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## The Genus *Oxydia* in the United States (Lepidoptera, Geometridae)

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This group of moths is perhaps better known under the name *Microgonia* Herrich-Schäffer (1855, Sammlung . . . Aussereuropäischer Schmetterlinge, pp. 28, 41, 63), with the type species being designated as *rhodaria* Herrich-Schäffer (W. Warren, 1893, Novitates Zool., vol. 2, p. 146). Dr. J. G. Franclemont was kind enough to let the author examine four specimens of this species from the Cornell collection, and, as a result, it became obvious that the type species of *Microgonia* and *Oxydia* are not congeneric. The limits of both these genera must await a careful study of the New World tropical fauna, but it can be stated here that two groups are definitely involved. *Microgonia* can be distinguished from *Oxydia* as follows: the male antennae are serrate, the forewings have only a single accessory cell, and both the primaries and secondaries are angled. Greater differences are found in the male genitalia, as *Microgonia* does not have either the row of strong sclerotized spines on the gnathos or a furca, the valves are narrower and have an elongate, narrow costal arm, and the transtilla and juxta are united by a neck-like process.

The problem of properly identifying specimens in this genus has proved to be a rather thorny one. The situation has been complicated by a number of examples bearing Florida labels that were undoubtedly distributed by some of the old-time dealers who have been known to put false locality labels on specimens. The present study was under-

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taken to try to ascertain just which species actually do occur in this country, especially in Florida, and which names should be applied to them.

ACKNOWLEDGMENTS: The author wishes to acknowledge with thanks the cooperation and aid of the following men who have allowed him to study specimens in their charge: Mr. Harry K. Clench of the Carnegie Museum, Pittsburgh; Dr. Henry Dybas of the Chicago Natural History Museum; Dr. John G. Franclemont of the Department of Entomology, Cornell University; Dr. Eugene G. Munroe of the Division of Entomology, Department of Agriculture, Ottawa; and Dr. E. L. Todd of the United States National Museum. A similar word of thanks goes to Mr. Otto Buchholz of Roselle Park, New Jersey, Mr. Charles P. Kimball of Siesta Key, Florida, and Mr. Alex K. Wyatt of Chicago for the privilege of studying specimens from their private collections. To Mr. D. S. Fletcher of the British Museum (Natural History) goes another grateful acknowledgment for comparing types in his charge and for the proper application of most of the names used in this paper. A last word of appreciation goes to Mr. Rudolph J. Schrammel for taking the photographs, and to Miss Marjorie Statham for the maps and genitalic drawings that are included in this paper.

#### GENUS *OXYDIA* GUENÉE

*Oxydia* GUENÉE, 1857, *Histoire naturelle des insectes*, vol. 9, p. 52. J. B. SMITH, 1891, List of the Lepidoptera of boreal America, p. 64; 1903, Check list of the Lepidoptera of boreal America, p. 81. DRUCE, 1891, *Biologia Centrali-Americana*, Insecta, Lepidoptera-Heterocera, vol. 2, p. 25. W. WARREN, 1895, *Novitates Zool.*, vol. 2, p. 146 (placed as synonym of *Microgonia*). HULST, 1896, *Trans. Amer. Ent. Soc.*, vol. 23, p. 382. DYAR, "1902" [1903], *Bull. U. S. Natl. Mus.*, no. 52, p. 345.

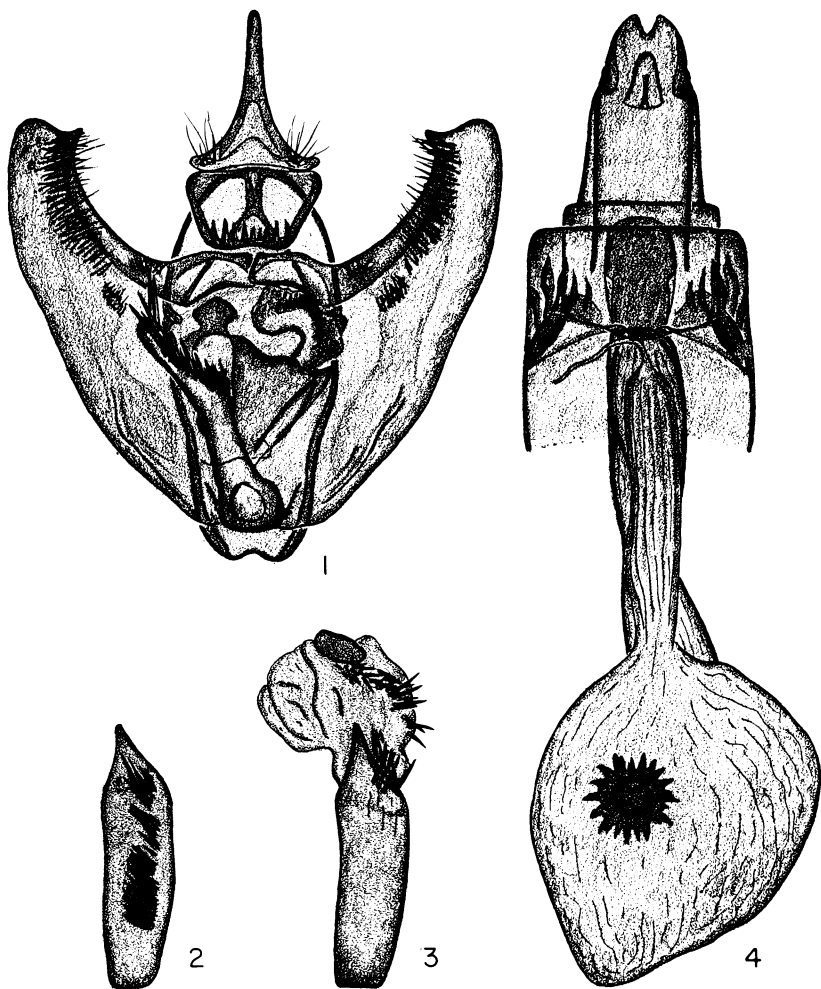
*Microgonia* auct. BARNES AND McDUNNOUGH, 1917, Check list, p. 123. McDUNNOUGH, 1938, Check list, p. 174.

