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William E. Miller
University of Minnesota

NEARCTIC *RHYACIONIA* PINE TIP MOTHS: A REVISED IDENTITY AND A NEW SPECIES (LEPIDOPTERA: TORTRICIDAE)

William E. Miller[1]

ABSTRACT

Moths now identified as *Rhyacionia busckana* are a mix of two long-confused sibling species. The name *R. busckana* applies to the species with male antennal pecten length subequal to antennal segment length, and with female sterigma width three-fold or more ostium bursae width. The name *R. granti* applies to the previously undescribed species (type locality Iron Bridge, Algoma District, Ontario) with male antennal pecten length at least two-fold antennal segment length, and with female sterigma width less than three-fold ostium bursae width. Structural differences were discovered after sex attractant studies revealed differences in behavioral physiology and phenology. In the Great Lakes region, *R. busckana* larvae feed on *Pinus resinosa* and *P. sylvestris*, and *Rhyacionia granti* larvae feed on *Pinus banksiana*.

Rhyacionia is one of the better-known North American tortricid genera, both taxonomically and biologically (Powell and Miller 1978). Without notable exception, the known larvae feed on needle, bud, and shoot tissues of *Pinus* spp. Several of the more than 20 Nearctic *Rhyacionia* species are considered forest, ornamental, or nursery pests.

The two species treated here have long been confused under one name, *Rhyacionia busckana* Heinrich. That two species were involved was suggested by sex attractant studies at the Forest Pest Management Institute, Canadian Forestry Service, Sault Ste. Marie, Ontario (G. G. Grant, pers. comm.). These studies revealed differences in behavioral physiology and phenology. I examined specimens thus segregated and found consistent morphological correlates. When applied more widely, these results showed that the original type series and a large existing collection of *R. busckana* were species mixtures. Although distinct and separable morphospecies, the pair can be viewed as sibling species because of sympatry and great similarity.

In this paper I identify the species to which the name *R. busckana* applies, and describe the other sibling, which lacks a valid name.

Rhyacionia busckana Heinrich
(Figs. 1–4)

Rhyacionia busckana Heinrich (1923: 17) (holotype: male, Bellmore, Long Island, New York, 7-IV-13, genit. prep. CH 15-I-20, No. 24785 in National Museum of Natural History, Washington, D. C., forewing length 7.5 mm, genitalia illustrated in Heinrich 1923: Fig. 51, basal part of antenna illustrated here in Fig. 4), Powell and Miller (1978: 19) (part).

Discussion. Male antennal pecten length is subequal to antennal segment length (Fig. 4) (16n). The male uncus is subequal in length and width, and the aedeagus has a

[1]Department of Entomology, University of Minnesota, St. Paul, MN 55108.

pronounced asymmetry (Fig. 3) (16n). The female sterigma widens caudally, and its greatest width is three-fold or more ostium bursae width (Fig. 2) (5n). Adults of both sexes usually, but not always, have red crown scaling, which in old specimens may be faded (21n). Red crown scaling and host species were used to associates the sexes. In Ontario, adults developed from larvae found on *Pinus resinosa* Ait. and *P. sylvestris* L. (8n). At least three *Rhyacionia busckana* paratypes are not that species, but represent the sibling species described below. Voucher specimens of *R. busckana* originated in Ontario and New York. They are in the Great Lakes Forest Research Centre, Sault Ste. Marie, Ontario, Canadian National Collection, Ottawa, University of Minnesota, St. Paul, University of California, Berkeley, and National Museum of Natural History, Washington, D. C.

Rhyacionia granti **new species**
(Figs. 5–8)

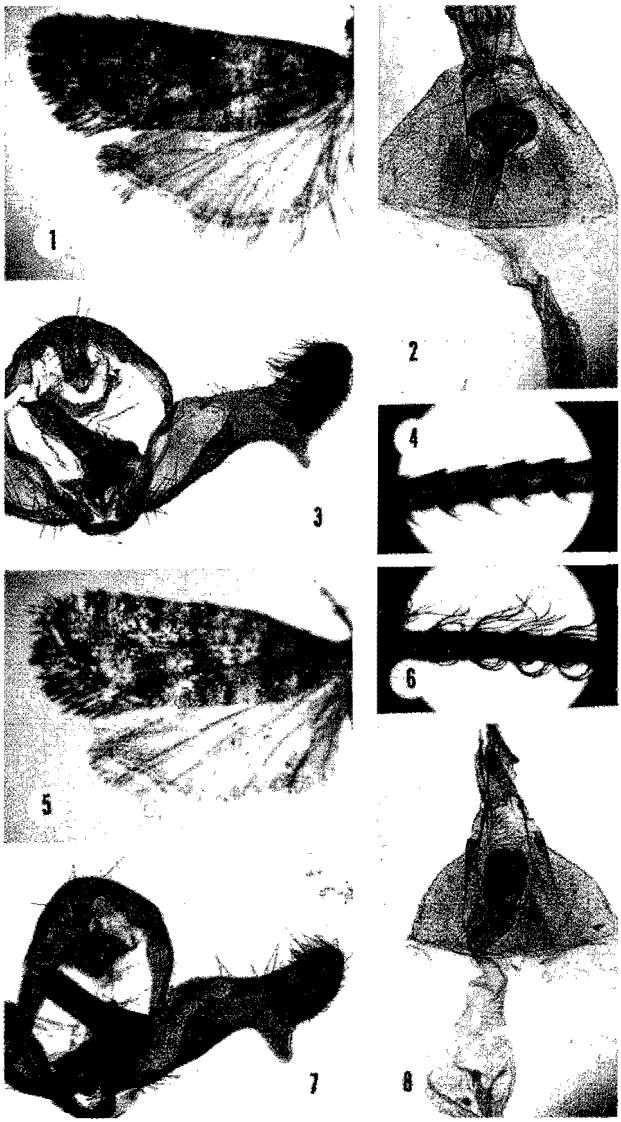
Rhyacionia busckana Heinrich; Powell and Miller (1978: 19) (part), Lindquist (1961: 2), Heppner (1975: 121). Misidentification.

