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MOTHS OF THE GENUS *PARAMULONA* HAMPSON

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The lepidopterous genus *Paramulona*, described by Hampson in 1900, is native to Cuba and is found only on that island. The present study of these moths is based upon material from the collections of the United States National Museum and the British Museum of Natural History. Arthur D. Cushman, of the United States Bureau of Entomology and Plant Quarantine, made the drawings for figures 95, *e*, and 96, *i* and *j*. The rest of the drawings are my own work.

Family ARCTIIDAE

Subfamily LITHOSIINAE

Genus *PARAMULONA* Hampson

Paramulona HAMPSON, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 2, p. 386, 1900.—DRAUDT, in Seitz, Grossschmetterlinge der Erde, vol. 6, pp. 251, 252, 1918.—STRAND, in Wagner, Lepidopterorum catalogus, pars. 26, p. 732, 1922.—FORBES, Scientific survey of Porto Rico and the Virgin Islands, vol. 12, pt. 1, pp. 32, 33, 1930.

Type.—*Mieza albulata* (Herrich-Schaeffer) (type by original designation).

Labial palpus upturned, nearly reaching vertex of head.

Antennae of male and female bipectinate; pectinations originating ventrally on posterior half of subsegments; with a pair of bristles on each pectination, one long and placed apically on pectination (except in *Paramulona baracoa*, where this bristle is subapical), the second shorter and below the first; pectinations ciliate. Male with pectinations narrowly fused at base and usually with pectinations of middle subsegments long, twice or more as long as width of subseg-

ments (except in *P. baracoa*, where the pectinations are short). Female with pectinations broadly fused at base and with pectinations of middle subsegments short, shorter than width of subsegments.

Venation of forewing with vein 2 from outer third of cell or before and past middle, downward curved at base; veins 4 and 5 separate, 4 from lower angle, 5 from slightly above lower angle (see under Remarks); 6 from below upper angle of cell; 7 from stalk of 8 and 9; 10 and 11 free; 10 from middle or nearer stem 7, 8, and 9 than to 11; 11 from beyond middle of cell and curved toward 12, distally coincident with 12.

Venation of hindwing with 2 from outer third of cell or beyond; 3 stalked with 4 from lower angle of cell; 5 absent; 6 and 7 usually stalked from upper angle of cell, sometimes separate; 8 from before middle of cell.

Male with one or two long and shallow, suboval scale pouches on the abdomen. One between fifth and sixth tergites in all the species and one between sixth and seventh tergites in all the species except *Paramulona albulata*. These pouches slightly bilobed anteriorly.

Male genitalia (figs. 95, *a-c*; 96) with curved and hooklike uncus terminating in a constricted and slightly elongate point; gnathos absent; anellus present and with weakly sclerotized ventral plate or juxta and two small dorsal plates; vinculum broadly U-shaped; inner surface of harpe with fingerlike lobe from costa, this lobe fused with harpe along its entire length; aedeagus short and broad; vesica armed with scobinations and numerous long spinelike cornuti and with a single cornutus shaped like a rose thorn; bulbus ejaculatorius from dorsal part of anterior end of aedeagus.

Female genitalia (fig. 95, *d, e*) with a single genital plate, this plate posterior to ostium bursae and bilobed with lobes extending anteriorly into two pockets; ostium bursae between seventh and eighth segments; ductus bursae lightly sclerotized, broad and long and convoluted; entrance to bursa copulatrix armed with a large circlet of clawlike spines and with a dense cluster of these spines just beyond and to the right of this circlet; bursa copulatrix subspherical and with a single subcordate and denticulate signum near or at anterior end.

Remarks.—In the type specimen of *Paramulona albulata* (Herrich-Schaeffer) veins 4 and 5 of the forewing are stalked (on both sides). This specimen was studied by Hampson and formed the basis for his description of the genus *Paramulona*. Dr. M. E. Hering has checked the venation of the type specimen for me and reports that Hampson was correct in his description and illustration of veins 4 and 5 in the forewing. In the 16 specimens of *albulata* studied by me these veins are separate. Hence the type specimen of *albulata* is a freak in that respect.

