



Revision of the Genus *Psectrotarsia* Dognin, 1907 (Lepidoptera: Noctuidae: Heliothinae)

MICHAEL G. POGUE

Systematic Entomology Laboratory, PSI, Agricultural Research Service, U. S. Department of Agriculture, c/o Smithsonian Institution, P.O. Box 37012, NMNH, MRC-168, Washington, DC, 20013-7012, USA; mpogue@sel.barc.usda.gov

Abstract

Based on characters of the male and female genitalia, the genus *Erythroecia* Hampson, 1910 is considered a **new synonym** of *Psectrotarsia* Dognin, 1907. *Psectrotarsia* contains five species: *P. flava* Dognin (type species); *P. suavis* (H. Edwards), **new combination**; *P. hebaridi* (Skinner), **new combination**; *P. euposis* (Dyar), **new combination and revised status**; and *P. rhodophora* (Hampson), **new combination**. Each species is redescribed and illustrated. *Copitarsia fuscirena* (Hampson), **new combination**, and *C. tamsi* (Giacomelli), **new combination**, are transferred from *Psectrotarsia* to *Copitarsia* Hampson, 1906. *Psectrotarsia* ranges from the northeastern, midwestern, and southwestern United States to Guatemala.

Key words: systematics, genitalia, new synonym, new combination, revised status, *Erythroecia*

Introduction

Psectrotarsia Dognin, 1907 was used first in combination with the type species, *P. flava* Dognin, but a formal description of the genus was not provided. Hampson (1908) used *Psectrotarsia* in a key to the genera of Acronyctinae, but did not include species names (Poole, 1989). Hampson (1910) did not regard *Psectrotarsia* as formally described, and therefore, redescribed it and designated *P. fuscirena* Hampson as the type species; thus, he created both a junior synonym and homonym of *Psectrotarsia* Dognin.

Prior to this study, *Psectrotarsia* contained three species: *P. flava*, *P. fuscirena*, and *P. tamsi* Giacomelli. However, *P. fuscirena* and *P. tamsi* have a series of large robust spines on the basitarsus of the proleg, a synapomorphy of *Copitarsia* Hampson, 1906 (Simmons and Pogue, 2004). Thus, *C. fuscirena*, **new combination**, and *C. tamsi*, **new combination**, are transferred from *Psectrotarsia* to *Copitarsia*. *Copitarsia* is currently under revision, and DNA and morphological evidence places it in the subfamily Noctuinae (Simmons, pers. comm.).

Materials and Methods

Images of adult moths and genitalia were captured with a Microoptics Digital Imaging System using a Nikon D1X camera with a modified K2 long-distance lens and a pulsed xenon flash. Images were enhanced with Adobe PhotoShop® CS. The adults in Figs. 6–15 are approximately 1.4 times natural size.

Dissections of genitalia followed the methods of Pogue (2002) but genitalia were mounted in euparal. The vesica was inflated with 99% isopropyl alcohol and stained in Orcein. Genitalic morphological terminology follows Forbes (1954).

Specimen databases are maintained for the Heliothinae of North America using Microsoft EXCEL[®] and FileMaker Pro[®] 7. All specimens are bar-coded with a unique number.

Specimens were examined at the following collections: Academy of Natural Sciences, Philadelphia (ANSP); The Natural History Museum, London, England (BMNH); Chadron State College, Chadron, Nebraska (CSC); Eric H. Metzler, Alamaogordo, New Mexico (EHM); University of Florida, McGuire Center for Lepidoptera Research, Gainesville, Florida (MCLR); Snow Museum of Entomology, University of Kansas, Lawrence, KS (SMEK); University of California, Davis, California (UCD); Instituto Biología, Universidad Nacional Autónoma de México, Mexico City, Mexico (UNAM); and National Museum of Natural History, Smithsonian Institution, Washington, DC (USMN).

***Psectrotarsia* Dognin**

Psectrotarsia Dognin, 1907: 240 [type species: *Psectrotarsia flava* Dognin by monotypy]; Hampson, 1910: 232; Poole, 1989: 842; Matthews, 1991: 20.

Psectrotarsia Hampson, 1908: 5 [Available but without included names until Hampson, 1910: 232] [type species: *Psectrotarsia fuscirena* Hampson by subsequent designation by Hampson, 1910: 232] [junior synonym and homonym]; Poole, 1989: 843.

Erythroecia Hampson, 1910: 57 [type species: *Heliothis suavis* H. Edwards by subsequent designation by Hampson, 1910: 57]; Dyar, 1912: 65; Barnes and McDunnough, 1917: 69; Forbes, 1954: 255; McDunnough, 1938: 98; Hardwick, 1970: 25; Franclemont and Todd, 1983: 158; Poole, 1989: 380; Rings et al., 1992: 139; Poole and Gentili, 1996: 739; Hardwick, 1996: 40. **New synonym.**

Redescription. *Head* (Figs. 1–5): Frons bulbous with distinct transverse ridges or cylindrically produced, ventral lip slightly produced; eyes fully developed; labial palp moderately porrect, apex at approximately half eye height; antenna filiform, scaled dorsally, unscaled ventrally; vertex with flat scales overlain with hairlike scales (flat scales best seen on more worn specimens). *Thorax*: Patagium, tegulae, and thorax with flat scales overlain with hairlike scales; foretibia unarmed; underside clothed with long, hairlike scales. *Abdomen*: Dorsally with base of narrow scales overlain with fine hairlike scales, ventrally with base of wide flat scales overlain with long hairlike scales; second tergite with two pairs of lateral sclerotized bars, scent pockets and hair pencils absent. Male genitalia (Figs. 16–25) with uncus elongate, approximately 0.37X length of valve, apex pointed; valve flat and straplike, length 5.0–5.5X width; corona present; ampulla arising from dorsal margin of sacculus, narrow, curved, elongate, approximately 0.20X length of valve; sacculus well developed; juxta rectangular with lateral margins round, dorsal and ventral margins excavated; saccus V-shaped; aedoeagus approximately 0.75X length of valve, apex narrow, vesica oriented on left side and opening of ductus ejaculatorius dorsad, a series of appressed, scobinated bars from middle to apex on left side of aedoeagus; vesica Y-shaped, with a short basal diverticulum bearing a short apical spinelike cornutus, lateral elongate diverticulum bearing a long apical spine-like cornutus, second elongate diverticulum (bearing orifice of ductus ejaculatorius) lacks a cornutus. Female genitalia (Figs. 26–36) with papilla analis soft, lightly sclerotized with short, elongate setae, apex rounded; ovipositor not telescopic; anterior apophysis narrow, not extending below ninth segment; posterior apophysis narrow, approximately same length as anterior apophysis; ninth segment smooth with moderately elongate setae around distal margin; ostium bursae lightly sclerotized, covered with spiculi; distal one third to two fifths of ductus bursae membranous, proximal portion ribbed, sclerotized and continuing into apical portion of corpus bursae; corpus bursae elongate; appendix bursae extends dorsad to juncture of ductus bursae and corpus bursae, ribbed sclerotized area of ductus bursae curves into base of appendix bursae; signa absent.

Discussion. The monophyly of *Psectrotarsia* is based on two putative synapomorphies: elongate ampulla and multi-diverticulate vesica bearing cornuti in the male genitalia. The genus *Erythroecia* was synonymized based on these synapomorphies.