Head, front slightly bulging, heavily clothed with scales, eyes large, round, wider than front; antennae simple, scaled above, shortly ciliate below, the males with a row of longer setae at end of each segment, this being reduced in the female to one or two setae; tongue present; labial palpi with second joint elongate, rising to middle of eyes, heavily scaled, third joint small. Thorax without tufts, with elongate, hair-like setae; fore tibia with process less than one-half of the length of tibia; hind tibia elongate, in the male slightly swollen and with strong hair pencil, both sexes with two pairs of spurs, the apical reduced in size. Abdomen without crests; ventral surface of third segment with row of bristles in males, eighth segment without plate. Forewings broad, the

apex more or less subfalcate, 12 veins, two areoles;  $R_1$  from top of cell, anastomosing shortly with Sc, the basal cell narrow, the distal cell very elongate,  $R_4$  to apex,  $R_5$  below falcation;  $M_1$  from upper angle,  $M_2$  from middle of dc,  $M_3$  from lower angle;  $Cu_1$  from well before angle,  $Cu_2$  from two-thirds of distance from angle; fovea absent. Hind wings broad, outer margin rounded, anal margin elongate, frenulum strong in both sexes; Sc adjacent to R at base of cell for short distance; R and  $M_1$  from just before upper angle;  $M_3$  from angle;  $Cu_1$  from before angle,  $Cu_2$  from two-thirds of distance to angle. Forewings and hind wings concolorous brown, variously shaded with gray, olive, red, or yellow, t. a. line usually obsolescent, t. p. line usually strongly represented, discal dots small or absent, often with a large blackish spot in cells Sc and R just distad of extradiscal line on secondaries. Beneath similar to upper surface, with obsolescent maculation.

MALE GENITALIA: Uncus simple, long, curved, tapering, rarely slightly bulbous, the apex terminating in two or one small points; socius present, sometimes weakly defined; gnathos heavily sclerotized, an isosceles trapezoid in outline, the anterior margin with a row of about eight to 15 elongate, ventrally directed, sclerotized spines; valves elongate, broad at base, symmetrical; costa broadly sclerotized, terminating in a projection near apex; valvula and sacculus simple, membranous or lightly sclerotized, with a variable number of short spines, often confined to costal area; transtilla appearing as a continuation of the costa, broad, more heavily sclerotized on anterior and posterior margins; cristae absent; anellus very large, well sclerotized, sometimes with lateral folds, the one on the right side more sclerotized in part and extending posteriad from near base of furca, the anellus extending farther posteriad on left side than on right; furca well developed, situated on left side, tapering or enlarged medially, with numerous spines, often on posteromedial margin; tegumen relatively small, subequal in length to length of uncus; saccus elongate, longer than length of uncus, projecting beyond base of valves, the lateral margins well sclerotized, slightly converging, anterior margin less heavily sclerotized and concave medially; manica sclerotized, thickly beset with numerous short or very short spines; aedeagus rather short and broad, usually not much longer than length of saccus, slightly curved, often with ventral surface extended posteriorly as a narrow, pointed projection; vesica armed with numerous cornuti, these being in groups or in a linear arrangement, not exceeding one-half of the width of aedeagus, some tending to be deciduous, the dense basal patch arising from a sclerotized piece, and rarely with scobinations.

FEMALE GENITALIA: Sterigma usually with a well-developed, scoop-like medial plate and lateral sclerotized areas; ductus bursae elongate, sclerotized, and with longitudinal striations, sometimes with a short sclerotized collar; ductus seminalis arising from the posterior end of an arm of ductus bursae; corpus bursae elongate, usually enlarged an-



FIGS. 1-4. Genitalia of *O. vesulia transponens* (Walker). 1. Male genitalia. Port Antonio, Jamaica, March 5, 1955 (B. Heineman). 2. Aedeagus. Port Sewall, Florida, March 12-16, 1949 (L. J. Sanford). 3. Aedeagus with vesica extended, and with group of deciduous spines lost. Same data as 1. 4. Female genitalia. Florida City, Florida, May 15, 1936.

teriorly, rounded, membranous, with a large stellate signum on ventral surface.

The descriptions given above are based primarily on specimens from Florida. It may be necessary to amend these definitions when the genus is studied in its entirety.

EARLY STAGES: Grossbeck records the food plant as "oak," and Bates gives grapefruit, so at least one species has been reared in this country. A brief larval note is also given by the latter author.

TYPE SPECIES: *Phalaena Geometra vesulia* Cramer (designated by Hulst, 1896, Trans. Amer. Ent. Soc., vol. 23, p. 382).

DISTRIBUTION: Widely spread throughout tropical America and the Antilles, occurring in the United States in Florida.

