

ENTOMOLOGY.—*North American Eucosminae, notes and new species (Lepidoptera).* CARL HEINRICH, Bureau of Entomology. (Communicated by S. A. ROHWER.)

In the present paper I am describing seven new species and four new varieties, adding two described species to our faunal list, reducing two species to the rank of varieties, sinking three species as synonyms, and transferring the generic position of three others. These changes are occasioned by the receipt of a large amount of additional material sent in for determination (chiefly by Dr. Wm. Barnes, E. H. Blackmore, and the Canadian National Museum) since the publication of my revision of the Eucosminae.¹

Strepsicrates smithiana, Walsingham

Strepsicrates smithiana Walsingham, Proc. Zool. Soc. Lond., 1891: 506.

This West Indian species will have to be listed in our fauna, as Dr. Barnes has several specimens from Everglades, Florida (Reared "Apr. 8-15" and "Apr. 16-23" from larvae feeding on guava). A pair of these has been deposited in the National Collection. The males show no differences in genitalia or pattern from those of Dyar's *indentana*. The females are somewhat differently marked; *smithiana* has a narrow, rather strong shading of black scales along dorsal margin and termen of forewing, which is lacking in *indentana*, while *indentana* has a fine black streak from end of cell to apex, lacking in typical *smithiana*. Otherwise the two forms agree. I am therefore keeping the Dyar name, but reducing *indentana* to the rank of a variety.

Alar expanse.—12-14 mm.

Type.—In British Museum.

Type locality.—St. Vincent, British West Indies.

Food plant.—Guava.

Thiodia ornatula, new species

Palpus extending scarcely the length of the head beyond it; snowwhite. Face and forepart of head snow white; posterior part of head fuscous. Thorax blackish fuscous, more or less spotted with white; tegula blackish anteriorly, dull white behind. Forewing pale cream white marked with blackish fuscous and brown; a broken, outwardly angulate basal patch indicated by several irregular blackish fuscous lines extending from costa and dorsum, these not meeting (the patch broken longitudinally below costa); on outer half of costa four large pale brown geminate spots; a round brown apical spot and a narrow short brown streak along termen at middle; ocelloid patch consisting of two vertical metallic bars enclosing a blackish fuscous patch which expands above into a rather large blackish spot and merges into extensions of the brown geminations from costa; on dorsum bordering the inner margin of the ocelloid patch a rather large triangular blackish

¹Bull. U. S. Nat. Mus. no. 123. 1923.

patch; cilia brownish, paler toward costa and with a narrow dark fuscous basal band above tornus; forewing, otherwise, of the whitish ground color; termen concave; veins 3, 4, and 5 somewhat approximate at termen. Hindwing pale smoky fuscous; cilia paler with a dark basal band; veins 3 and 4 short stalked.

Male genitalia similar in shape to those of *essexana* Kearfott, but slightly smaller and with neck of harpe more heavily haired.

Alar expanse.—12.5–15 mm.

Type.—In collection Barnes.

Paratypes.—Cat. no. 27247 U. S. N. M. Also in American Museum, Canadian National, and Barnes collections.

Type locality.—Oak Station, Pennsylvania.

Food plant.—Unknown.

Described from male type, 19 male and 1 female paratypes from the type locality bearing dates from June 21 to Aug. 15 (*F. Marloff*); 1 female paratype from New Brighton, Pennsylvania ("VII-20-07"); 1 female paratype from Wyoming County, Pennsylvania (*W. D. Kearfott*, "VI-17-06"); 3 male and 1 female paratypes from Pittsburgh, Pennsylvania (*H. Engel*, "VI-25-08"); 1 male paratype from Essex County Park, New Jersey (*Kearfott*, July 22); 1 male paratype from Plummer's Island, Maryland (*Busck*, Aug. 1903); and 1 male paratype from Chicago, Illinois (Sept. 1900). These specimens had been determined by Kearfott as *Laspeyresia gallaesaliciana* Riley and were in the Barnes and American Museum collections under that name.

A very distinct species, resembling *Epinotia nigralbana* Walsingham in color, and pattern, and like no other *Thiodia*.