Five species currently are placed in *Psectrotarsia*, two from North America and one each from Mexico, Guatemala, and Peru.

Key to the species of *Psectrotarsia*

1. Forewing ground color yellow with brown markings, no pink; Peru.....*flava*
- 1'. Forewing with pink.....2
2. Forewing predominately yellow; central and southwestern North America*suavis*
- 2'. Forewing predominately pink; eastern North America, Mexico, and Guatemala3
3. Forewing yellow and dark pink; hindwing dark pinkish-gray; eastern North America *hebardii*
- 3'. Forewing yellow and bright pink; hindwing gray4
4. Male genitalia with posterior margin of valve straight, apex of ampulla projecting above costal margin of valve; corona with less than 10 setae; Guatemala*rhodophora*
- 4'. Male genitalia with posterior margin of valve curved from sacculus to widest valve width, apex of ampulla not projecting above costal margin of valve; corona with more than 10 setae; Mexico*euposis*

Psectrotarsia flava Dognin

(Figs. 1, 6–7, 16–17, 26, 31)

Psectrotarsia flava Dognin, 1907: 240.—Hampson, 1910: 233.—Poole, 1989: 842.—Matthews, 1991: 20.

Diagnosis. *Psectrotarsia flava* can be distinguished from all other species in the genus by the lack of pink coloring in the forewings.

Redescription. Male. *Head:* Frons with frontal tubercle cylindrical, protruding, with a distinct ridge around circumference and oblong median protuberance (Fig. 1), scales hairlike, pale yellowish-white; labial palp porrect, scales pale yellowish-white, some tipped with brown; antenna white; scape white; eyes large, globular. *Thorax:* Narrow scales pale yellowish-white mixed with others speckled pale brown and gray, wide flat white scales under narrow scales; foreleg pale rufous speckled with gray, fringe buff-colored, foretibia lacks spines, tarsi bearing a few white scales along apical margins; middle leg with femur white, tibia buff-colored, tarsi pale rufous with cream-colored apical margins; hind leg with femur white, tibia mostly white with pale rufous shading, tarsi buff-colored with hint of white on apical margins; underside with some wide flat scales and fine hairlike scales white. Forewing length 12.9–13.3 mm (n = 2); ground color pale yellow; obscure basal patch gray; antemedial line forms acute angle with costal margin extending to posterior margin, gray; median line from costal margin along proximal margin of reniform spot, angled from ventro-proximal corner of reniform spot to posterior margin; reniform spot at end of discal cell gray; veins radiating from discal cell highlighted gray; postmedial line scalloped, gray; subterminal area with gray band extending from costal margin, becoming fainter toward posterior margin; fringe white basally, rufous apically. Hindwing ground color shiny white, with wide gray marginal band varying in intensity; veins highlighted gray in some specimens; yellow along margin between gray band and fringe; fringe white. *Abdomen:* Dorsal surface gray with white scales apically, genital tuft pale yellowish-white; ventral surface pale yellowish-white, speckled with pale gray. Genitalia (Figs. 16–17) with uncus elongate, approximately 0.37X length of valve; apex pointed; valve broad, length 5X width, costal margin slightly angulate at 0.80X length, posterior margin gently curved to costal margin; ampulla elongate, 0.25X length of valve; corona with more than 10 setae; sacculus with ventral margin produced; juxta ovate with dorsal and ventral margins excavated; saccus V-shaped; aedoeagus slightly bent at middle, apex pointed; vesica with four diverticula (Fig. 17), left diverticulum lack-

ing a cornutus, middle diverticulum with a short apical cornutus, longer right diverticulum lacking a cornutus, base of right diverticulum with uninflated, scobinate diverticulum bearing an elongate cornutus.

Female. *Head, Thorax:* As in male, except forewing length 13.6–14.9 mm (n = 2). *Abdomen:* Genitalia (Figs. 26, 31) with papilla analis fleshy, apex truncate; posterior apophysis 0.95X anterior apophysis, narrow; ductus bursae sclerotized and heavily striated in distal 0.67 with striations extending onto corpus bursae; appendix bursae present as undifferentiated cephalad extension of corpus bursae, approximately same size as corpus bursae; corpus bursae round; signa absent.

Holotype. Female, Peru, Trujillo. Dognin Collection. *Psectrotarsia flava* type f, Dogn. [hand written label]. USNM Type No. 31784 [red label]. Genitalia slide USNM 49761 [green label]. USNM ENT 00147710 [bar-code label]. Deposited in USNM.

Distribution and Biology. Distributed in Peru, west of the Andes (Fig. 36). Larval host is unknown.

Material Examined. 2m, 1f. **PERU: LIMA:** Verrugas, 14 Apr. 1928 (1f), genitalia slide USNM 41174, R. C. Shannon, USNM ENT 00147641. **PIRUA:** La Beatita, 18 Apr. 1969 (1m), genitalia slide USNM 41173, Ch. Korytkowski, USNM ENT 00147712; 18 Apr. 1969 (1m), genitalia slide USNM 49760, A. Castro, USNM ENT 00147711.

Discussion. *Psectrotarsia flava* is known only from four specimens. The female genitalia differ from all other species in *Psectrotarsia* in that the ductus bursae bisects the corpus bursae into two subequal parts. If the portion dorsal to the ductus bursae is considered the appendix bursae, it is much larger than in any other species of *Psectrotarsia*.

***Psectrotarsia suavis* (H. Edwards), new combination**

(Figs. 2, 8–9, 18–19, 27, 32)

Heliothis suavis H. Edwards, 1884: 45.—Smith, 1891: 53.—Smith, 1893: 271.—Grote, 1895: 66.—Dyar, 1903: 186. *Erythroecia suavis*; Hampson, 1910: 57.—McDunnough, 1938: 98.—Franclemont and Todd, 1983: 158.—Poole, 1989: 380.—Matthews, 1991: 19.—Poole and Gentili, 1996: 739.—Hardwick, 1996: 40.

Diagnosis. *Psectrotarsia suavis* has the forewing ground color dominantly yellow with bright pink markings, in contrast to *P. hebaridi* (Skinner), *P. euposis* (Dyar), and *P. rhodophora* (Hampson) where the pink markings dominate the forewing color.