The adults of this genus are among the largest geometrids to be found in the United States. They are very similar to *Abbottana clemataria* (Abbott and Smith), but may be distinguished from the latter by the simple male antennae, the presence of the tibial hair pencil, and the reduction in size of the second pair of spurs on the metathoracic legs, the presence of the row of bristles on the ventral surface of the third abdominal segment, the less angular nature of the wing margins, and the double accessory cell.

A study of a large number of specimens labeled as being from Florida shows that at least five species are supposed to occur there. However, a careful examination of this situation seems to indicate that three of these species are of highly dubious authenticity and, in the light of our present knowledge, cannot be accepted as actually occurring in Florida. Full descriptions are given below for the two species that are definitely known to occur in this country, and brief notes are given concerning the others. Of these first two, one is widespread in South and Central America and through the Antilles, while the second was described from Cuba; both obviously reached Florida through this island chain. The spurious species all occur in Mexico, and there are no known connecting "links" between there and the so-called Florida specimens. This throws further doubt on the authenticity of the labeling of these specimens, as a distributional picture of Veracruz and southern Florida is a bit on the suspicious side.

### ***Oxydia vesulia transponens* (Walker), new combination**

Figures 1-8

*Choerodes transponens* WALKER, 1860, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 20, p. 20. SCHAUS,

1940, Scientific survey of Porto Rico and the Virgin Islands, New York Acad. Sci., vol. 12, p. 316.

*Oxydia transponens*, DYAR, "1902" [1903], Bull. U. S. Natl. Mus., no. 52, p. 345 (synonym of *vesulia*).

*Oxydia vesuliata* (*sic!*), HULST, 1886, Ent. Amer., vol. 2, p. 47. SLOSSON, 1890, Ent. News, vol. 1, p. 102 (*partim*).

*Oxydia vesulia*, J. B. SMITH, 1891, List of the Lepidoptera of boreal America, p. 64; 1903, Check list of the Lepidoptera of boreal America, p. 81. HULST, 1896, Trans. Amer. Ent. Soc., vol. 23, p. 382. DYAR, "1902" [1903], Bull. U. S. Natl. Mus., no. 52, p. 345. HOLLAND, 1903, Moth book, p. 352 (*partim*, not pl. 45, fig. 11). GROSSBECK, 1917, Bull. Amer. Mus. Nat. Hist., vol. 37, p. 102 (*partim*).

*Microgonia vesulia*, BARNES AND McDUNNOUGH, 1917, Check list, p. 123. BATES, 1923, Florida Ent., vol. 7, p. 22. McDUNNOUGH, 1938, Check list, p. 174.

*Microgonia vesulia* subsp. *antilliana* PROUT, 1932, Novitates Zool., vol. 38, p. 113.

MALE: Head, vertex and base of antennae pure white; front brown; palpi brown, with terminal segment dull black. Thorax grayish brown or brown, tending to be slightly browner below; legs light brown, with variable black spotting. Abdomen light brown above and below, variably suffused with gray or ochraceous scaling, and with scattered black scales.

Upper surface of wings: Ground color brown, variably suffused with gray and olivaceous, reddish brown, or ochraceous, and with scattered black scales. Forewings with t. a. line weakly defined, of same color as wing suffusion, partly or completely shaded basally by a faint white line, arising on costa about one-fourth of distance from base, making two large outward bends in discal and cubital cells, pointing basad on cubital and anal veins, then forming another convexity before inner margin; discal dot minute, black, sometimes absent; median shade line sometimes present, more often indicated by a heavier suffusion of gray, olivaceous, reddish brown, or ochraceous scaling that becomes more intense towards t. p. line and in lower portion of wing; t. p. line prominent, light gray or white, shaded basally by a narrow dark line of color of suffusion, arising on costa between two-thirds and three-fourths of distance from base, curving sharply obliquely outward along vein  $R_5$  to within 1 or 2 mm. of wing margin, the line rather diffuse below costa, then angled sharply posteriorly and running straight or with slight concavity to inner margin at two-thirds of distance from base; subterminal area of ground color, hence usually contrasting with adjacent darker median area, usually with a concentration of black scales above angle of t. p. line, the s. t. area becoming darker along outer

margin; s. t. line absent or indicated by a series of diffuse markings concentrated on the veins, often with a patch of slightly lighter scaling basad to these and at outer angle; fringe concolorous with s. t. area, there being no terminal line. Hind wings concolorous with forewings, except for slightly lighter costal area, and for more small patches of black scales; intradiscal line absent; discal dot usually not differentiated from other patches of black scales; extradiscal line prominent, extending more or less straight across wing from radial vein to anal margin, coloration as on primaries, often with median area darkened basad of line; a large black spot distad of extradiscal line in cells Sc and R; subterminal area broad, with s. t. line usually present, being indicated as on forewings, sometimes emphasized with black scales opposite large black spot; the subterminal area becoming darker near wing margin in lower portion of wing; fringe as on primaries.

Under surface of wings: Ground color brown, slightly lighter than on upper surface, more heavily covered with scattered gray and black scales. Forewings lighter in color along inner margin; t. a. and median lines vaguely indicated by broad, dark gray, diffuse lines; discal dot as above; t. p. line of upper surface weakly indicated, with a series of black venular dots, in a straight line, situated basad of this; apex of wing with light scaling, sometimes basally with some black; often a black patch of scales in cell  $Cu_2$  in subterminal area near t. p. line; subterminal area concolorous with remainder of wing; fringe as above. Hind wings concolorous with forewings, becoming darker near outer margin; discal dot black, distinct; extradiscal line of upper surface weakly indicated, followed distally by a series of black dots on veins in lower part of wing; large black spot of upper surface absent, sometimes showing through as a grayish blotch; subterminal area and fringe as on primaries.