KEY TO THE SPECIES OF PARAMULONA

1. Males----- 2
 Females----- 5
2. Harpe with fingerlike clavus from sacculus; vesica with cornuti very thick and long, over half width of posterior end of aedeagus and not numerous (about 1 dozen)-----*nephelistis* (Hampson)
 Harpe without clavus or with clavus a broad and short triangular lobe; vesica with cornuti not so thick usually not so long and always more numerous (about 3 dozen)----- 3
3. Harpe without clavus and with a long shallow ridge on outer surface parallel to sacculus; basal lobes of juxta long and slender, as long as width of juxta at top-----*albulata* (Herrich-Schaeffer)
 Harpe with clavus a broad and short subtriangular lobe; basal lobes of juxta short and thick, much less than width of juxta at top----- 4
4. Harpe with notch near and just beyond middle of apex; aedeagus constricted just behind posterior end-----*schwarzi*, new species
 Harpe with notch before middle of apex; aedeagus not constricted just behind posterior end-----*baracoa*, new species
5. Genital plate mesially notched along posterior edge-----*nephelistis* (Hampson)
 Genital plate not notched but rounded along posterior edge.
albulata (Herrich-Schaeffer)

PARAMULONA NEPHELISTIS (Hampson)

FIGURE 95, a-c, e

Cincia nephelistis HAMPSON, Ann. Mag. Nat. Hist., ser. 7, vol. 15, pp. 436, 437, 1905; Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 1, pp. 700, 701, 1914.—DRAUDT, in Seitz, Gross-schmetterlinge der Erde, vol. 6, p. 252, 1918.—STRAND, in Wagner, Lepidopterorum catalogus, pars. 26, p. 733, 1922.

Paramulona nephelistis (Hampson), FIELD, Proc. U. S. Nat. Mus., vol. 100, p. 326, 1950.

Male.—Palpus light fuscous-brown, light straw colored at the tip. Scales of outer sixth and basal half of antenna pale ochraceous white. The two-thirds of the antenna below outer sixth fuscous. Head fuscous with ochraceous fringe at vertex and ochraceous scales above base of palpi. Mesoscutum, patagium, and tegula fuscous with longitudinal stripes of ochraceous. Legs ochraceous, banded with light fuscous. Abdomen pale ochraceous below and somewhat darker, more brownish above. Forewing above pale ochraceous with fuscous scales along the veins and with large fuscous patches in the center and base. Outer margin bordered with ochraceous, especially at apex. Forewing below pale fuscous except along inner margin, where the color is lighter and sordid white. Hindwing above sordid white, slightly darker toward apex and outer margin. Hindwing below sordid white except along foremargin and apex, where the color is darker and more of a fuscous.

Length of forewing 10 mm.

Male genitalia as characterized in the key and as illustrated by figure 95, *a-c*.

Female.—Habitus similar to that of male, dark fuscous areas on fore wings above more extensive and with ochraceous along costal margin extending inward to cell. With ochraceous patches just beyond cell and directly below cell, this ochraceous sometimes slightly pinkish.

Length of forewing 10–13 mm.

Female genitalia as characterized in the key and as illustrated by figure 95, *e*.

Type locality.—"Mutijas, Cuba." I find no trace of any such locality and believe it is a mistake for Matanzas.

Additional type data.—Holotype of *nephelistis* is a male (σ genitalia preparation, British Museum No. 1947–261).

Location of type.—In British Museum of Natural History.

Distribution.—CUBA: *Province of Matanzas*, Matanzas (May); *Province of Oriente*, Santiago de Cuba (February, March, June, July).

Twenty-one specimens (all available) dissected and studied.

Remarks.—The genitalia of the type of *nephelistis* (genitalia preparation, British Museum No. 1947–261) were compared and found to agree with the genitalia of a male (genitalia preparation, British Museum No. 1949–77) from Santiago, Cuba, by D. S. Fletcher, of the Department of Entomology, British Museum of Natural History. This compared specimen was lent to me and is illustrated by figure 95, *a-c*.