Redescription. Male. *Head:* Frons bulging, rugose, with minute white scales between ridges (Fig. 2), scales hairlike and pink; labial palp appressed, scales pink, hairlike scales at base under eye white; antenna pink dorsally to middle then becomes white, lateral scales white; scape pink dorsally, white ventrally; eyes large and globular. *Thorax:* Patagium and prothorax with pink hairlike scales; tegula a mixture of yellow narrow and hairlike scales; mesothorax with broad pink band extending into metathorax, bordered laterally with yellow; foreleg with femur brown mediad, white laterad, long pink and white hairlike scales ventrad, foretibia pink, armature variable, absent or with strong, curved spine on lateral surface of one or both foretibiae, tarsi white; middle leg with femur white, tibia pink, tarsi white; hind leg with femur white, tibia mostly white with pale pink shading, tarsi white; prosternum mixed pink and white, meta- and mesosterna white. Forewing length 13.7–17.3 mm (n = 6); ground color yellow; costa from base to terminal area pink with faint white spots; antemedial line pink with joined irregular spots; orbicular spot pink, round, in middle of discal cell; reniform spot pink; subterminal line pink, broad, with joined irregular spots; fringe pink; underside ground color pale yellow; costa and subapical patch pink; orbicular and reniform spots gray; subterminal line broad, faint, pale gray. Hindwing ground color pale yellowish white to white; wide marginal band varies from absent to covering almost entire wing and varies from gray on heavily marked specimens to pinkish gray on lighter marked specimens. *Abdomen:* Dorsal surface and genital tuft buff-colored; ventral surface white. Genitalia (Figs. 18–19) with uncus elongate, approximately 0.38X length of valve; apex pointed; valve broad, length

5.9X width, costal margin straight, posterior margin straight, apex round; ampulla elongate, 0.25X length of valve; corona with more than 10 setae; sacculus with ventral margin produced; juxta ovate with dorsal and ventral margins excavated; saccus V-shaped; aedeagus slightly bent at middle, apex pointed; vesica Y-shaped when viewed dorsally, diverticulum lacking cornuti, left diverticulum bearing a long apical cornutus, base of left diverticulum with a small round diverticulum having a short apical cornutus.

Female. *Head, Thorax:* As in male, except forewing length 16.2–16.6 mm (n = 6). *Abdomen:* Genitalia (Figs. 27, 32) with papilla analis fleshy, apex rounded; posterior apophysis 0.80–0.90X anterior apophysis, narrow; ductus bursae sclerotized and heavily striated in distal 0.33; appendix bursae present as undifferentiated cephalad extension of corpus bursae; corpus bursae large, kidney-shaped; signa absent.

Lectotype. Male, Las Vegas, N. M., H. Meeske, [18]’89. Barnes Collection. Lectotype *Heliothis suavis* Hy. Edwards, designated by Hardwick 1996 [red label]. Deposited in USNM.

Distribution and Biology. This is a western Great Plains species that occurs from southwestern South Dakota, extreme northeastern and western Nebraska, northern and southwestern Kansas, eastern Colorado, New Mexico east of the Rocky Mountains, southern Arizona, and the panhandles of Oklahoma and Texas as well as in south central and southwestern Texas (Fig. 36). There are two records from Mexico without a specific locality data, from the states of Chihuahua (Hardwick, 1996) and San Luis Potosi. Larval host is unknown.

Material Examined. 44m, 19f. **MEXICO: SAN LUIS POTOSI:** Matchuala, 19 Sep. 1967 (1f), S.D. Webb (MCLR). **U.S.A: ARIZONA:** COCHISE CO. No specific locality (1m), Barnes Coll.; Huachuca Mountains, Ash Canyon Rd., 1/2 mi w Highway 92, Lot 4, Aug. 1980 (1m), N. McFarland; Huachuca Mountains, Ash Canyon, 9 Aug. 1991 (1m), D.C. Ferguson; Hereford, 14 July (1m), C.R. Biederman; Huachuca Mountains, (1m), Barnes Coll. **MARICOPA CO.** No specific locality (1m), Barnes Coll. **PIMA CO.** Baboquivari Mountains, 1–15 Aug. (2 m), O.C. Poling, 15 Aug. 1923 (1m). **SANTA CRUZ CO.** Santa Rita Mountains, 26 July 1925 (2m), Coll. Brooklyn Museum. **YAVAPAI CO.** Douglas, 8–15 Aug. (1f), Barnes Coll. **COLORADO:** No specific locality (1m), Oslar. **BACA CO.** S end of Springfield, Hwy. 385/287, 4409 ft., 26 Aug. 2002, M.G. Pogue and C.E. Harp; Picture Canyon, SW of Campo, 4290 ft., 25 Aug. 2004 (1f), M.G. Pogue. **CHAFFEE CO.** Poncha Springs, 8–15 July (2f), genitalia slide USNM 46526, Barnes Coll. **LARIMER CO.** Ft. Collins, (1m); **PUEBLO CO.** W of Pueblo, 23 Aug. 1957, M. May (MCLR). **KANSAS:** **ELLIS CO.** Hays, 3 Sep. 1935 (1m, 1f), 30 Sep. 1935 (2m), genitalia slide USNM 49742, H.H. Walkden. **HODGEMAN CO.** [no specific locality], 17–25 July 1917 (1f) (SMEK). **KIOWA CO.** 5 mi S Greensburg, 25 Aug. 1993 (1m), G. Salsbury (SMEK); 5 mi SE Greenburg, 11 June 1993 (1f), 8 Aug. 1993 (1m), 5 Sep. 1994 (1f), G. Salsbury (SMEK). **RILEY CO.** Manhattan, (1f), H.H. Walkden. **SCOTT CO.** Scott City, 22 June 1934 (1m). **NEBRASKA:** **CEDAR CO.** Randolph (UCD). **DEUEL CO.** Chappell, 29 July 1951 (1f), R. Leuschner. **PLATTE CO.** Columbus, 29 Aug. (2m), 15 July 1963 (1f), E.A. Froemel. **SCOTTS BLUFF CO.** Scottsbluff, 19 Aug. 1967 (2m) (CSC). **NEW MEXICO:** No specific locality (3m), Coll. Brooklyn Museum; southern, 23–30 Aug. (1m), O.C. Poling. **LUNA CO.** Deming, 1–7 Sep. (1m). **OTERO CO.** High Rolls, (1m), Barnes Coll. **SAN MIGUEL CO.** near Hot Springs, Las Vegas, 7000 ft., Aug. 1882 (1m), F.H. Snow. **UNION CO.** Clayton, 4.4 mi S of Hwy 87 on 402, 4855 ft., 23 Aug. 2004 (2m), M.G. Pogue. **OKLAHOMA:** **CIMARRON CO.** Black Mesa State Park, east end of primitive area, 4312 ft., 24 Aug. 2004 (1f), M.G. Pogue. **SOUTH DAKOTA:** **PENNINGTON CO.** North Rim, Sage Creek Basin, White River Badlands, 7 July 1964 (1m), D.C. Ferguson. **TEXAS:** **BREWSTER CO.** Alpine, 9 Sep. 1963 (2m), 10 Sep. 1963 (1m), A. & M.E. Blanchard, 1926 (1f), genitalia USNM 49743, O.C. Poling. **CULBERSON CO.** Guadalupe Mtns., Pine Canyon, 5700 ft., 28 Aug. 1967 (2m), A. & M.E. Blanchard; Guadalupe Mtns., Bear Canyon, 5400 ft., 3 Sep. 1969 (1f), A. & M.E. Blanchard; Sierra Diablo Wildlife Management Area, 6000 ft., 30 Aug. 1970 (1f), 31 Aug. 1970 (1 f), A. & M.E. Blanchard. **JEFF DAVIS CO.** Fort Davis, 24 Aug. 1967 (3m, 1f), 28 Aug. 1964 (1m, 1f), 28 Aug. 1970 (1m), A. & M.E. Blanchard; Mount Locke, Davis Mountains, 25 July 1967 (1m), A. & M.E. Blanchard. **KIMBLE CO.** Junction, 19 Sep. 1968 (1m), A. & M.E. Blanchard. **TERRELL CO.** Sander-

son, 28 Sep. 1980 (1f), genitalia slide USNM 49745, A. & M.E. Blanchard, (1m) E. Knudson (MCLR). All specimens deposited in USNM unless otherwise indicated.