Length of forewing: 27 to 32 mm.

FEMALE: Like male, but less heavily suffused with dark scalation; under surface lighter brown, with more light gray and white scaling at apex and in subterminal area of primaries.

Length of forewing: 28 to 40 mm.

MALE GENITALIA: Uncus tapering, with bifurcate apex; gnathos with from 10 to 15 spines on the anterior truncate portion; costa of valves broadly sclerotized almost to apex, then curving medially and terminating in a broadly projecting point; sacculus sclerotized basally, the sclerotized area extending diagonally across valvula to costa, the distal portion of this sclerotized area near and at costa with very many short

spines, and with another smaller patch of spines situated basally on valvula anteriorly of a small sclerotized ridge; anellus with a sclerotized fold on right side anterolaterally, irregularly enlarged posteriorly in two places, once on right side above aedeagus and again on left side by furca, the latter capitate with a sharply narrowed neck; furca slightly constricted below broad base, rather sharply enlarged medially, being one and one-half times as wide as constriction, then tapering to rounded apex beyond a small shoulder on right side, the dorsal surface with numerous small setae, the posterior margin with numerous elongate, sclerotized spines, extending from medial swelling to small shoulder; manica heavily beset with very many, very short spicules, often arranged in irregular rows; ventral surface of aedeagus extended posteriorly as a pointed projection; vesica with a very dense group of fine, deciduous spines located medially, arising from an elongate, sclerotized plate, and with approximately 50 longer and heavier spines in a linear arrangement, extending from the median group to a semicircular line around the right side of posterior end of the aedeagus.

**FEMALE GENITALIA:** Sterigma with scoop-like plate widest medially, gently tapering distally, both ends evenly rounded, the posterior end sometimes with a small median indentation, with well-sclerotized lateral areas extending to bases of apophyses of segment VII, with several apodeme-like folds often present in the lateral areas; ductus bursae elongate, with poorly defined collar appearing as continuation of anterior end of scoop-like plate, slightly swollen and more heavily sclerotized dorsally, with longitudinal striations more numerous ventrally; ductus seminalis arising from end of elongate, sclerotized arm that extends posteriorly to near anterior margin of medial scoop-like plate; corpus bursae large, in length subequal to length of ductus bursae, well rounded, the surface with numerous fine, impressed lines, arranged concentrically around signum on ventral surface and rather irregularly on dorsal surface, the signum armed with numerous strong teeth around outer edge.

**EARLY STAGES:** Undescribed for this country, except for the brief note by Bates, who states the caterpillar to be "a large gray looper, fully four inches long when mature."

**FOOD PLANTS:** There is a single specimen labeled as having been reared from oak in the collection of the American Museum of Natural History. Bates has reared what is presumed to be this species on grapefruit leaves. In all probability a number of other species of food plants are eaten. In Puerto Rico this subspecies has been recorded on *Cassia*,



Rubiaceae, orange (Möschler, 1891, Abhandl. Senckenbergischen Naturf. Gesell., vol. 16, p. 257), and *Acalyphy wilkesiana* (Wolcott, 1923, Jour. Dept. Agr. Porto Rico, vol. 7, p. 181).

TYPES: *Transponens* and *antilliana*, in the British Museum (Natural History).

TYPE LOCALITIES: Santo Domingo (*transponens*); Jamaica (*antilliana*).

RANGE: Peninsular Florida and the Florida Keys (see fig. 5). On the wing throughout the year. From Florida this subspecies continues through the Bahamas to Cuba, Jamaica, and Hispaniola.

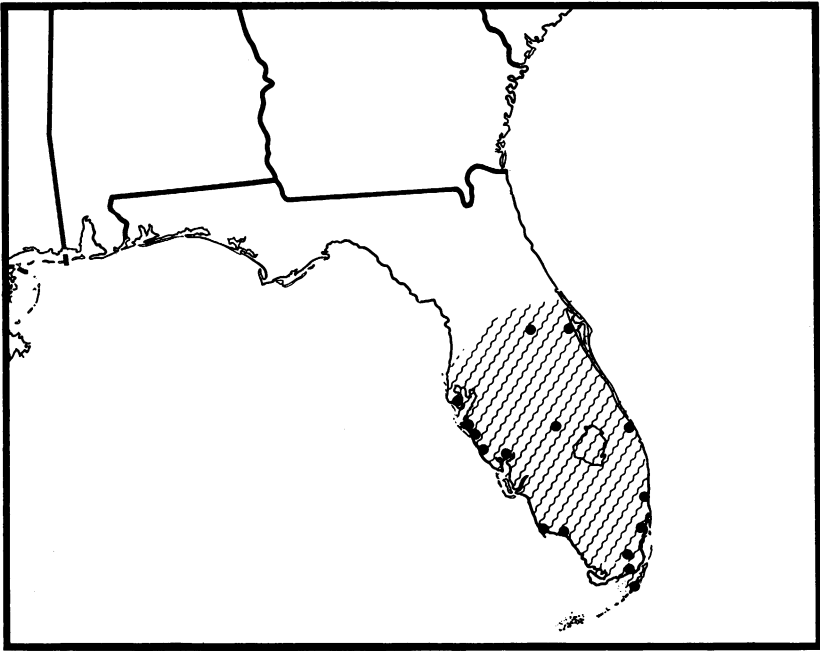


FIG. 5. Distribution of *O. vesulia transponens* (Walker) in the United States.