PARAMULONA ALBULATA (Herrich-Schaeffer)

FIGURES 85, *d*; 96, *a-c*

Mieza albulata HERRICH-SCHAEFFER, Correspondenz-blatt zoologisch-mineralogischen Vereins in Regensburg, vol. 20, p. 120, 1866.—DEWITZ, Mittheilungen des Münchener Entomologischen Vereins, vol. 1, p. 95, 1877.

Paramulona albulata (Herrich-Schaeffer), HAMPSON, Catalogue of the Lepidoptera Phalaena in the British Museum, vol. 2, p. 386, fig. 300, 1900.—DRAUDT, in Seitz, Gross-schmetterlinge der Erde, vol. 6, p. 252, fig. 34 c 8, 1918.—STRAND, in Wagner, Lepidopterorum catalogus, pars 26, p. 732, 1922.—WOLCOTT, Journ. Dept. Agr., Porto Rico, vol. 7, No. 1, p. 158, 1923; vol. 20, No. 1, p. 415, 1936.—FORBES, Scientific survey of Porto Rico and the Virgin Islands, vol. 13, pt. 1, p. 33, 1930.

Male.—Palpus, antenna, head, thorax, and legs entirely like *Paramulona nephelistis*. Forewings above very similar to *nephelistis*, fuscous along veins more distinct, fuscous patches more extensive and ochraceous along outer margin more distinct.

Length of forewing 8–12 mm.

Male genitalia as characterized in the key and as illustrated by figure 96, *a-c*.

Female.—Habitus like that of male and similar to female *Paramulona nephelistis*. Forewing darker, more suffused with fuscous, separate fuscous patches not so distinct.

Length of forewing 10–13 mm.

Female genitalia differing from *nephelistis* in the shape of the genital plate as described in the key and as illustrated by figure 95, *d*.

