Journal of the Lepidopterists' Society
49(1), 1995, 24–30

JERAPOWELLIA BURNSORUM, A NEW GENUS AND SPECIES OF MOTH FROM THE SOUTHWESTERN UNITED STATES (TORTRICIDAE: OLETHREUTINAE)

WILLIAM E. MILLER

Department of Entomology, University of Minnesota, St. Paul, Minnesota 55108, USA

ABSTRACT. ***Jerapowellia*, new genus,** is proposed for ***J. burnsorum*, new species,** which is described from 36 male and 3 female specimens captured in New Mexico and Arizona. Diagnostic character states of *Jerapowellia* are lack of male valval costal hook, a state shared with *Rhyacionia*, and presence of spinelike setae on the uncus, a character state apparently unique in Eucosmini. Capture dates range from 26 March to 27 May. As in *Rhyacionia*, males are strongly attracted to carbon acetate baits with double bonding in the ninth position.

Additional key words: Eucosmini, *Rhyacionia*, pheromone trapping, Arizona, New Mexico.

Males of the taxon described here have appeared in large numbers in traps baited with synthetic attractants to detect *Rhyacionia* species (Stevens et al. 1985, C. R. Ward pers. comm.). It rarely has been collected by other means, perhaps because of early-season adult flight which preceeds most collecting activity.

In the following description, **boldface roman type** signifies character states diagnostic of subfamily Olethreutinae, ***boldface italic type*** signifies those diagnostic of tribe Eucosmini, and *plain italic type* signifies those diagnostic for the genus. Terminology and classification follow Horak (1991) and Horak and Brown (1991). The letter n preceded by a number indicates number of specimens underlying an observation. Forewing length measurement excludes tegula but includes fringe. Wing venation was studied with permanent preparations (3 n) and temporary ones prepared by wetting wings with xylol (5 n).

***Jerapowellia* W. E. Miller, new genus**

Figs. 1–5

New genus near *Rhyacionia*, Stevens et al. (1985).

Male and female (39 n). Head. Antennal length 0.5 times forewing length, **one ring of scales per flagellar segment,** basal segment unmodified. Labial palpus ascending, scaling of second segment spreading, third segment porrect, length of second segment 2.5 times length of third segment. Proboscis length 0.5–0.75 times length of labial palpus. Scaling of front and crown dense, bushy. Thorax. Smooth-scaled, metathoracic legs unmodified. Forewing (Figs. 1, 2). Smooth-scaled, slightly broader toward termen, lacking costal fold, costa slightly and uniformly curved from base to apex, apex acute, termen convex, dorsum slightly

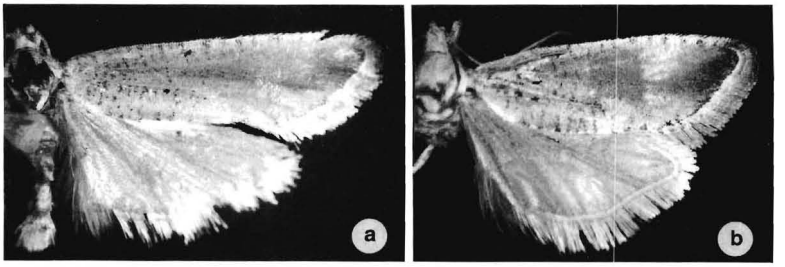


FIG. 1. Wings of *Jerapowellia burnsorum*. a, Male paratype from Albuquerque, New Mexico, forewing length 11.0 mm; b, Female paratype from near Kingman, Arizona, forewing length 8.5 mm.

curved. Twelve veins present, all separate except M_2 and M_3 which are connate; R_1 arising at middle of cell, R_2 arising nearer R_3 than to R_1, CuA_2 arising at distal 0.67 of cell; internal veins of cell obscure or nearly obscure. Hindwing (Figs. 1, 2). Termen straight, **cubital vein with pecten on upper side,** Rs and M_1 connate, ***M_3 and CuA_1 stalked,*** anal margin unmodified, lacking melanic sex scaling. Abdomen. Lacking paired ventrolateral papilliform scale pockets and lateral or dorsal hair tufts. Male genitalia (Figs. 3a, b; 9 n). *Uncus with between 15 and 20 large spinelike setae on each inner lateral surface,* bilobed in outline, prominent, well sclerotized, with base forming paired lateral finely and sparsely setose lobes that project ventrally; socii absent if not consisting of the foregoing lobes; **valva with large unsclerotized area basally,** inner face well sclerotized, *lacking costal hook,* lacking clasper, cucullus barely delineated by slight neck constriction; **transtilla absent, gnathos reduced; aedeagus fused with anellus narrowly at base,** lacking cornuti; anellar ring around base of aedeagus narrow, laterally lobed. Female genitalia (Fig. 4; 3 n). **Sterigma not connected with anterior apophyses,** lamella antevaginalis rudimentary; lamella postvaginalis elongate, emarginate posteriorly, evenly sclerotized, neither setose nor microtrichiate, overlapping sternite, separated from sternite by sutures; ostium bursae small; ***sclerotized ring present near ductus seminalis,*** corpus bursae with two short, conical, unequal sized signa. Attractants. Males respond strongly to carbon acetate baits with double bonding in the ninth position, but at one Arizona locality they unexpectedly responded to one with double bonding in the eighth and tenth positions (Stevens et al. 1985, C. R. Ward pers. comm.).