REMARKS: One hundred and eighteen specimens and nine genitalic dissections studied from Florida, as well as a large series of this species from the Antilles, South and Central America, including another nine genitalic dissections. This is a very variable moth, not only in the intensity of maculation, but in the coloration of the wings. In most specimens the outer portion of the median area is quite a bit darker than the remainder of the wings, but in some specimens this is not so

at all; in two males the median area is yellow. In the light of the known variability of some of the species in this genus, this is an expected variation.

This species can be distinguished from the other member of this genus occurring in Florida by the combination of the well-defined t. p. line and of the usually olivaceous coloring of the upper surface of the forewings, and by its larger size.

*Oxydia cubana* (W. Warren)

Figures 9-12

*Microgonia cubana* W. WARREN, 1906, Proc. U. S. Natl. Mus., vol. 30, p. 544.

*Oxydia vesuliata* (sic!), SLOSSON, 1890, Ent. News, vol. 1, p. 102 (*partim*).

*Oxydia vesulia*, GROSSBECK *nec* Cramer, 1917, Bull. Amer. Mus. Nat. Hist., vol. 37, p. 102 (*partim*).

MALE: Head, vertex and base of antennae pure white; front grayish brown or dark brown; palpi concolorous with front. Thorax brown or ochraceous, above and below; legs concolorous with thorax, suffused with grayish brown and with scattered dull black spotting. Abdomen brown or ochraceous above and below.

Upper surface of wings: Ground color brown, red-brown, or ochraceous, variably striate with gray, dark brown, or black scales. Forewings with t. a. line weakly defined, usually indicated by basal shading of darker scales, arising on costa about one-third of distance from base, curving slightly across wing to inner margin, with outward bends in discal and cubital cells; discal dot small, black; median line absent, although a postmedian line may occasionally be indicated by a complete or partial row of light-colored venular spots, these sometimes being connected by a pale line; median area of wing concolorous with remainder of wing, or tending to be slightly more reddish brown or orange brown; t. p. line usually weakly defined, varying from being completely absent to fairly prominent, often indicated by the slight change in color from median to subterminal areas, sometimes by a series of light-colored venular spots, when present arising on costa seven-tenths of distance from base, curving sharply obliquely outward along vein  $R_5$  to within 2 to 4 mm. of wing margin, often with a whitish spot and black scaling along this portion of line, then sharply angled and running straight or with slight concavity to inner margin at two-thirds of distance from base; subterminal area with concentration of black scales above angle of t. p. line, sometimes with scattered black scaling distad of t. p. line increasing in width posteriorly; s. t. line indicated by a series of venular dots or diffuse markings, extending

from angle of t. p. line to outer angle, the dots sometimes weakly connected or the s. t. line indicated by a slight difference in color on the two sides; fringe concolorous with s. t. area, there being no terminal line. Hind wings concolorous with forewings, except for slightly lighter costal area; intradiscal line absent; discal dot absent or very weakly indicated; extradiscal line diffuse, usually rather weakly indicated, sometimes absent; a large, rather diffuse black spot distad of extradiscal line in cells Sc and R; subterminal area broad, with s. t. line usually present, being indicated as on forewings, sometimes emphasized with black scales opposite large black spot; the subterminal area and fringe becoming darker near wing margin in lower portion of wing.

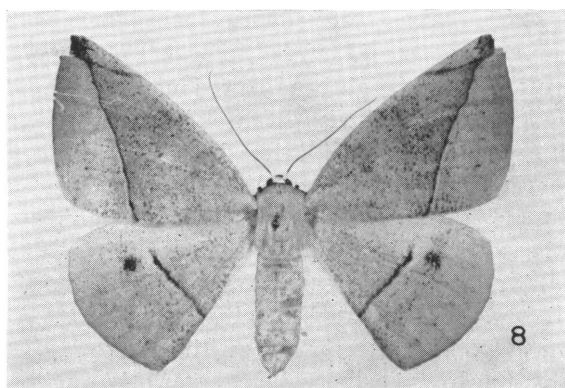
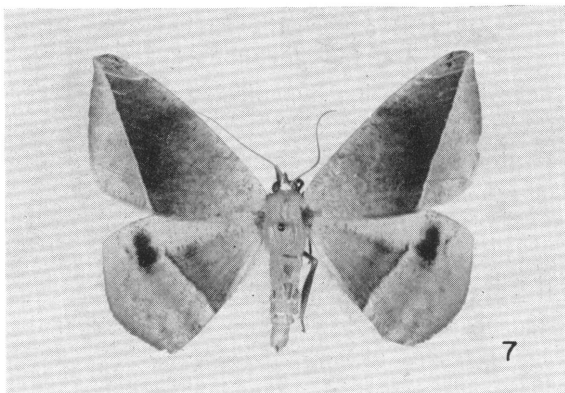
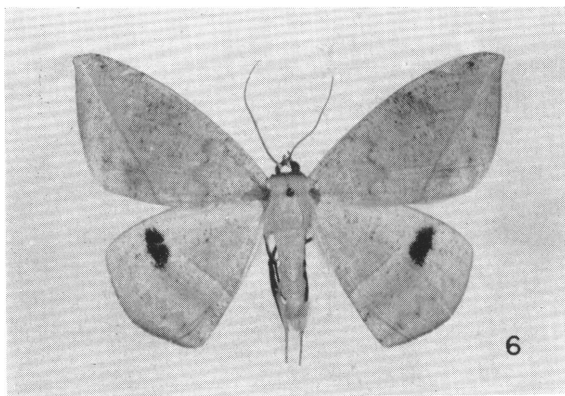
Under surface of wings: Ground color brown or ochraceous, slightly lighter than on upper surface, less heavily covered with darker scales and striae. Forewings lighter in color along inner margin, and lighter beyond s. t. line at apex of wing; maculation absent, or with cross lines weakly indicated; discal dot as above. Hind wings concolorous with forewings, becoming slightly darker near outer margin; discal dot usually present, sometimes only weakly indicated; other maculation usually absent.