Thiodia insignata, new species

Palpus extending the length of the head beyond it; greyish fuscous; inner side white. Face, head, and thorax greyish fuscous. Forewing whitish grey with dark greyish fuscous pattern marking and an ochreous shade below apex; a complete outwardly angulate dark basal patch further out on dorsum than on costa and with apex at vein 1b; from mid costa to vein 1b below end of cell a dark slanting half fascia from the end of which a very faint dark shade extends upward to sub apical costal spot; on dorsum near tornus and opposite extremity of fascia, a similar colored triangular dark spot; costa beyond middle with four greyish fuscous spots separated by white germinate dashes; ocelloid patch a group of seven black dots separated by three very faint vertical metallic bars; area above, suffused with ochreous; termen straight and decidedly slanting; veins 3, 4, and 5 not approximate at termen; cilia sordid whitish with a dark median shade. Hind wing pale smoky fuscous; cilia paler, with a broad dark median band; veins 3 and 4 united.

Male genitalia similar to those of *octopunctana* Walsingham.

Alar expanse.—19–20 mm.

Type.—In collection Barnes.

Paratype.—Cat. no. 27248 U. S. N. M. Also in American Museum.

Type locality.—Silverton, Colorado.

Food plant.—Unknown.

Described from male type and 1 male paratype from the type locality ("July 8–15" and "Aug. 1–7") and 1 male paratype from Chimney Gulch, Golden, Colorado (*Oslar*). I have also before me two males from Iditarod, Alaska ("June 22 and July 7, 1918," *A. Twitchell*) which appear to be the

same species. They are similar in color, markings and structure except that the dark shade connecting end of outer semifascia and subapical costal spot of forewing is darker and the apex of cucullus is a trifle more pointed. They possibly represent a distinct local race; but for the present may as well go under this name.

Closest to *columbiana* Walsingham; with similar pattern, but larger and darker and with different genitalia; the costa of harpe is straighter and the apex of cucullus more distinctly rounded.

Thiodia kokana (Kearfott)

Eucosma kokana Kearfott, Trans. Amer. Ent. Soc. **33**: 29. 1907.

Barnes and McDunnough, Check List Lepid. Bor. Amer. no. 7006, 1917.

Eucosma chortaea Meyrick, Ent. Mo. Mag. **48**: 35. 1912.

Hystricophora kokana Heinrich, U. S. Nat. Mus. Bull. 123, 259. 1923.

Thiodia sororiana Heinrich, U. S. Nat. Mus. Bull. 123: 263. 1923.

Mr. Meyrick has suggested to me the above synonymy which I was inclined to doubt, as the type (♀) of *kokana* and that of *sororiana* (♂) showed some slight differences in the shape of termen and in the approximation of veins 3, 4 and 5 on termen of forewing. Recently, however, we have received from Miss Annette F. Braun a pair (♂ and ♀) of authentic *kokana* from the type locality (Cincinnati, Ohio). These specimens showed the differences to be purely sexual and the tentative reference of *kokana* to *Hystricophora* an error.

Thiodia infrimbiana candidula, new variety

A pale Eastern race of *infrimbiana*, distinguished by its snow white color and unmarked white forewing cilia. It lacks the olivaceous overcast of typical *infrimbiana*. There is no trace of the semicircular dark shade above the ocelloid patch, so conspicuous in the latter, and the markings are fainter, in some specimens almost obsolete. The harpe of the male genitalia also has a cucullus more sharply pointed at apex.

Alar expanse.—15–18 mm.

Type.—In Canadian National Collection.

Paratype.—Cat. no. 27249 U. S. N. M. Also in Canadian National, American Museum, and Barnes collections.

Type locality.—Aweme, Manitoba.

Food plant.—*Artemesia*.

Described from male type 7 male and 1 female paratypes from the type locality collected by Norman Criddle ("28-VII-1921", "3-VII-1921," "15-VIII-1921" and "23-VII-08"); 2 female paratypes from Cartwright Manitoba (*E. F. Heath*); and one male paratype from St. Anthony Park, Minnesota (labeled, "ties leaves of *Artemesia ludovicana*, Aug. 6").