Type species. *Jerapowellia burnsorum,* new species.

Etymology. *Jerapowellia* is of feminine gender and a patronym honoring the distinguished lepidopterist and tortricidologist Jerry A. Powell, one of the collectors of the new taxon.

Discussion. The hallmarks of *Jerapowellia* are the absence of a costal hook on the male valva, and presence of the prominent uncus with spinelike setae on inner lateral surfaces. The first of these character states is shared only with *Rhyacionia* among Nearctic Eucosmini, and the second with no known genus of Eucosmini in the Nearctic or Palearctic (Heinrich 1923, Kuznetsov 1987). *Jerapowellia* keys to *Rhyacionia* in Heinrich's (1923) key to Nearctic genera of Eucosmini, and to *Gravitarmata* in Kuznetsov's (1987) key to Palearctic genera of Eucosmini. *Jerapowellia* differs from *Rhyacionia* and *Gravitarmata* most importantly in having the spinelike setae on the uncus, and in lacking cornuti. Attraction to carbon acetates with double bonding in the ninth position as observed for *Jerapowellia* is the mode predominating in *Rhyacionia*; it occurs to some extent in other Eucosmini, and is least common in Olethreutini and Grapholitini (Roelofs & Brown 1982).

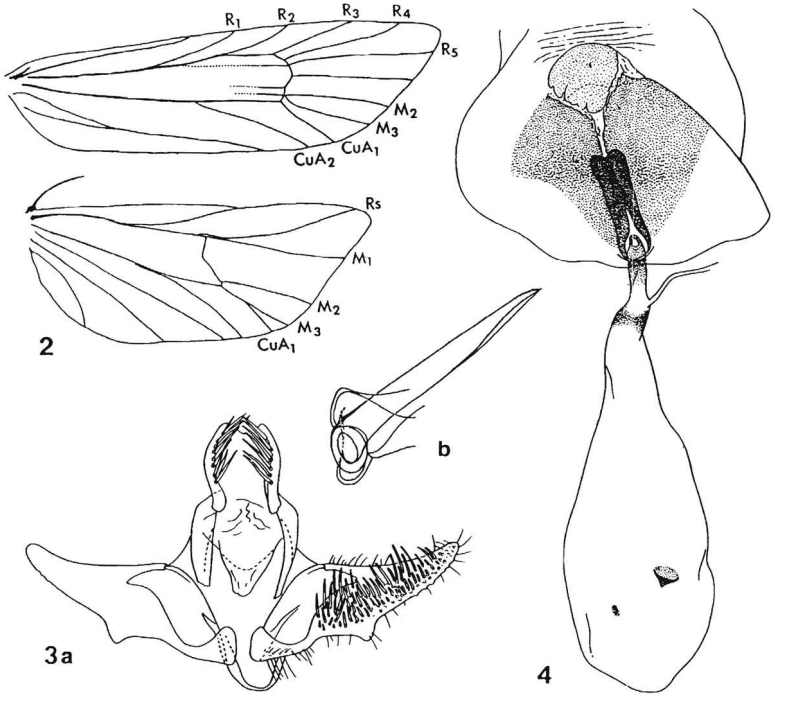
Jerapowellia burnsorum W. E. Miller, new species

Figs. 1–5

Character states in the generic description apply as well as the following.