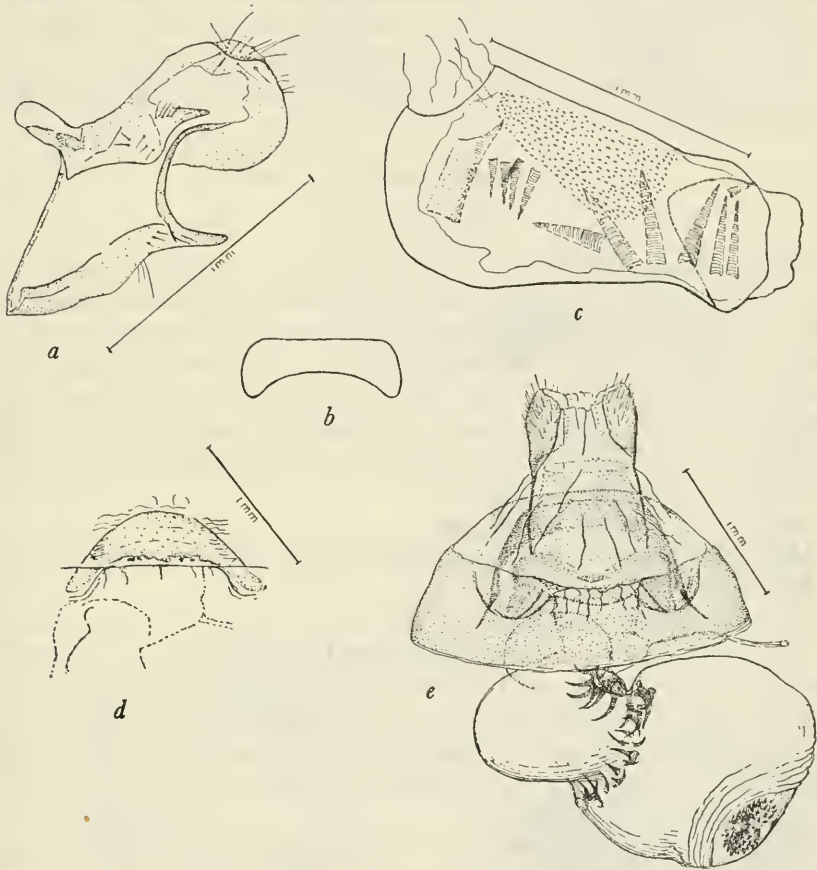


FIGURE 95.—*a-c*, *Paramulona nephelistis* (Hampson): *a*, Inner face of right harpe; *b*, juxta; *c*, aedeagus, lateral view. *d*, *P. albula* (Herrich-Schaeffer), genital plate of female. *e*, *P. nephelistis*, female genitalia.

Type locality.—Cuba.

Additional type data.—Described from a single specimen, the holotype, male.

Location of type.—In the Herrich-Schaeffer collection, Zoological Museum of the University of Berlin.

Distribution.—CUBA: *Province of Habana*, Habana, Santiago de Las Vegas (January); *Province of Matanzas*, Matanzas (March, May,

July); *Province of Santa Clara*, Cienfuegos. This species was recorded from Puerto Rico by Dewitz (loc. cit.). This record is probably a mistake.

Sixteen specimens were studied.

Remarks.—The genitalia of the type of *albulata* was studied by Dr. E. M. Hering, of the Zoological Museum of the University of Berlin, and found to be the species illustrated in the present paper as figure 96, *a-c*. Dr. Hering writes that the anellus, harpes, and aedeagus are identical. There is a slight individual difference in that the type of *albulata* has the apex of the harpe slightly more excavated but not nearly so much as in *P. baracoa* (fig. 96, *g*).

3. PARAMULONA BARACOA, new species

FIGURE 96, *g-j*

Male.—Palpus dark brown, straw colored and slightly pinkish at tip. Antenna, head, thorax, and legs similar to *Paramulona nephelistis*. Scape of antenna pinkish and with considerable pink and light-colored areas of legs. Forewing similar to *nephelistis* and *albulata*, darker fuscous than in either. Outer margin pale ochraceous, contrasting strongly with the fuscous behind the margin. Hindwing above and below and forewing below as in *nephelistis* and *albulata* with fuscous slightly darker.

Length of forewing, 8.5–10 mm.

Male genitalia with characters as given in the key and as illustrated.

Female.—Unknown.

Type locality and distribution.—Baracoa, Province of Oriente, Cuba.

Additional type data.—Described from the holotype, male (locality as above; William Schaus; U. S. N. M. No. 34819; ♂ genitalia preparation W. D. F. No. 2481, 1947) and paratypes Nos. 1, 2, males (same locality; William Schaus; ♂ genitalia preparation W. D. F. No. 3079, 1949, for paratype No. 1; ♂ genitalia preparation W. D. F. No. 2480, 1947 for paratype No. 2).

Location of types.—Holotype and paratypes Nos. 1 and 2 in the United States National Museum.

4. PARAMULONA SCHWARZI, new species

FIGURE 96, *d-f*

Male.—Palpus fuscous, basal subsegments with many ochraceous scales and base and tip of apical subsegment ochraceous. Frons fuscous below and ochraceous above. Vertex of head, patagium, tegula and thorax, ochraceous with scattered fuscous scales. Legs as in *Paramulona nephelistis*, ochraceous color with pinkish tinge. Forewing ochraceous, irrorated with fuscous scales, this irroration more