Length of forewing: 26 to 29 mm.

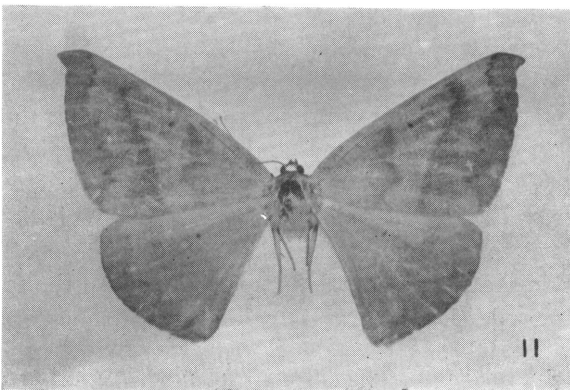
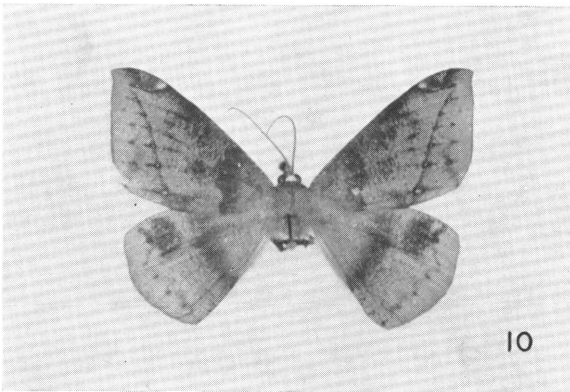
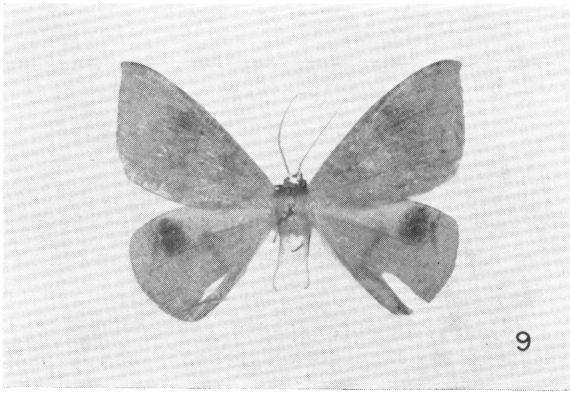
FEMALE: Like male, but less heavily suffused with dark scalation; t. p. line situated nearer middle of wing, less sharply angulate on vein R<sub>5</sub>, the angle being from 5 to 7 mm. from wing margin; under surface tending to be lighter brown, with more light gray and white scaling at apex and in subterminal area of primaries.

Length of forewing: 30 to 33 mm.

MALE GENITALIA: Uncus slightly narrowed medially, bluntly rounded, with bifurcate apex; gnathos with from eight to 13 spines on the anterior truncate portion; costa of valves broadly sclerotized almost to apex, then curving medially and terminating in a broadly projecting point; sacculus sclerotized basally, the sclerotized area extending diagonally across valvula to costa, the distal portion of the sclerotized area near and at costa with very many short spines, and with another smaller patch of spines situated basally on valvula anteriorly of a weakly defined sclerotized ridge; anellus with a sclerotized fold on right side anterolaterally, irregularly swollen posteriorly on right side, and with a subrectangular or capitate projection on left side; furca slightly constricted below broad base, median area only slightly swollen, with another slight constriction before the somewhat enlarged apex, the



FIGS. 6-8. Adults of *O. vesulia transponens* (Walker). 6. Male, Florida City, Florida, June 24, 1941 (Mrs. L. E. Forsyth). 7. Male, same data, June 30, 1944. 8. Female, same data, June 20, 1940.



FIGS. 9-11. Adults of *O. cubana* (W. Warren). 9. Male, Siesta Key, Sarasota County, Florida, February 28, 1952 (C. P. Kimball). 10. Male, same data, January 18, 1952. 11. Female, without data, ex collection Mrs. A. T. Slosson.

dorsal surface with numerous small setae, the posterior margin very heavily beset with elongate, sclerotized spines, extending from medial swelling almost to the apex; manica heavily beset with very many, very short, needle-like spicules, often arranged in irregular rows; ventral surface of aedeagus extended posteriorly as a narrow, pointed projection; vesica with a very dense group of fine, deciduous spines located medially, arising from an elongate, sclerotized plate, and with approximately 50 to 75 longer and heavier spines in a linear arrangement, extending from the median group to a semicircular line around the right side of posterior end of the aedeagus.