Male. Length of forewing 7.5–11.5 mm, averaging 9.3 mm (36 n). Head. Length of second segment of labial palpus 1.25 times eye diameter, length of antennal pecten subequal to flagellomere length; labial palpus, front, crown, and antenna clothed with a mixture of brownish white-tipped scales and pure white scales. Thorax. Scaling similar to that of head, but paler; pro- and mesothoracic legs clothed with brownish white-tipped scales and pure white scales, metathoracic legs with shining white scales. Forewing (Fig. 1). Length 3.1–4.1 times middle width. Fasciae and costal strigulae absent, scaling of upper side mostly shining reddish rust tinged with purple in center, costal and dorsal margins yellowish; costa, dorsum, and basal 0.5 speckled with brownish black; fringe at termen shining reddish rust, grayish elsewhere. Scaling of under side gray, paler toward edges. Hindwing (Fig. 1). Scaling of upper and under sides light gray, fringe paler. Abdomen. Dorsal scaling shining tan, ventral scaling white. Genitalia (Figs. 3a, b; 9 n). Length of aedeagus 0.4–0.5 times valval length, gradually tapering distally, distal 0.33 open ventrally, asperities present apically. Valval inner surface with spinelike setae of variable length, cucullus tapering distally to a rounded point, with a rudimentary pollex.

Female. Exterior as described for male, except forewing length 8.5–9.5 mm, averaging 9.2 mm (3 n). Genitalia (Fig. 4; 3 n). Anterior apophyses longer than posterior apophyses. Ostium bursae located at



FIGS. 2–4. Structures of *Jerapowellia burnsorum*. **2,** Wing venation; **3,** Male genitalia; a, Valvae and associated structures, drawn from genit. prep JAP 3841; b, Aedeagus, drawn from genit. prep. RLB 966; **4,** Female genitalia, drawn from genit. prep. JAP 3688.

anterior end of sternite 7, ductus bursae short, a sclerotized bulging structure at posterior end of sternite 7.

Types. Holotype male: [Turkey Park, 8500 ft (2590 m), ponderosa pine zone] 12 km W Portal, Arizona, Apr. 77, Hopk. U.S. 36912-B, R. Stevens collector, genit. prep. JAP 4188, in Essig Museum of Entomology, University of California, Berkeley.

Paratypes. Females: Emory Pass, 8200 ft [2500 m], Black Range, Grant & Sierra Cos., New Mexico, V.27.59, J. M. & S. N. Burns collectors, genit. prep. JAP 3688; Hualapai Mts., 6500 ft [1980 m], 10 mi [16 km] SE Kingman, Mohave Co., Arizona, IV.11.59, J. M. & S. N. Burns collectors, genit. prep. JAP 3915; Hualapai Mt. Park, Mohave Co., Arizona, 6100 ft [1860 m], IV.11/12.86, [J. A.] Powell & [J. W.] Brown collectors, genit. prep. WEM 195933.

Males: Same data as preceding except genit. prep. WEM 195931; Sitgreaves Nat. For., Chevelon R[anger] D[istrict] [Arizona], IV.25.74, D. T. Jennings collector, genit. prep. JAP 3841; 4 specimens, same

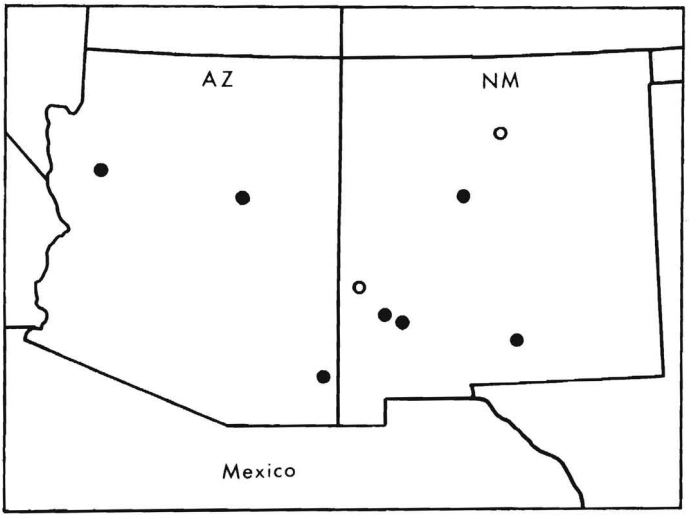


FIG. 5. Distribution of *Jerapowellia burnsorum* specimen records. Solid circles represent specimens examined in this study, open circles unexamined specimens reported by Stevens et al. (1985).

locality as holotype, Apr. and May 77, wing prep. WEM 2610931; 2 specimens, 25 km N Silver City, New Mexico, Hopk. U.S. 36911-B, R. Stevens collector, genit. prep. JAP 4185, wing prep. WEM 2510931; Hualapai, E9 [Arizona], genit. prep. RLB 966; Lincoln N[ational F[orest], 22 km N Ruidoso, New Mexico, Apr. 77, Hopk. U.S. 36910-B, R. Stevens collector; 25 specimens, all Albuquerque, Bernalillo Co., New Mexico, various local sites and dates in 1991 and 1992, mostly the latter, C. R. Ward or B. Stech collectors, genit. preps. WEM 912922, 195932, 912921, 812923, and wing prep. WEM 2410931.