Male. Forewing length 6.5–8.0 mm (holotype 7.0 mm) (8n). **Head:** Labial palpus clothed with brownish black white-tipped scales, sometimes also red scales, length of second segment subequal to eye diameter, length of third segment one-fourth that of second; front brownish black; crown scales brownish black and white tipped, sometimes red, partly obscuring antennal bases; antennal pecten length at least two-fold antennal segment length (Fig. 6). **Thorax:** Dorsally clothed with white-tipped brownish black scales, sometimes also red, ventrally paler; leg scaling similar to thoracic; forewing upper sides clothed on basal two-thirds with brownish black white-tipped scales forming faint dark and pale crossbands, on apical one-third with red and yellow scales (Fig. 5); hindwing upper sides uniformly light gray. **Abdomen:** Shiny gray. **Genitalia** (Fig. 7) (7n): Uncus ventrally recurved, length at least two-fold mid-width; socii rudimentary; neck of valva ventrally constricted, sculped out on inner aspect, clasper broad, pollex one-third dorsal-ventral length of cucullus; apical one-fourth of aedeagus slightly asymmetrical, ending in a spur, with 7 to 13 spinules on dorsal and one lateral surface; vesica with two to eight cornuti.

Female. Forewing length 6.0–7.5 mm (9n). Similar exteriorly to male. **Genitalia** (Fig. 8) (9n): Margin of ostium bursae ring-like, sterigma often wrinkled, greatest width less than three-fold ostium bursae width; ductus bursae sclerotized near ostium bursae on one side; corpus bursae with two thorn-like signa subequal in size.

Type Data. Holotype: male, Iron Bridge, Algoma Dist., Ontario, 25-IV-84, Grant, ant. and genit. prep. WEM 267843 (Figs. 6, 7), in Canadian National Collection, Ottawa. Seven male and nine female paratypes in voucher depositories listed in previous section: ONTARIO: three males, Iron Bridge, 25-IV-84 and 14-V-82, Grant, ant. and genit. preps. WEM 287844 and 317842; one male, Kirkwood Forest, near Thessalon, 2-V-84, Grant, genit. prep. WEM 307841; one male, Sault Ste. Marie, em. Forest Insect Survey (FIS) 9-V-57, genit. prep. WEM 52475a; one female, Nestor Falls, em. FIS 18-I-61, genit prep. WEM 410841 (Fig. 8); two females, English River, em. FIS 18-I-61, genit. preps. WEM 7575a and b; one female, Calstock, em. FIS 20-I-61, genit. prep. 7575c; one female, Sioux Lookout, em. FIS 16-I-61 (Fig. 5), genit prep. 52375a; NEW YORK: two females, Central Park, Long Is., 10-IV-13, genit. preps. ME 3-VIII-27-4 and WEM 251851 (from *R. busckana* paratypes); PENNSYLVANIA: one male, Harrisburg, 26-III-11 (from *R. busckana* paratypes); FLORIDA: one male and female, Cedar Key, Levy Co., 21-XI-73, Heppner, genit. preps. WEM 123743 and 123741; MARYLAND: one female, Beltsville, 5-IV-55, Miller, genit. prep. WEM 22-XI-58.

Discussion. Superficially, *R. granti* resembles *R. zozana* (Kearfott), *R. fumosana* Powell, *R. jenningsi* Powell, *R. adana* Heinrich, *R. blanchardi* Miller, and its sibling, *R. busckana*. Structurally, it most resembles the last. The two species differ as follows. In *R. granti* males, antennal pecten is coarser and at least twice as long as that in *R. busckana*;



Figs. 1-8. *Rhyacionia busckana*: (1) wings of female from Barrie, Ont.; (2) genitalia of female from Barrie, Ont.; (3) genitalia of male from Iron Bridge, Ont.; (4) basal part of holotype male antenna. *R. granti*: (5) wings of female from Sioux Lookout, Ont.; (6) basal part of holotype male antenna; the pecten curled in process of preparation; (7) genitalia of holotype male; (8) genitalia of female from Nestor Falls, Ont.

the uncus is usually narrower; and aedeagal asymmetry less pronounced (Figs. 3, 7) (7n and 16n, respectively). In *R. granti* females, caudal widening of the sterigma is usually slight, while in *R. busckana* it is pronounced; sterigma width in the former is less than three-fold ostium bursae width, while in the latter it is three-fold or more (Figs. 2, 8) (9n and 5n, respectively).

Rhyacionia granti adults of both sexes usually, but not always, have brownish black crown scaling. Brownish black crown scaling and host species were used to associate the sexes.

In Ontario, the larval host of *R. granti* is *Pinus banksiana* Lamb. (8n). Larvae complete feeding in early July and drop to the ground to pupate (Lindquist 1961).

The species is named for its discoverer, Gary G. Grant.

LITERATURE CITED

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.

Heppner, J. B. 1975. Occurrence in Florida of *Rhyacionia busckana* (Lepidoptera: Tortricidae, Olethreutinae). Entomol. News 86:121–122.

Lindquist, O. H. 1961. A shoot moth on jack pine in Ontario. Canada Dept. of Forestry, Forest Entomology and Pathology Branch, Bi-monthly Prog. Rept. 17(2):2.

Powell, J.A., and W. E. Miller. 1978. Nearctic pine tip moths of the genus *Rhyacionia*: Biosystematic review. USDA Agric. Handb. 514. 51 pp.