**FEMALE GENITALIA:** Sterigma with scoop-like plate widest medially, the ends evenly rounded, the lateral areas smoothly sclerotized, extending to bases of apophyses of segment VII; ductus bursae with well-defined collar separated from scoop-like plate by a constriction, the bursae elongate, dorsal surface swollen and more heavily sclerotized, with longitudinal striations more numerous ventrally; ductus seminalis arising from end of elongate, sclerotized area that extends posteriorly to bursa collar; corpus bursae large, in length subequal to length of ductus bursae, rounded, with a small dorsal swelling, otherwise well rounded, the surface with numerous fine, impressed lines, arranged concentrically around signum on ventral surface and rather irregularly on dorsal surface, the signum armed with numerous small teeth around outer edge.

**EARLY STAGES:** Unknown.

**FOOD PLANT:** Unknown.

**TYPE:** In United States National Museum.

**TYPE LOCALITY:** Baracoa, Cuba.

**RANGE:** Florida Keys and west coast of Florida as far north as the St. Petersburg area. (See fig. 12.) On the wing from October through May.

**REMARKS:** Twenty-two specimens and seven genitalic dissections studied from Florida; three specimens from Cuba and the genitalia of the holotype were also studied. This is another very variable species, as seldom are any two specimens alike in color or maculation. This species can be distinguished from *vesulia* by its smaller size, the fact that the wings are more reddish brown, and by the weakly defined or absent t. p. line.

The genitalia of this species are very similar to those of the Florida population of *vesulia*. The differences that are present are usually rather small and not very obvious until the structures are carefully studied. Some of the points of difference in the male may be found in

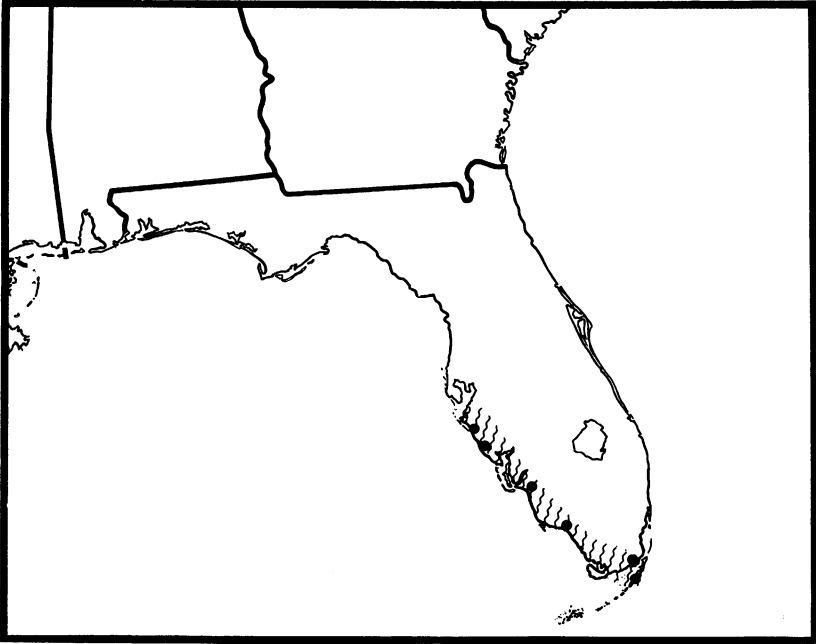


FIG. 12. Distribution of *O. cubana* (W. Warren) in the United States.

the slight constriction of the uncus, the smaller projections on the posterior margin of the anellus, only a slight median swelling of the furca, the fact that the posterior margin is more heavily beset with spines, and more numerous spines in the aedeagus. In the female the ostial plate of *cubana* is a bit smaller and more rounded apically, the sclerotized collar of the ductus bursae is better defined, and the signum has smaller teeth.

It is difficult to compare the Florida population with Cuban material, as only three specimens, including the type, have been seen from that island; the latter are in the collection of the United States National Museum. The holotype is a small male, having the length of the forewing 24 mm.; the other two examples were larger and more like Floridian specimens in size. All three of these Cuban specimens are relatively immaculate above and below, with the holotype having the maculation more prominent than the other examples. Much more material is needed before an adequate comparison can be made.

Among the specimens listed by Grossbeck (1917) under the name *vesulia*, the male from Everglades, Florida, April 8, 1912, is referable here. It is also probable that the "very dark purple-brown" specimens

of Mrs. Slosson belong here, as this species is represented in her collection.

***Oxydia guenéei* (W. Warren), new combination**

*Oxydia vesulia*, HOLLAND *nec* Cramer, 1903, Moth book, pl. 45, fig. 11.

*Microgonia guenéei* W. WARREN, 1904, Novitates Zool., vol. 11, p. 157.

This is a species of dubious authenticity, so it should not be accepted as occurring in Florida, at least until such time as specimens are actually collected there. In appearance, this species is similar to the Florida population of *vesulia*, but can be distinguished from it by the fact that the top of the head is olive-brown or ochraceous, being concolorous with the front and thorax. In the male the color of the wings varies from olive-brown to ochraceous, while the females are often broadly suffused with yellow or yellow-brown, particularly in the median area.