This name will apply to the Manitoba and other eastern specimens which we have hitherto referred to *infrimbiana* Dyar. Typical *infrimbiana* is apparently limited to the Pacific coast.

Thiodia segregata, new species

Palpus, face, and head dull white; palpus extending the length of the head beyond it; grey toward apex. Thorax and ground color of forewing creamy or greyish white, due to a greyish ochreous shading at tips of scales; a pale rusty ochreous basal patch and median fascia and a similar dark shade toward apex faintly indicated; in some specimens the basal patch is fairly clear and angulate, with the apex at vein 1b, and farther out on dorsum than on costa; in others it is indicated only by a faint median or dorsal shade; median fascia a faint, straight, rather narrow band from mid costa to outer fourth of dorsum; ocelloid patch weak, consisting of three very faint, vertical metallic bars enclosing a varying number of small black dots, sometimes as many as nine, often altogether obsolete; termen concave; veins 3, 4, and 5 somewhat approximate at termen; cilia whitish, finely dusted with blackish grey. Hindwing pale smoky fuscous; cilia pale, with a dark basal band; veins 3 and 4 united.

Male genitalia as in *festivana* Heinrich.

Alar expanse.—11–12 mm.

Type.—In collection Barnes.

Paratypes.—Cat. no. 27250 U. S. N. M. Also in American Museum and Barnes collections.

Type locality.—Monachee Meadows, Tulare County, California.

Food plant.—Unknown.

Described from male type, 43 male and 2 female paratypes from the type locality (8000 ft., "July 26–23" and "Aug. 8–15").

Similar to *festivana* Heinrich; but paler and less distinctly marked. Possibly a local race of that species.

Eucosma giganteana minorata, new variety

A food plant variety, differing from typical *giganteana* in size and habit. The color and pattern are the same; but the moths are much smaller and the genitalia (male and female) are only half the size of those of *giganteana*, tho similar in shape and structure. The larvae of typical *giganteana* are borers in the roots of *Sylphium perfoliatum* while those of the new variety feed in the flower heads of *Sylphium gracile*. Such a difference in food habit within a species is not astonishing in the Olethreutidae, and in this case does not, I think, justify more than varietal separation.

Alar expanse.—17–19 mm.

Type.—Cat. no. 27251 U. S. N. M.

Type locality.—Liberty, Texas.

Food plant.—*Sylphium gracile*.

Described from male type and one male paratype from the type locality (July 29, 1922 and July 16, 1923); and one female paratype from Stowell, Texas (July 5, 1923) all reared by L. J. Bottimer of the Federal Horticultural Board.

Gypsonoma parryana (Curtis)

Argyrota parryana Curtis, Appendix, Ross Second Arctic Voyage, 1835, p. 75.

Omitted from my revision of the Eucosminae. Similar to *fasciolana* in pattern and genitalia; but with outer dark fascia of forewing disappearing before dorsum and with aedoeagus longer and more slender.

There are several specimens from Alaska in the Canadian National Collection.

Alar expanse.—18-19 mm.

Type.—Location unknown.

Type locality.—Arctic America.

Food plant.—Unknown.

Gypsonoma nebulosana (Packard)

Grapholitha nebulosana Packard, Proc. Bost. Soc. Nat. Hist. 11: 61. 1866.

Heinrich, U. S. Nat. Mus. Bull. no. 123: 261. 1923.

Epinotia nebulosana Fernald, in Dyar List N. Amer. Lepid., no. 5231. 1903.

Enarmonia nebulosana Barnes and McDunnough, Check List Lepid., no. 7155. 1917.

Through the courtesy of Nathan Banks I have been able to make a genitalia slide of Packard's type and place this species. It is nearly unicolorous brown, with genitalia like those of *fasciolana* Clemens; possibly a suffused dark variety of the latter, but without any trace of the whitish anti-median and post median areas so conspicuous on *fasciolana*.

I would correct here an error in my *Revision of the North American Eucosminae*. The actual type (Packard no. 607; M. C. Z. type no. 14312) is at Cambridge and not in the Fernald collection as I stated. Fernald's specimen is a paratype. There is an authentic specimen (σ) from Hopedale, Labrador ("27-VII-1922") in the Canadian National Collection.