Paratypes are deposited in the Essig Museum of Entomology, University of California, Berkeley, California; New Mexico State University, Las Cruces, New Mexico; University of New Mexico, Albuquerque, New Mexico; University of Arizona, Tucson, Arizona; National Museum of Natural History, Washington, D.C.; American Museum of Natural History, New York, New York; Canadian National Collection, Ottawa, Ontario; The Natural History Museum, London, England; Mississippi Entomological Museum, Mississippi State, Mississippi; and University of Minnesota, St. Paul, Minnesota.

Etymology. The name *burnsorum* is a patronym honoring the earliest known collectors of the species, John M. and Sarah N. Burns, the first renowned for literary as well as lepidopterological accomplishments.

Discussion. The species is sexually monomorphic. The illustrated

sexes (Fig. 1) depict the minor variation in color pattern among individuals, and the range of broad to narrow forewings, respectively, between small and large adults of either sex. The lamella postvaginalis varies in length by approximately 2.3 to 4.0 times its width (3 n). The type series includes specimens (9 n) from four *Pinus ponderosa* Laws. (Pinaceae) trap localities of Stevens et al. (1980, 1985).

Geographical range. *Jerapowellia burnsorum* is known from New Mexico and Arizona (Fig. 5). The dispersed collection localities in these States suggest the species also may occur in neighboring areas of Texas, California, Nevada, other contiguous States, and Mexico.

Biology. The flight period is early and long, capture dates extending from 26 March to 27 May (29 n). The period is perhaps protracted by wide topographic occurrence, elevations of capture ranging between approximately 300 and 2600 m.

The larval food plant is unknown, but moths have been trapped in pine stands (Stevens et al. 1985, C. R. Ward pers. comm.), and forewing color is typical of many Lepidoptera that feed on *Pinus*. Mapped collection localities (Fig. 5) compared with geographic ranges of pines (Critchfield & Little 1966) show that several species of *Pinus* occur at one or a few collection points, and that one pine, *P. ponderosa*, probably occurs at all of them.

ACKNOWLEDGMENTS

I thank C. R. Ward, New Mexico State University, for the gift of specimens; J. A. Powell for loaning additional specimens from the Essig Museum, and supplying Figs 3a and 4, which were drawn by Celeste Green, former staff artist with the Department of Entomological Sciences, University of California, Berkeley; R. L Brown for loaning additional specimens from the Mississippi Entomological Museum, reviewing the manuscript, and pointing out character states; R. E. Stevens for providing additional information about the type locality from the Hopkins file system of the Forest Service, U.S. Department of Agriculture; and S. J. Weller and M. Horak for commenting on the manuscript.

LITERATURE CITED

CRITCHFIELD, W. B. & E. L. LITTLE. 1966. Geographic distribution of the pines of the world. U.S. Dept. Agric. Misc. Publ. 991. 97 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.

HORAK, M. 1991. Morphology, pp. 1–22. *In* Van der Geest, L. P. S. & H. H. Evenhuis (eds.), Tortricid pests: Their biology, natural enemies and control. Elsevier, Amsterdam. 808 pp.

HORAK, M. & R. L. BROWN. 1991. Taxonomy and phylogeny, pp. 23–48. *In* Van der Geest, L. P. S. & H. H. Evenhuis (eds.), Tortricid pests: Their biology, natural enemies and control. Elsevier, Amsterdam. 808 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. Vol. 4, Lepidoptera, Pt. 1. U.S. Dept. Agric. & Natl. Sci. Found. 991 pp. [Translated and updated from 1978 Russian edition.]

ROELOFS, W. L. & R. L. BROWN. 1982. Pheromones and evolutionary relationships of Tortricidae. Ann. Rev. Ecol. Syst. 13:395–422.

STEVENS, R. E., C. SARTWELL, T. W. KOERBER, G. E. DATERMAN, L. L. SOWER & J. A. POWELL. 1980. Western *Rhyacionia* (Lepidoptera: Tortricidae: Olethreutinae) pine tip moths trapped using synthetic sex attractants. Canad. Entomol. 112:591–603.

STEVENS, R. E., C. SARTWELL, T. W. KOERBER, J. A. POWELL, G. E. DATERMAN, & L. L. SOWER. 1985. Forest tortricids trapped using *Eucosma* and *Rhyacionia* synthetic sex attractants. J. Lepid. Soc. 39:26–32.

Received for publication 22 December 1993; revised and accepted 12 March 1994.