but it includes the present sea floor, which emerged several times as a land bridge during Pleistocene time (Hopkins et al. 1982). Today, high proportions of Beringian biota are represented on both sides of the Bering Straits. Two examples are plants and Noctuidae: 57 percent of Beringian plants are holarctic (Matthews 1982), and 26 percent of Beringian noctuids are holarctic (Lafontaine & Wood 1988).

Kuznetsov and Mikkola (1991) recently summarized Beringian Tortricidae collected on the Siberian side. They reported 66 species in all, of which 39 percent were counted as holarctic. Some Beringian Tortricidae have been described on each side of the Straits under different names. I report one new synonymy of this kind here as well as five other species whose holarctic occurrence was not included in the above count.

*Epiblema simplonianum* (Duponchel) is among the many Tortricidae reported for the first time from Beringia by Kuznetsov and Mikkola (1991). This taxon was said to be a transpalearctic arctoalpine species (type locality nr. Simplon, Switzerland). As the lone Beringian *Epiblema*, it begged comparison with *E. arctica* Miller, previously the lone arctic *Epiblema* (type locality Anaktuvuk Pass, Alaska). I found that illustrations of *E. arctica* wings and genitalia (Miller 1985a) matched those of *E. simplonianum* (Kuznetsov 1987). Further comparison of male and female Alaskan and Yukonian *E. arctica* specimens with Siberian, Finnish, and Swedish *E. simplonianum* specimens confirmed that both taxa are the same morphospecies. These results are summarized as follows:

*Epiblema simplonianum* (Duponchel)

*Carpocapsa simploniana* Duponchel 1835:259.

*Epiblema simploniana*; Obraztsov 1965:380, Kuznetsov 1987:741.

*Epiblema simplonianum*; Kuznetsov and Mikkola 1991.

*Epiblema arctica* Miller 1985a, Brown and Powell 1991. **New Synonymy.**

A more extensive nomenclatural review for the palearctic region can be found in Obraztsov (1965). Among specimens examined in this study and listed below are previously undetermined ones that extend the known nearctic distribution of *E. simplonianum* beyond Alaska to Yukon Territory.

**Epiblema specimens examined.** ALASKA: Eagle Summit, 65 mi [105 km] SW Circle, 2 July 1979, [P. A.] Opler & [J. A.] Powell, female genit. prep. WEM 298843, *Epiblema arctica* Miller PARATYPE, forewing length (FL) 7.5 mm; same data as preceding except male genit. prep. WEM 298842, FL 7.5 mm, *Epiblema arctica* Miller PARATYPE; 4 mi [6 km] N Cantwell, 2000–2200 ft [610–670 m], 27 June 1979, P. Opler, J. Powell, male genit. prep. JAP 4460, *Epiblema arctica* Miller PARATYPE, FL 9.0 mm (Essig Museum of Entomology, University of California, Berkeley [UCB]). FINLAND [Lapland]: Saana [mountain], 10 July 1936, coll. E. Lankiala, female genit. prep. WEM 214941, FL 8.0 mm, Kilpisjärvi, 10 July 1938, coll. Lingonblad, male genit. prep. WEM 214922, FL 8.0 mm; all above in University of Minnesota Entomology Museum, St. Paul (UMEM), except where noted otherwise. RUSSIA [Siberia]: Chukchi Peninsula, 64° 55' N, 172° 30' W, 45 km N Provideniya, Pestsovaya Riv. valley, 11 July 1991, K. Mikkola coll., male genit. prep. WEM 214944, *Epiblema simploniana* Dup., det. V. Kuznetsov, FL 6.0 mm. [SWE-DEN:] Sarek [mountain], Poppus, male genit. prep. WEM 214945, FL 7.5 mm. CANADA: Yukon Terr., 65° 06' N, 138° 15' W, Ogilvie Mts., 1050 m, Dempster Hwy., km 155, 7 April 1985, K. Mikkola, male, FL 8.0 mm; same data as preceding except male genit. prep. WEM 214943, FL 9.5 mm; all in Zoological Museum Helsinki, Finland (ZMH).

**Additional holarctic Beringian species.** Five species reported from Siberian Beringia by Kuznetsov and Mikkola (1991) that are actually holarctic went uncounted as such by them. These species are as follows: (1) *Olethrutes metallica* (Hübner) (= *O. murina* [Packard], *O. puncticostana major* [Walsingham]), whose known nearctic occurrence includes British Columbia, Alberta, Colorado, and Labrador (Miller 1985b); (2) *O. obsoletana* (Zetterstedt) (= *O. kennethana* McDunnough), known in the nearctic from Alaska, Alberta, and Northwest Territories (Great Bear Lake) (Miller 1985b); (3) *Ancylis geminana* (Donovan) (including *A. diminutana* [Haworth], a widely presumed junior synonym), known to be transnearctic (Bradley et al. 1979, Heinrich 1923, Kuznetsov 1987); (4) *Epinotia cruciana* (Linnaeus), known to be transnearctic (Brown 1980, Kuznetsov 1987); (5) *Notocelia cynosbatella* (Linnaeus), known from British Columbia. Apparently the last-named species was introduced accidentally into the nearctic (Mutuura 1980), but the preceding four undoubtedly are natively holarctic. Of the above five senior synonyms, only *Epinotia cruciana* was known to be holarctic in time to be included in the nearctic check list of Lepidoptera (Powell 1983).