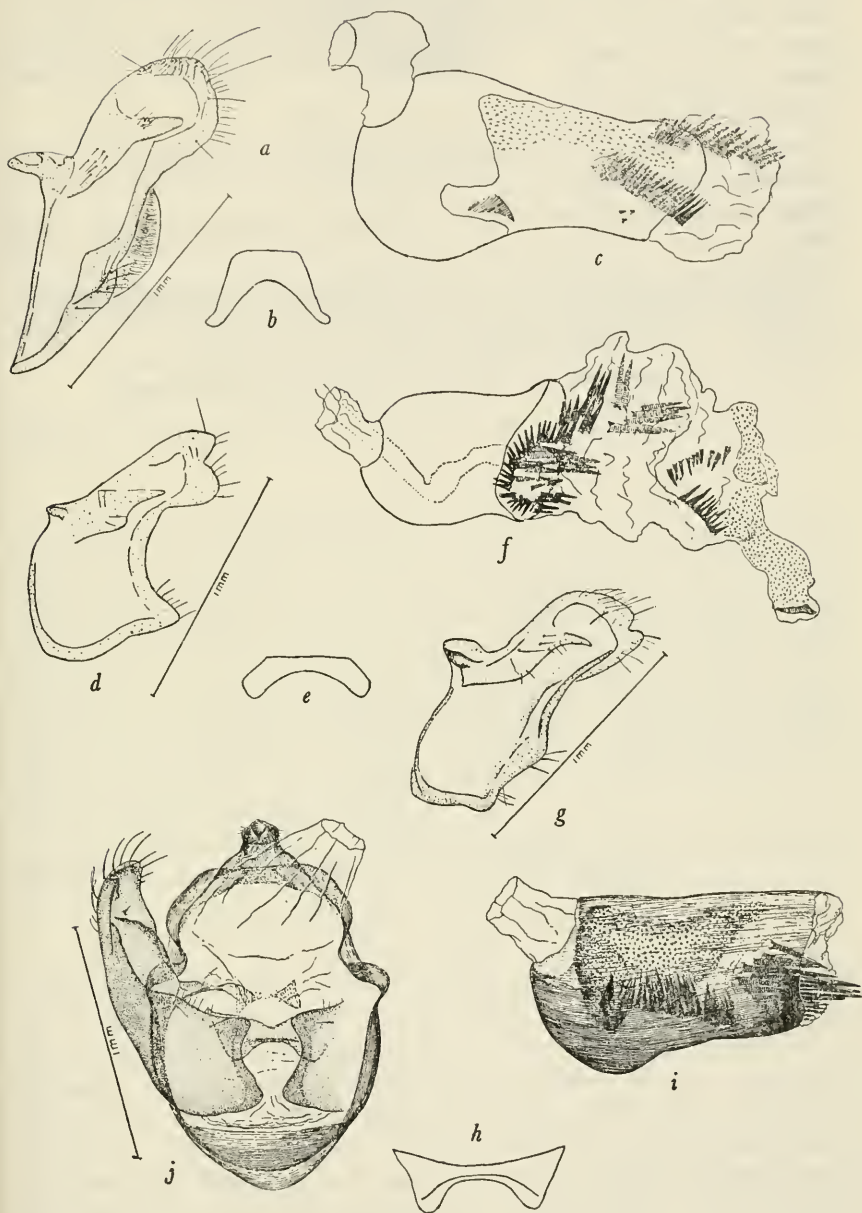


FIGURE 96.—*a-c*, *Paramulona albulata* (Herrich-Schaeffer): *a*, Inner face of right harpe; *b*, juxta; *c*, aedeagus, lateral view. *d-f*, *P. schwarzi* Field: *d*, Inner face of right harpe; *e*, juxta; *f*, aedeagus, lateral view. *g-j*, *Paramulona baracoa* Field: *g*, Inner face of right harpe; *h*, juxta; *i*, aedeagus, lateral view; *j*, male genitalia, ventral view.

heavy in the base; with a faint irregular submarginal band and a faint broken fuscous band through middle of cell and continued to inner margin; with faint fuscous streaks opposite end of cell between these two bands. Forewing below and hindwing above and below as in *nephelistis*.

Length of forewing 8 mm.

Male genitalia as characterized in the key and as illustrated.

Female.—Unknown.

Type locality and distribution.—Cayamas, Province of Santa Clara, Cuba.

Additional type data.—Described from a single specimen, the holotype, male (locality as above; January 27; E. A. Schwarz; U. S. N. M. No. 34821; ♂ genitalia preparation W. D. F. No. 1342, 1941).

Location of type.—In the United States National Museum.