Discussion. Recently collected specimens have been from short grass prairie habitats in southeastern Colorado, the panhandle of Oklahoma, northeastern New Mexico, and western Texas.

***Psectrotarsia hebaridi* (Skinner), new combination**

(Figs. 3, 11, 20–21, 28, 33)

Erythroecia hebaridi Skinner, 1917: 329.—McDunnough, 1938: 98.—Franclemont and Todd, 1983: 158.—Poole, 1989: 380.—Matthews, 1991: 19.—Rings et al., 1992: 139.—Poole and Gentilli, 1996: 739.—Hardwick, 1996: 41.

Diagnosis. *Psectrotarsia hebaridi* differs from all other species in the genus in that its forewing markings are a dark pink that expands to almost completely cover the wing (cf. *P. suavis*).

Description. Male. *Head:* Frons bulging, rugose, with minute white scales between ridges (Fig. 3), scales hairlike and purplish-pink; labial palp appressed, scales pale pink mixed with white, apical segment white; antenna purplish pink dorsally to middle then becoming paler, lateral scales white; scape purplish pink dorsally, white ventrally; eyes large and globular. *Thorax:* Patagium and prothorax with pale purplish pink hairlike scales; tegula a mixture of narrow and hairlike scales, pale purplish-pink on anterior half, yellow posteriorly; mesothorax pale purplish-pink anteriorly becoming pale yellow posteriorly, sides white; metathorax with hairlike scales pink; foretibia armature absent, buff-colored tinged with pale purplish-pink, tarsi white; middle leg buff-colored, tarsi white; hind leg and tarsi white; prosternum buff-colored under head, meso- and metasterna white. Forewing length 13.7–15.3 mm (n = 3); ground color yellow; all markings dark pink; basal costal spot from costa to M vein; claviform spot between M and A veins coalesced with spot below; orbicular and reniform spots partially coalesced; median line irregular below reniform; subterminal area with broad band of purplish-pink; fringe yellow; underside with basal dash along M vein, orbicular and reniform spots, as well as broad subterminal band grayish purplish-pink. Hindwing; ground color grayish purplish-pink; fringe white. *Abdomen:* White. Genitalia (Figs. 20–21) with uncus elongate, approximately 0.38X length of valve; apex pointed; valve broad, length 5.9X width, costal margin straight, posterior margin straight; apex round; ampulla elongate, 1/4 length of valve; corona with less than 10 setae; sacculus with ventral margin produced; juxta ovate with dorsal and ventral margins excavated; saccus V-shaped; aedoeagus slightly bent at middle, apex rounded; vesica Y-shaped, basal diverticulum bearing a short apical spine-like cornutus, lateral diverticulum elongate with an elongate apical spine-like cornutus, diverticulum bearing orifice of ductus ejaculatorius lacking a cornutus.

Female. *Head, Thorax:* As in male, except forewing length 14.7–14.9 mm (n = 3). *Abdomen:* Genitalia (Figs. 28, 33) with papilla analis fleshy, narrow, apex rounded; posterior apophysis 0.95X anterior apophysis, narrow; ductus bursae sclerotized and heavily striated on distal half; no discernable appendix bursae; corpus bursae large, kidney-shaped; signa absent.

Lectotype. Male, U.S.A., Virginia, Hot Springs. Designated by Hardwick (1996). Deposited in ANSP. Not examined.

Distribution and Biology. Known only from single localities in northern New Jersey, southern Ohio, and western Virginia (Fig. 36). The larval host of *P. hebaridi* is richweed (*Collinsonia canadensis* L., Lamiaceae) and was discovered by Eric Metzler (pers. comm.) in southern Ohio. Hardwick (1996) described the preserved larva. The moth is found from mid-August through September at the Ohio site where it is locally abundant and associated with moist forested slopes with old trees (Rings et al., 1992).

Material Examined. 9m, 4f U.S.A: **NEW JERSEY:** SUSSEX CO. Lake Hoptacong, 19 Aug (1m), genitalia slide USNM 46524, F. Lemmer. **OHIO:** SCIOTO CO. Shawnee State Forest, 1 mi s of Pond Run Tower, 20 Aug. 1986 (1m), 31 Aug. 1986 (1m), J. D. Hooper (USNM); Nile Township, Shawnee State Forest, in a

clear cut, 17 Aug. 1985 (1m, 1f), 22 Aug. 1986 (2m), 23 Aug. 1986 (2m, 1f), Pond Run Tower, 21 Aug. 1987 (1f), 0.5 mi e of Pond Run Tower, 24 Aug. 1989 (1m, 1f), E.H. Metzler (EHM). All specimens deposited in USNM unless otherwise indicated.

Discussion. *Psectrotarsia hebardii* was described from Hot Springs, in western Virginia, by Skinner (1917) from 2 males that were collected by Morgan Hebard on August 15, 1916 at light. No other specimens have been collected in Virginia despite recent surveys (Roble, pers. comm.). Prior to 1930 the only other population of *P. hebardii* was from near Lake Haptacong in north central New Jersey and a recent collection of 2 specimens from Johnsonburg, Warren Co., New Jersey. In 1984 Eric Metzler discovered *P. hebardii* in southern Ohio. Additional populations were discovered within 5 km of the 1984 site in 1985 and 1986 (Shuey et al., 1987).

***Psectrotarsia euposis* (Dyar), new combination and revised status**

(Figs. 4, 12–13, 22–23, 29, 34)

Erythroecia euposis Dyar, 1912: 65—Poole, 1983: 380.—Hardwick, 1996: 41.

Diagnosis. *Psectrotarsia euposis* is most similar to *P. rhodophora* (Hampson). In *P. euposis* the valve in the male genitalia has the posterior margin gently curved from the sacculus to its widest width, the apex of the ampulla does not project above the costal margin of the valve, and the corona has more than 10 setae. In *P. rhodophora* the posterior margin of the valve is straight, the ampulla projects above the costal margin of the valve, and the corona has less than 10 setae. The most obvious difference in the female genitalia is the presence of a bar-like signa in *P. euposis*; a signa is absent in *P. rhodophora*.

Redescription. Male. *Head:* Frons with low transverse ridges, minute cream-colored scales between ridges (Fig. 4); vertex with narrow pink scales; labial palp appressed, scales pink with white fringe at base; antenna pink in basal 1/3 then gradually changing to white to apex; scape pink dorsally, white ventrally; eyes large and globular. *Thorax:* Patagium and prothorax with pink hairlike scales; tegula a mixture of yellow narrow and hairlike scales; meso- and metathorax pink; foretibia armature absent, pink, tarsi white; middle leg with white femur, pink tibia, and white tarsi; hind leg mostly white with some pink apically, tarsi white; underside with some buff colored and pink hairlike scales under head, rest white. Forewing length 14.6–17.4 mm (n = 6); ground color yellow; all markings pink; basal costal spot from costa to M vein; claviform spot between M and A veins coalesced with spot below; orbicular spot present; reniform spot present; median line irregular below reniform; subterminal area with broad band of pink; fringe pink spotted with yellow; underside mostly gray, orbicular and reniform spots obscure, apical spot pink, terminal area yellow. Hindwing ground color gray, fringe white. *Abdomen:* Sternites gray, genital tuft and tergites white. Genitalia (Figs. 22–23) with uncus elongate, approximately 0.34X length of valve, apex pointed; valve broad, length 4.3X width, costal margin straight, posterior margin gently curved from sacculus to widest valve width, angulate at distal end to round apex; ampulla elongate, 0.2X length of valve, apex not projecting above costal margin of valve; corona with more than ten setae; sacculus with ventral margin slightly produced; juxta rectangulate with dorsal and ventral margins excavated; saccus V-shaped; aedeagus slightly bent at middle, apex truncate; vesica Y-shaped, with enlarged bulbous area at junction of Y, bulbous area with 2 or 4 small cornuti, right diverticulum (when viewed ventrally) with elongate cornuti at apex, left diverticulum lacking cornuti.