This species has smaller male genitalia than does *vesulia*. The two may be quickly separated by the shape of the furca, which in this species is longer, narrow, curving to the left to become slightly C-shaped, tapering from a wide base, the apex bluntly rounded, and with a single median row of closely set, short spines in the distal one-half of the furca. In the female genitalia the ductus bursae of the present species is larger and more heavily sclerotized dorsally, and the origin of the ductus seminalis is at the end of the arm which extends not more than two-thirds of the length of the ductus bursae.

A series of 80 males and 40 females from the Mexican states of Veracruz, Hidalgo, and Chiapas are before the author. The specimens bearing "Florida" labels consist of five males and one female, as follows: Miami(?), *ex* collection Viola H. dos Passos, male; Chokoloskee, "10-12-01," male, and same locality, June, female; Miakka, Engel collection, male, and same locality, Holland collection (Moth book, pl. 45, fig. 11), male; Manatee County, Barnes collection, male. The first three specimens are in the collection of the American Museum of Natural History, the next two in the Carnegie Museum, and the last is in the United States National Museum.

***Oxydia nimbata* Guenée**

*Oxydia nimbata* GUENÉE, 1857, Histoire naturelle des insectes, vol. 9, p. 59.

*Oxydia noctuitaria* WALKER, 1860, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 20, p. 52.

*Oxydia vitiligata* C. AND R. FELDER AND ROGENHOFER, 1875, Reise der Österreichischen Fregatte Novara . . . , Lepidoptera, vol. 2, pl. 122, fig. 17.



A single male, labeled "Chokoloskee, Fla., June" is in the collection of the American Museum of Natural History; the label is written in the same hand as is that for the female of the preceding species. W. T. M. Forbes has added a label to this specimen "... probably false locality," with which I agree. A series of 27 males and 45 females before the author from the states of Veracruz, San Luis Potosi, and Chiapas would seem to indicate that this species is not rare in Mexico. It can be distinguished from the preceding species by the olivaceous color of the upper surface of the wings, the top of the head being concolorous with the front and thorax, and by the fact that the ground color of under surfaces of the wings is largely whitish or light gray.

The male genitalia can be separated from those of the preceding species by the small, sclerotized, thorn-like projection at the end of the sclerotized region of the costa, the costal region being sclerotized for only two-thirds of the length of the valves. In the females, the entire last abdominal segment is much more heavily sclerotized than in the preceding species, and the ductus seminalis arises anteriorly of the middle of the short ductus bursae.

There are two male specimens from the H. Strecker collection in the Chicago Natural History Museum collection labeled "Florida." While these are similar in appearance to the above, it is doubtful that they can be correctly called *nimbata*; the correct name for these specimens must await a revision of the tropical species of this genus. In any case, they can be disregarded as far as locality data go.

### *Oxydia mundata* Guenée

*Oxydia mundata* GUENÉE, 1857, Histoire naturelle des insectes, vol. 9, p. 57; 1858, *op. cit.*, atlas, pl. 10, fig. 1. WALKER, 1860, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 20, p. 51. DRUCE, 1892, Biologia Centrali-Americana, Insecta, Lepidoptera-Heterocera, vol. 2, p. 28.

*Microgonia mundata*, W. WARREN, 1907, Novitates Zool., vol. 14, p. 312.

*Oxydia zonulata*, HULST, 1886, Ent. Amer., vol. 1, p. 201; 1896, Trans. Amer. Ent. Soc., vol. 23, p. 382. J. B. SMITH, 1891, List of the Lepidoptera of boreal America, p. 64; 1903, Check list of the Lepidoptera of boreal America, p. 81. New synonymy.

*Microgonia zonulata*, BARNES AND McDUNNOUGH, 1917, Check list, p. 123. McDUNNOUGH, 1938, Check list, p. 174.

In the original description of *zonulata*, Hulst gives the type locality as "Texas." An examination of the male type in the collection of the British Museum (Natural History) shows that it should be placed as a synonym of *mundata* Guenée, described from Brazil. Druce records

this species from Panama but does not indicate any additional Central American distribution. It seems rather doubtful that this specimen was actually taken in Texas, so the name can be dropped from our lists. In fact, the present author has been unable to locate any specimens belonging to this genus from the state of Texas.

*Oxydia masthala* Druce

*Oxydia masthala* DRUCE, 1892, *Biologia Centrali-Americana*, Insecta, Lepidoptera-Heterocera, vol. 2, p. 28, vol. 3, pl. 43, fig. 9.

A series of eight males and six females bear identical labels of "Everglades, Florida," a single male, "A. E. Co., *Oxydia zonulata*, typical, ident. by Hulst, Chokoloskee, Fla., Big Cypress Swamp, February, 00," and a single female, "Chokoloskee, Fla., December." Of these specimens, 13 are in the collection of the United States National Museum, two in the American Museum of Natural History, and one belongs to Mr. Buchholz. It seems doubtful that the above really were taken in Florida, and it would be highly advisable not to accept this name at this time.

The apex of the primaries is much more strongly falcate than in the other species covered in this paper. In addition, the moth is smaller, and both sexes tend to have small scaleless areas distad of the t. p. line on the upper surface of the primaries. The valves of the male genitalia are strongly tapered and curved medially in the apical region, while the furca is straight and tapering. In the female genitalia the corpus bursae is not enlarged but appears as a more membranous continuation of the elongate and striate ductus bursae.

This species is apparently not rare in Mexico, as 48 males and 17 females are before the author from the states of Veracruz and Hidalgo.