Alar expanse.—19 mm.

Type.—In Museum Comparative Zoology.

Type locality.—Strawberry Harbor, Labrador.

Food plant.—Unknown.

Gypsonoma adjuncta, new species

Palpus, face and head white, dusted with grey. Thorax dark grey dusted with white. Forewing dark (blackish) grey with a white patch, somewhat streaked with grey, on costa beyond base, an irregular (more or less obscured) white blotch on mid dorsum and some white dusting near costa on outer third; an obscure blackish dot at end of cell and a faint black dot at apex; cilia grey dusted with white at tornus. Hind wing dark smoky fuscous; cilia paler, with a very slightly darker basal band.

Alar expanse.—12-15 mm.

Type.—Cat. no. 27252 U. S. N. M.

Paratypes.—In Canadian National and Blackmore collections.

Type locality.—Toronto, Canada.

Food plant.—Unknown.

Described from male type and one male paratype from the type locality ((Parish, "1-13" and "6-7-16") received through Edward Meyrick and one paratype from Victoria, British Columbia (W. H. Carter, "26-VI-21," Blackmore no. 473).

Similar to the European *incarnana* Haworth, but with anti median white area not a complete pale fascia (dark basal patch fusing at least at middle with median dark scaling), with post median area more heavily dusted (almost suffused) with grey scaling, with costal hook of harpe of male genitalia much shorter, and with basal opening of harpe larger and more evenly rounded. Possibly an American race of *incarnana*.

Proteoteras implicata, new species

Forewing olivaceous green, marked with black or blackish fuscous; an outwardly angulate, dark basal patch faintly indicated by irregular lines of blackish scales beyond base, strongest on basal fourth of costa; costa finely strigulated; from just beyond middle of costa a dark outwardly slanting half fascia more or less dusted with black, extending to upper outer edge of cell; from end of this a fine black line extending out and up toward apex and terminating in a rounded black spot before apex. Hind wing brownish fuscous; cilia slightly paler, with a dark basal band.

In male some fine black scaling on upper side of hind wing, on base of cell, and between veins 1a and 1b at extreme base of wing; on under side of hindwing along costa from base to outer fourth, and a very little along lower vein of cell at base; on under side of forewing on basal third of costa and on upper and below lower veins of cell at extreme base; also on extreme posterior lateral margins of thorax and on outer side of hind tibia and outer surfaces of all femora.

Male genitalia with 2 or 3 heavy, flat spines from outer surface of harpe, and with entire neck of harpe from outer margin of basal opening to cucullus, densely spined; socii long and rather slender, with short hair pencils; general shape as in *aesculana*.

Alar expanse.—11–15 mm.

Type.—In Barnes collection.

Paratype.—Cat. no. 27253 U. S. N. M. Also in American Museum and Barnes collections.

Type locality.—Everglades, Florida.

Food plant.—"Bush Ash."

Described from male type, 3 male and 4 female paratypes from the type locality labeled, "ex larva in stems of Bush Ash, Apr. 16–23"; and one male paratype from La Chorrera, Panama (*Busck*, May 1912).

Similar to *aesculana* Riley; but with different genitalia and different sex scaling in male.

Exentera senatrix, new species

Palpus, face, head and thorax dark ashy grey. Forewing grey, the pale areas ashy grey with a faint bluish tint, the dark markings blackish fuscous; a dark basal patch somewhat broken on dorsum at base by pale scaling and fusing above cell with a similar dark shade from mid costa; at lower outer angle of cell a small blotch of blackish scaling; outer third of costa with three obscured dark geminations; costa otherwise very faintly marked with fine pale gemination; ocelloid patch obscure, two vertical bars enclosing 3 or 4 very short black dashes; forewing, otherwise, ashy blue grey; termen notched at veins 3–5; veins 3, 4 and 5 closely approximate at termen; 7 and 8 short stalked or connate; cilia dark ashy grey, paler toward tornus. Hindwing pale smoky fuscous; cilia paler, with a dark basal band.