Female. *Head, Thorax:* As in male, except forewing length 15.5–15.6 mm (n = 2). *Abdomen:* Genitalia (Figs. 29, 34) with papilla analis fleshy, apex rounded; posterior apophysis 0.85 times anterior apophysis, narrow; ductus bursae membranous below ostium bursae, constricted at middle, sclerotized, heavily striated in distal 0.5; appendix bursae present as undifferentiated cephalad extension of corpus bursae extending to constriction in ductus bursae; corpus bursae large, kidney-shaped; signa bar-like with expanded base and slightly curved apex.

Holotype. Male, Tehuacan, Mexico. R. Muller Collector. Type No. 13892 U.S.N.M. [red label]. *Erythroecia euposis* Type Dyar [hand written label]. Deposited in USNM.

Distribution and Biology. Known from several states around Mexico City (Fig. 36). Larval host is unknown.

Material Examined. 7m, 3f **MEXICO:** Zacualpan, Sep. 1917 (1m, 1f). **DISTRICTO FEDERAL:** Lomas de Chapultepec, 1 Aug. 1936 (2m), T. Escalante. **HIDALGO:** 3 mi E Zimapan, 6400 ft., 31 July – 1 Aug. 1963 (1m), genitalia slide USNM 49747, Duckworth and Davis, Sep. (1f) (UNAM). **MICHOACAN:** 25 Sep. 1939 (1m) (UNAM). **MORELOS:** Cuernavaca, 16 Sep. 1933 (1m, 1f), T. Escalante. **PUEBLA:** Tehuacán, Sep. 1987 (1m.), C.C. Hoffmann (UNAM). All specimens deposited in USNM unless otherwise indicated.

Discussion. Although Hardwick (1996) synonymized *P. euposis* with *P. rhodophora*, the male and female genitalia are distinct. Thus, I resurrect *P. euposis* as a valid species and transfer it to *Psectrotarsia*.

***Psectrotarsia rhodophora* (Hampson), new combination**

(Figs. 5, 14–15, 24–25, 30, 35)

Erythroecia rhodophora Hampson, 1910: 58—Poole, 1989: 380.—Hardwick, 1996: 41.

Diagnosis. The forewing pattern of *P. rhodophora* is most similar to that of *P. euposis*, but there is more pink than yellow in the terminal area of *P. rhodophora* than in *P. euposis*.

Redescription. Male. *Head:* Frons with low transverse ridges, minute cream-colored scales between ridges (Fig. 5); vertex with narrow pink scales; labial palp appressed, scales pink with white fringe at base; antenna pink on basal 0.33, gradually changing to white to apex; scape pink dorsally, white ventrally; eyes large, globular. *Thorax:* Patagium and prothorax with pink hairlike scales; tegula a mixture of yellow narrow and hairlike scales; mesothorax and metathorax pink; foretibia armature absent, pink, tarsi white; middle leg with white femur, pink tibia, and white tarsi; hind leg mostly white with some pink at apices, tarsi white; underside with some buff-colored and pink hairlike scales anteriorly, remainder white. Forewing length 13.0–17.5 mm (n = 11); ground color yellow; all markings pink; basal costal spot from costa to M vein; claviform spot between M and A veins coalesced with spot below; orbicular spot present; reniform spot present; median line irregular below reniform spot; subterminal area with broad band of pink; fringe pink spotted with yellow; underside mostly gray, orbicular and reniform spots obscure, apical spot pink, terminal area yellow. Hindwing ground color gray, marginal edge pink bleeding onto white fringe. *Abdomen:* Sternites gray, genital tuft and tergites white. Genitalia (Figs. 24–25) with uncus elongate, approximately 0.34X length of valve, apex pointed; valve broad, length 5.0X width, costal margin straight, posterior margin straight; angulate at distal end to round apex; ampulla elongate, 0.2X length of valve, apex projecting above costal margin of valve; corona with less than ten setae; sacculus with ventral margin slightly produced; juxta rectangulate with dorsal margin excavated, ventral margin straight; saccus V-shaped; aedoeagus slightly bent at middle, apex truncate; vesica Y-shaped, with enlarged bulbous area at junction of Y, bulbous area projecting ventrally with one small cornutis at apex, right diverticulum of Y (when viewed ventrally) with elongate cornuti at apex, left diverticulum lacking cornuti.

Female. *Head, Thorax:* As in male, except forewing length 13.9–14.8 mm (n = 2). *Abdomen:* Genitalia (Figs. 30, 35) with papilla analis fleshy, apex rounded; posterior apophysis 0.72X anterior apophysis, narrow; ductus bursae sclerotized, heavily striated on distal 0.25; appendix bursae present as undifferentiated cephalad extension of corpus bursae; corpus bursae large, kidney-shaped; signa absent.

Holotype. Male, Type [round red bordered label]. Capitello, Guatemala. Rodriguez. Godman-Salvin Coll. 1901-99. *Erythroecia rhodophora* type m. Hmpsn. [hand written label]. Deposited in BMNH.

Distribution and Biology. Known only from Guatemala (Fig. 36). *Psectrotarsia rhodophora* was collected during October and November, whereas *P. euposis* flies from 31 July to September. Larval host is unknown.

Material Examined. 5m, 1f **GUATEMALA: QUEZALTENANGO:** Volcan Sta. Maria, Oct. (4m, 1f), Nov. (1m), m genitalia USNM 49746, Schaus & Barnes Coll. All specimens deposited in USNM.

Discussion. Hardwick (1996) synonymized *E. euposis* with *E. rhodophora* without examining the genitalia.