The six species discussed here raise the holarctic percentage of Beringian Tortricidae from 39 to 48. It seems likely that a collecting effort in nearctic Beringia as comprehensive as that of Kuznetsov and Mikkola (1991) in palearctic Beringia would disclose both more Beringian and more holarctic Tortricidae.

I thank J. Kullberg, P. J. Clausen, and J. A. Powell for the loan of ZMH, UMEM, and UCB specimens, respectively; K. Mikkola, S. J. Weller, and an anonymous reader for comments on the manuscript; and J. Kullberg for the gift of Finnish examples of *Epiblema simplonianum* to UMEM.

## LITERATURE CITED

- BRADLEY, J. D., W. G. TREMEWAN & A. SMITH. 1979. British tortricoid moths. Tortricidae: Olethreutinae. Ray Society, London. 336 pp.
- BROWN, R. L. 1980. A revision of the genus *Epinotia* (Hübner) (Tortricidae: Eucosmini), Part 1. The North American species of the *stroemiana* lineage. Ph.D. thesis, Cornell

- University, Ithaca, New York. 460 pp. (Diss. Abst. Intern. 41/09, pt B:3302, Microfilm Order No. 8102899).
- BROWN, R. L. & J. A. POWELL. 1991. Description of a new species of *Epiblema* (Lepidoptera: Tortricidae: Olethreutinae) from coastal redwood forests in California with an analysis of the forewing pattern. *Pan-Pacif. Entomol.* 67:107-114.
- DUPONCHEL, P.-A.-J. 1834 [1835]. *Historie naturelle des Lépidoptères ou papillons de France*. Vol. 9. Paris, Méquignon-Marvis. 626 pp.
- HEINRICH, C. 1923. Revision of the North American moths of the subfamily Eucosminae of the family Olethreutidae. *U.S. Natl. Mus. Bull.* 123. 298 pp.
- HOPKINS, D. M., J. V. MATTHEWS, C. E. SCHWEGER & S. B. YOUNG (eds.). 1982. *Paleoecology of Beringia*. Academic Press, New York. 489 pp.
- KUZNETSOV, V. I. 1987. Family Tortricidae (tortricid moths), pp. 279-956. *In* Medvedev, G. S. (ed.), *Keys to the insects of the European part of the USSR* (translation). U.S. Dept. Agric. & Natl. Sci. Found. 991 pp.
- KUZNETSOV, V. I. & K. MIKKOLA. 1991. The leaf-roller fauna of north-eastern Siberia, USSR, with descriptions of three new species (Lepidoptera, Tortricidae). *Nota Lepid.* 14:194-219.
- LAFONTAINE, J. D. & D. M. WOOD. 1988. A zoogeographic analysis of the Noctuidae (Lepidoptera) of Beringia, and some inferences about past Beringian habitats. *Mem. Entomol. Soc. Canad.* 144:109-123.
- MATTHEWS, J. V. 1982. East Beringia during late Wisconsin time: A review of the biotic evidence, pp. 127-150. *In* Hopkins, D. M., J. V. Matthews, C. E. Schweger & S. B. Young (eds.), *Paleoecology of Beringia*. Academic Press, New York. 489 pp.
- MILLER, W. E. 1985a. Nearctic *Epiblema*: A new synonymy, a revised identity, and two new species (Lepidoptera: Tortricidae). *Great Lakes Entomol.* 18:33-38.
- MILLER, W. E. 1985b. Nearctic *Olethreutes*: Five new synonymies, two revised statuses, and notes (Lepidoptera: Tortricidae). *Proc. Entomol. Soc. Wash.* 87:408-417.
- MUTUURA, A. 1980. *Epiblema* (*Notocelia*) *cynosbatella* (Lepidoptera: Tortricidae), a recently introduced Old World species potentially injurious to Rosaceae. *Canad. Entomol.* 112:511-514.
- OBRAZTSOV, N. S. 1965. Die Gattungen der palaearktischen Tortricidae 2. Die Unterfamilie Olethreutinae 6. *Tijds. Entomol.* 108:365-387.
- POWELL, J. A. 1983. Tortricidae, pp. 31-41. *In* Hodges, R. W. (ed.), *Check list of the Lepidoptera of America north of Mexico*. E. W. Classey & Wedge Entomological Research Foundation, London. 284 pp.

WILLIAM E. MILLER, *Department of Entomology, University of Minnesota, St. Paul, Minnesota 55108, USA.*

*Received for publication 8 May 1994; revised and accepted 20 November 1994.*