Male genitalia similar to those of *improbana* Walker.

Alar expanse.—19–21 mm.

Type.—In Barnes collection.

Paratypes.—Cat. no. 27254 U. S. N. M. Also in American Museum and Barnes collections.

Type locality.—Paradise, Cochise County, Arizona.

Food plant.—Unknown.

Described from male type, one male and 7 female paratypes from the type locality, dated, "Mich. 8–15" and Apr. 1–7").

A rather striking species with very narrow forewings. Close to *improbana* but apparently distinct.

Epinotia cruciana (Linnaeus)

Two species, *Sciaphila direptana* Walker and *Sciaphila vilisana* Walker, described² from St. Martin's Falls, Albany River, Hudson Bay, were omitted from my revision. Judging by the descriptions and Knight's figures in the American Museum they are both synonyms of *E. cruciana* (Linnaeus) and should for the present, at least, be so referred.

Epinotia cruciana lepida, new variety

A small dark reddish brown variety with pale anti and post median metallic bands more or less obscured. Palpus sordid whitish, shaded with fuscous towards apex. Face and head whitish ochreous shaded with fuscous. Thorax and forewing dark reddish brown, in some specimens with a somewhat leaden luster on extreme base of wing and over thorax; from costa at $\frac{1}{3}$ to mid dorsum a pair of narrow, irregular metallic lines, more or less obscured and sometimes enclosing a pale ochreous shading; on outer third of costa three or four whitish or ochreous geminate marks (very faint in some specimens) from which extend three irregular nearly parallel metallic lines, two to tornus, and one to termen below apex, the last often obsolete or much obscured; cilia leaden fuscous with a pale shade toward apex. Hindwing smoky fuscous; cilia paler, with a dark basal band.

Genitalia as in typical *cruciana* except somewhat smaller.

Alar expanse.—11.5–12 mm.

Type.—In Barnes collection.

Paratypes.—Cat. no. 27255, U. S. N. M. Also in American Museum and Barnes collections.

Type locality.—Mount Washington, New Hampshire.

Food plant.—Unknown.

Described from male type, 21 male and 2 female paratypes from the type locality ("4000 ft. "July 24–31" and "Aug. 1–7"). A distinct, local, dwarfed variety.

Epinotia cruciana russata, new variety

A unicolorous form with sordid whitish ochreous palpus and head, and rust red thorax and forewing. In some specimens there is a very faint indication of a darker semi-fascia from mid costa to tornus, but in most this is not distinguishable. The leaden streak along costa from base to middle,

² Cat. Lepid. Heter. Brit. Mus. 28:338. 1863.

so characteristic of the species, is strongly marked; forewing cilia faintly shaded with leaden fuscous; a short, narrow, vertical leaden bar above tornus. Hindwing pale smoky fuscous, somewhat whitish towards base; cilia whitish, with a dark basal band and a faint dark median shade.

Genitalia as in typical *cruciana*.

Alar expanse.—15–16 mm.

Type.—Cat. no. 27256 U. S. N. M.

Paratypes.—In National Museum and Blackmore collections.

Type locality.—Victoria, British Columbia.

Food plant.—Unknown.

Described from male type and 2 male paratypes from the type locality (*E. H. Blackmore*, "24-VI-23," "25-VI-23" and "21-VII-23"); and one male and one female paratype from Brentwood, British Columbia ("14-VII-23" and "30-VI-23," *Blackmore*).

Epinotia seorsa, new species

Antennae whitish; in male finely pubescent. Palpus triangular, strongly pored, extending three times the length of the head beyond it; outer side purplish red or reddish ochreous; upper edge and inner side sordid whitish, sometimes with a slight greyish dusting. Face and head sordid whitish. Thorax rust or rosy red somewhat shaded with sordid ochreous white at middle. Forewing rust color (in some specimens red rather than ochreous, in others quite pale) with a faint rose purple suffusion towards apex; on dorsum near base an obscure outwardly projecting angulate semi-lustrous leaden or purplish fuscous patch, forming the dorsal remnant of an incomplete basal patch; from mid costa to just beyond middle of dorsum a similar colored fascia, rather broad for most of its length but sharply tapering at costal and dorsal extremities; beyond this a narrow outwardly curved dark line from outer third of costa to tornus; and beyond this an occasional faint obscure dark line or two from costa, disappearing near termen; in some specimens there is an irregular faint pale shading along dorsum from base to outer fifth, but this is normally lacking; cilia rosy or rust color dusted with leaden scales towards tornus. Underside of forewing with pale costa and with rest of wing more or less suffused with leaden scaling; the pattern markings, especially the fascia and post median line, darkest and rather strongly marked. Hindwing whitish mottled with fuscous; cilia whitish, with dark basal band.