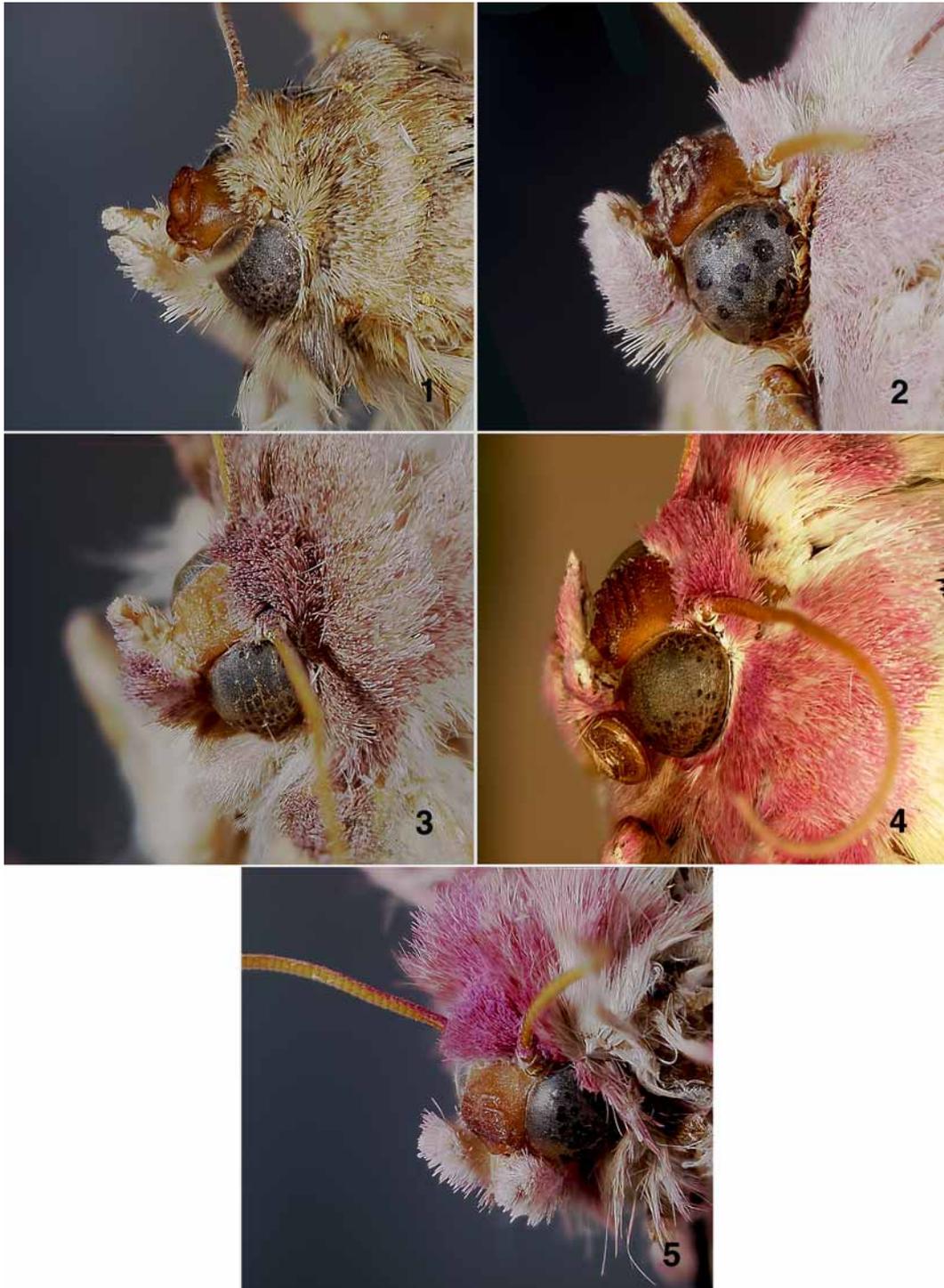
Acknowledgments

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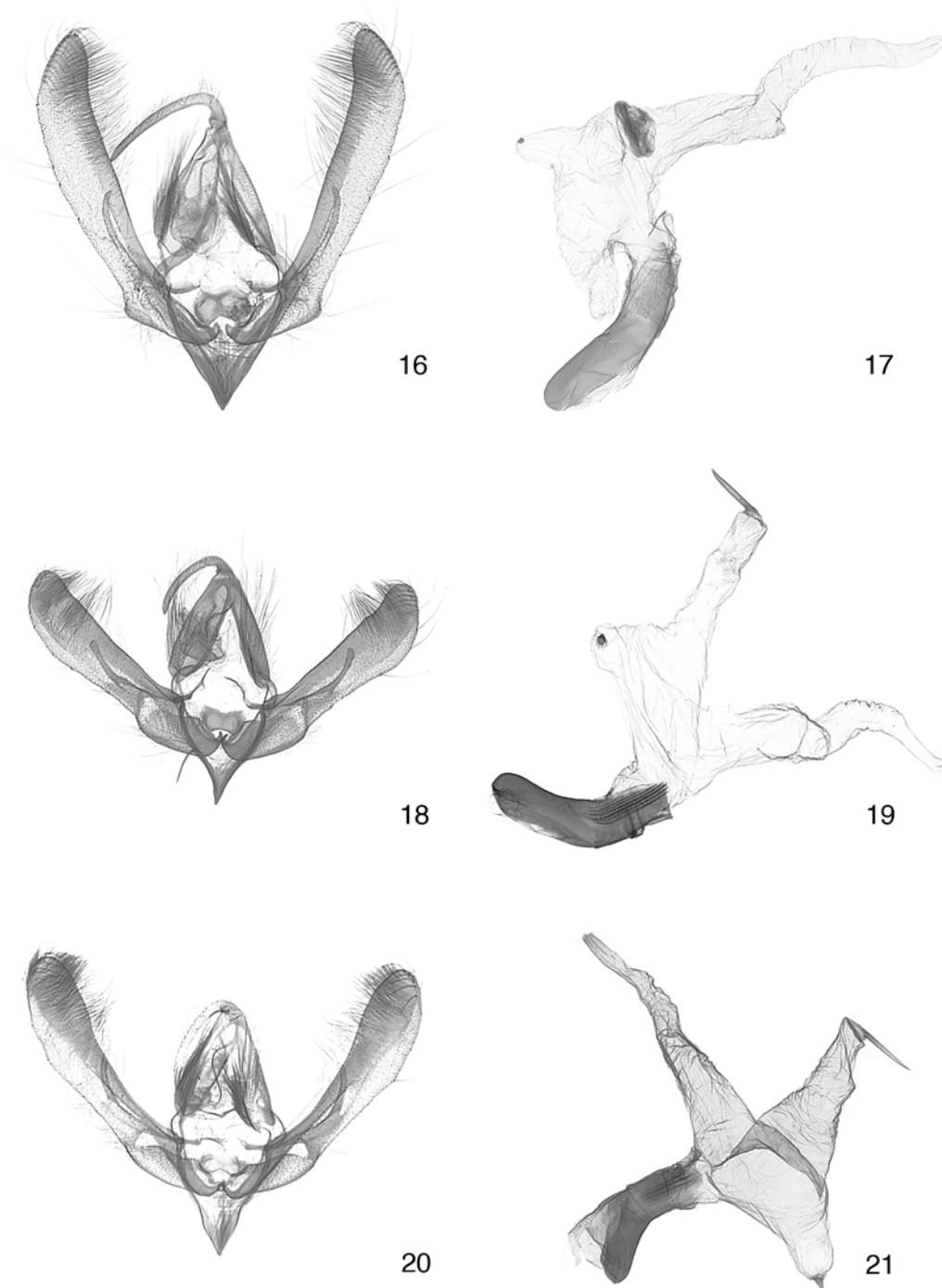
FIGURES 1–5. Heads. 1, *Psectrotarsia flava*, female, Peru, Lima, USNMENT 14764; 2, *P. suavis* Nebraska, Platte Co., Columbus, USNMENT 147638; 3, *P. hebaridi* New Jersey, Morris Co., Lake Hoptacong, USNMENT 147639; 4, *P. euposis* Mexico, Cuernavaca, USNMENT 147705; 5, *P. rhodophora*, Volcan Guatemala, Volcan Santa Maria, USNMENT 220365.



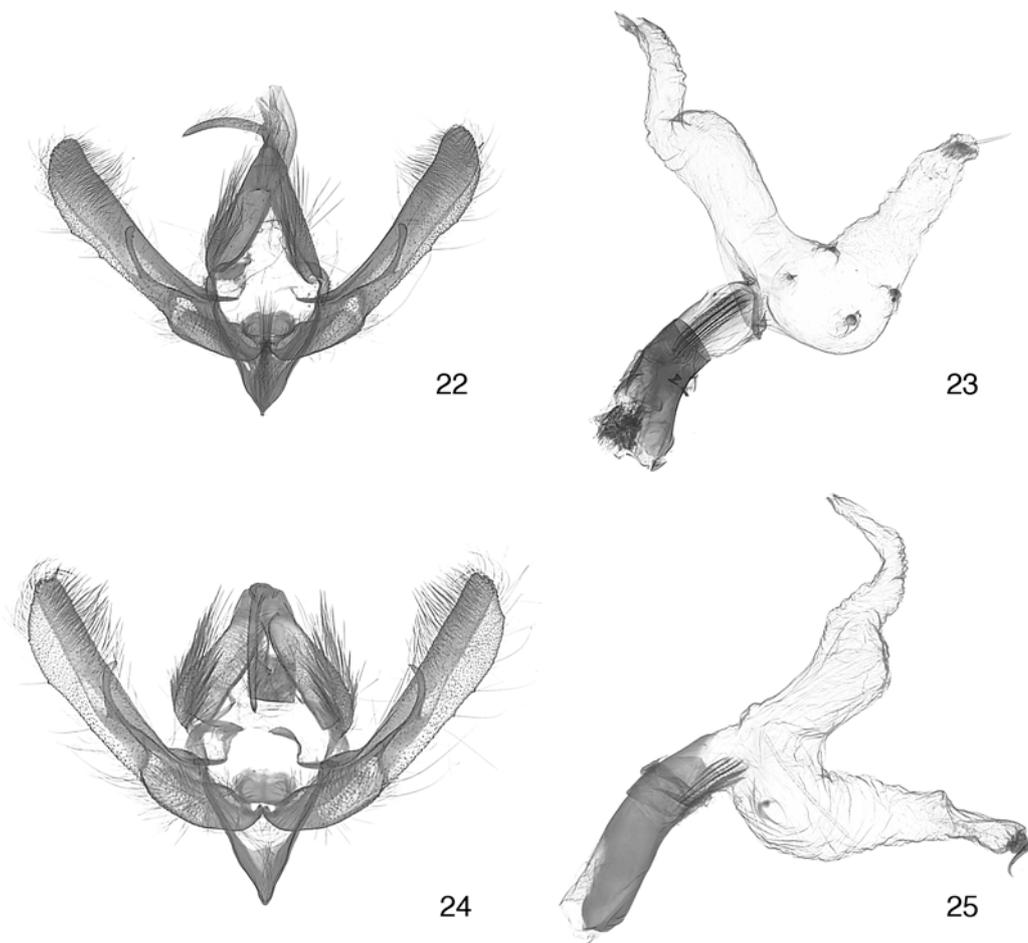
FIGURES 6–11. Adults. 6, *Psectrotarsia flava*, female holotype, Peru, La Libertad, Trujillo, USNMENT 147710; 7, *P. flava*, female, Peru, Pirua, La Beatita, USNMENT 147712; 8, *P. suavis*, male, Texas, Brewster Co., Alpine, USNMENT 147692; 9, *P. suavis*, male, Texas, Jeff Davis Co., Mount Locke, Davis Mountains, USNMENT 147693; 10, *P. suavis*, female, Oklahoma, Cimarron Co., Black Mesa State Park, east end of primitive area, 24 Aug. 2004, 4312 ft., USNMENT 221608; 11, *P. hebaridi*, male, Ohio, Scioto Co., Shawnee State Forest, clearcut 1 mi s of Pond Run Tower, USNMENT 147694.



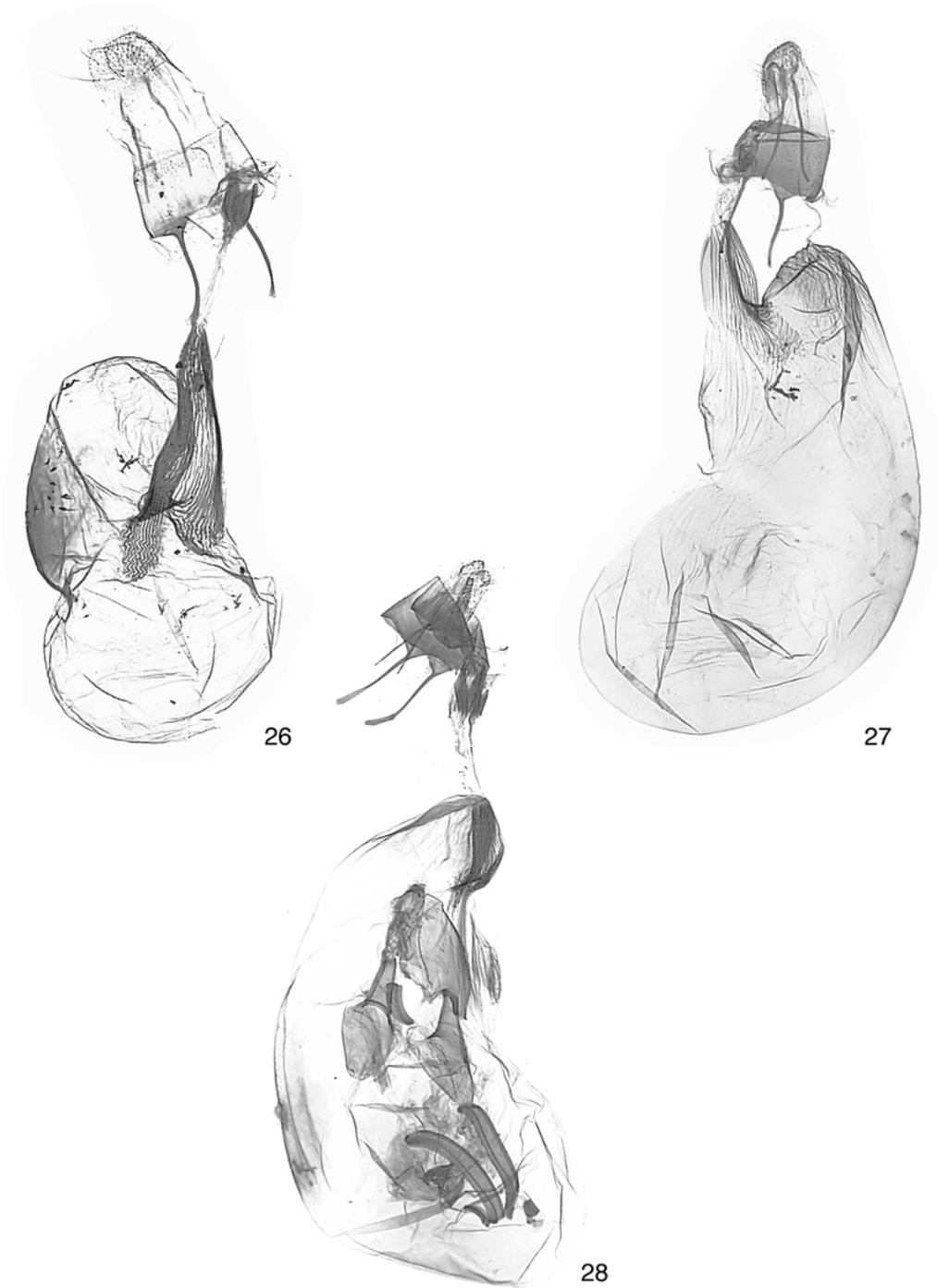
FIGURES 12–15. Adults. 12, *Psectrotarsia euposis*, male, Mexico, Distrito Federal, Lomas de Chapultepec, USNMENT 147703; 13, *P. euposis*, male, Mexico, Morelos, Cuernavaca, USNMENT 147704; 14, *P. rhodophora*, male, Volcan Santa Maria, Guatemala, USNMENT 147698; 15, *P. rhodophora*, male, Volcan Santa Maria, Guatemala, USNMENT 147700.