Male genitalia with uncus strong, undivided, tip slightly swollen; harpe as in *infusana* Walsingham but not so broad towards base; aedoeagus moderately long, straight and slightly tapering toward apex; cornuti a dense cluster of slender spines half as long as aedoeagus.

Alar expanse.—18–20 mm.

Type.—Cat. no. 27257 U. S. N. M.

Paratypes.—In National Museum, Canadian National Museum, Blackmore, and Barnes collections.

Type locality.—Vavenby, British Columbia.

Food plant.—Unknown.

Described from male type ("16-IX-1922, *Theo. A. Moilliet*, *Blackmore* no. 145"); one male and one female paratype from Victoria, British Columbia ("10-9-03" and "27-9-03"); one female paratype from Duncans, Vancouver Isl., ("22-9-12," *Hanham*); one female paratype from Quamichau Lake, Vancouver Island (*Hanham*, "*Blackmore* no. 665"); one male paratype from

Truckee, California ("Oct. 8-15"); and one female paratype without locality label but bearing Blackmore's no. 876 and presumably from British Columbia.

A distinct species close to *septemberana* Kearfott and *vagana* Heinrich.

Hystriophora taleana (Grote)

Grapholitha taleana Grote, Can. Ent. 10: 54. 1878. Heinrich, U. S. Nat. Mus., Bull. no. 123: 260. 1923.

Thiodia taleana Fernald, in Dyar List N. Amer. Lepid., no. 5182. 1903.

Eucosma taleana Barnes and McDunnough, Check List Lepid, Bor. Amer., no. 7071. 1917.

Under Grote's name the Canadian National Collection has several specimens from Aweme, Manitoba, agreeing with specimens from Kansas and Iowa which we had under *ochreicostana* Walsingham. If the determination is correct—and there seems no good reason to doubt it—*ochreicostana* and *taleana* are conspecific. Walsingham's name, however, may be retained as a racial designation for the Rocky Mountain and Western specimens, as these differ somewhat in both pattern and genitalia from those from the plains country; *ochreicostana* has broader harpes than *taleana* and a yellow shading on base of costa of forewing lacking in the latter form. Otherwise the genitalia and patterns agree. I am keeping *ochreicostana*, therefore as a variety of *taleana*.

Alar expanse.—15-18 mm.

Type.—In British Museum.

Type locality.—Illinois.

Food plant.—Unknown.

PROCEEDINGS OF THE ACADEMY AND AFFILIATED SOCIETIES

THE BIOLOGICAL SOCIETY

664TH MEETING

The 664th meeting was held in the lecture hall of the Cosmos Club March 15, 1924, at 8 p.m., with Vice President OBERHOLSER in the chair and 34 persons present.

Under *Short Notes*, H. C. SKEELS exhibited a copy of the recently published "Standardized Plant Names" and inquired whether the practice followed in that work of ending all personal specific names in the genitive with a single *i* was likely to be adopted by botanists generally. The subject was discussed by MESSRS. WETMORE, COVILLE, OBERHOLSER, and HITCHCOCK. Dr. OBERHOLSER stated that the contraction of the termination to a single *i*, which was followed at one time by the A.O.U., has now been abandoned by that body.

R. W. SHUFELDT read letters from foreign ornithologists referring to the specimen of *Archaeopteryx* in the Berlin Museum and to specimens of the Labrador Duck.

S. F. BLAKE reported that a flock of Purple Grackles, numbering between 3000 and 5000, is roosting at night in the southeast corner of the Soldiers'