FIGURES 16–21. Male Genitalia. 16, *Psectrotarsia flava*, Peru, La Beatita, USNMENT 147711, genitalia slide USNM 49760; 17, *P. flava*, aedeagus, same data; 18, *P. suavis*, New Mexico, Luna Co., Deming, USNMENT 147672, genitalia slide USNM 49744; 19, *P. suavis*, aedeagus, same data; 20, *P. hebaridi*, Ohio, Sciota Co., Shawnee State Forest, in a clear cut, USNMENT 144030, genitalia slide MGP 1208; 21, *P. hebaridi*, Ohio, Sciota Co., Shawnee State Forest, 0.5 mi E Pond Run Tower, USNMENT 144038, aedeagus, genitalia slide MGP 1219.



FIGURES 22–25. Male Genitalia. 22, *Psectrotarsia euposis*, Mexico, Morelos, Cuernavaca, USNMENT 147705, genitalia slide USNM 49756; 23, *P. euposis*, aedeagus, same data; 24, *P. rhodophora*, Guatemala, Quezaltenango, Volcan Santa Maria, USNMENT 147697, genitalia slide USNM 46758; 25, *P. rhodophora*, aedeagus, same data.



FIGURES 26–28. Female Genitalia. 26, *Psectrotarsia flava*, Peru, Trujillo, USNMENT 147709, genitalia slide USNM 49761; 27, *P. suavis*, Texas, Brewster Co., Alpine, USNMENT 147676, genitalia slide USNM 49743; 28, *P. hebaridi*, Ohio, Sciota Co., Shawnee State Forest, in a clear cut, USNMENT 144036, genitalia slide MGP 1209.

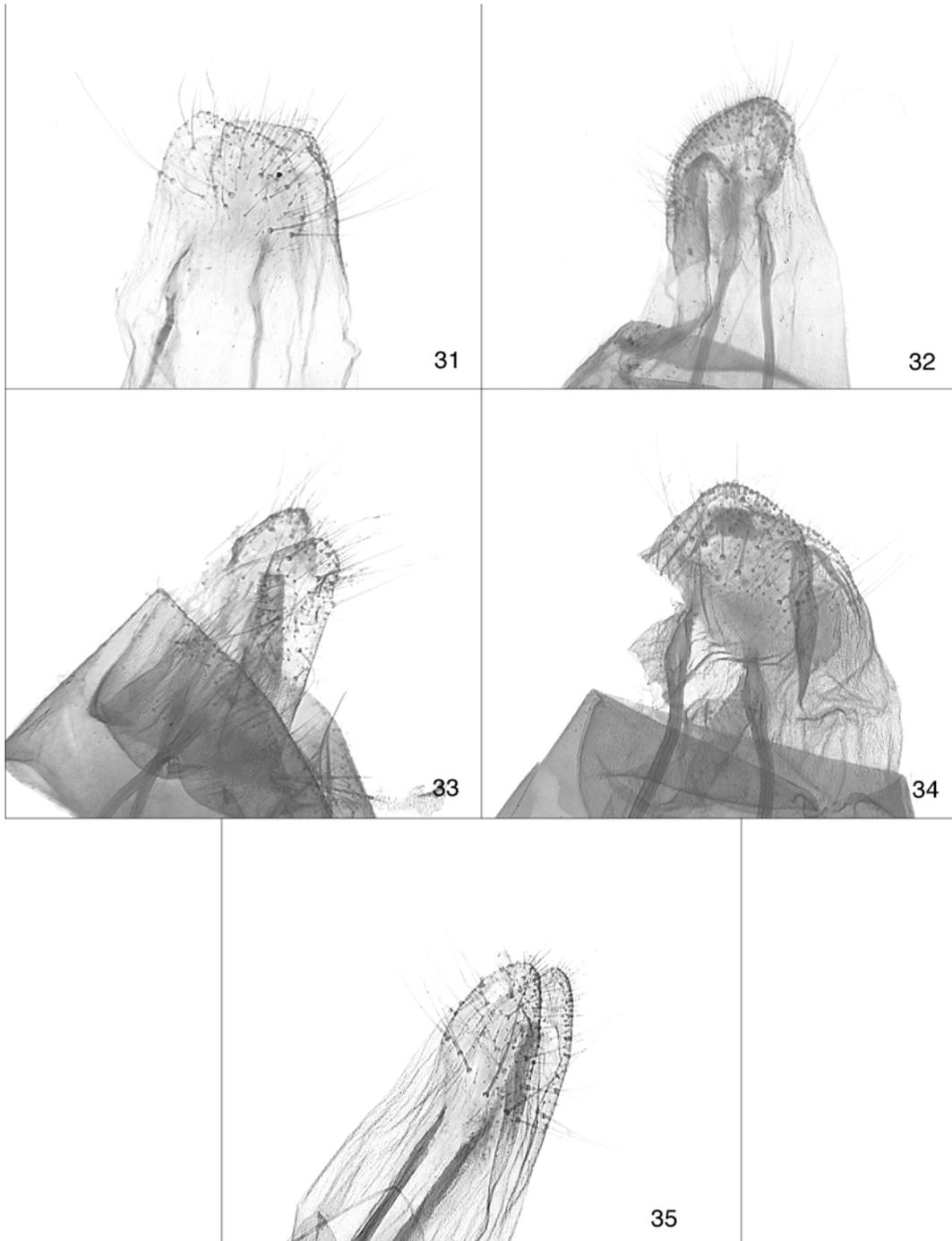


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FIGURES 29–30. Female Genitalia. 29, *Psectrotarsia euposis*, Mexico, Zacualpan, USNMENT 147709, genitalia slide USNM 49759; 30, *P. rhodophora*, Guatemala, Quezaltenango, Volcan Santa Maria, USNMENT 147701, genitalia slide USNM 46755.



FIGURES 31–35. Papillae anales of female Genitalia. 31, *Psectrotarsia flava*, same data as Fig. 26; 32, *P. suavis*, same data as Fig. 27; 33, *P. hebaridi*, same data as Fig. 28; 34, *P. euposis*, same data as Fig. 29; 35, *P. rhodophora*, same data as Fig. 30.



FIGURE 36. Collecting localities. *Psectrotarsia flava*, closed squares; *P. suavis*, closed circles; *P. hebardei*, closed triangles; *P. euposis*, closed triangles; *P. rhodophora*, open circle.

