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THREE NEW SPECIES OF *IDAEA* TREITSCHKE (GEOMETRIDAE: STERRHINAE) FROM THE SOUTHWESTERN UNITED STATES AND NORTHERN MEXICO.

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ABSTRACT. Three new species of *Idaea* Treitschke, 1825 (Geometridae: Sterrhinae) are described and illustrated: *Idaea knudsonaria* **n. sp.**, type locality Sierra Diablo Wildlife Management Area, Culberson County, Texas; *Idaea kendallaria* **n. sp.**, type locality Santa Ana Refuge, Hidalgo County, Texas; and *Idaea elizabetharia* **n. sp.**, type locality Madera Canyon, Santa Cruz County, Arizona. *I. kendallaria* has been reared on southern live oak, *Quercus virginiana* Miller.

Additional key words: *Idaea skinnerata*, *Idaea demissaria*, *Idaea asceta*, North America, inchworm

Idaea Treitschke 1825 is a large genus in the geometrid, or inchworm, moth subfamily Sterrhinae, containing about 680 species worldwide (Hausmann, 2004) and 30 in America north of Mexico. These include the 26 species listed in Hodges et al. (1983), *Idaea asceta* (Prout 1910) added by Covell (2011), and the three new species described here. The moths are moderately small and usually white, tan or gray. The forewing and hindwing are similar in color and pattern, and have only medial and postmedial lines, the medial line "at a rather proximal position" (Hausmann, 2004). Areas of darker shading present or absent, mostly between lines or distal to postmedial line when present. Small dark discal dots are present on all wings in many species. Antennae fasciculate in males, simple in females. The male hind tibia is often modified with or without hair pencils. Male genitalia are rather simple, with gnathos opposing the uncus and valves usually undivided but variable in width and shape. Sheet-like and spine-like cornuti are present or absent. The ductus bursae and/or corpus bursae of the female usually contain patches, bands, or a lining of spines and/or tiny pointed spicules.

During the course of revisionary studies of North American Sterrhinae the following three species came to light as undescribed. All are similar to each other in some maculation and/or genital features and also to several other species, such as *I. demissaria* (Hübner 1831), *I. celtima* (Schaus, 1901), *I. basinta* (Schaus. 1901), and *I. skinnerata* (Grossbeck, 1907). Since the ranges of at least two of them extend into Mexico, study of types of similar neotropical *Idaea* species was necessary before the new species could be described.

MATERIALS AND METHODS

Specimens used in this study are deposited in the following collections. They are listed with their acronyms which are given in parentheses following paratype and other data to indicate ownership or deposition of those paratypes.

AMNH American Museum of Natural History, New York, NY
GJB George J. Balogh collection, Portage, MI
CNC Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Ontario
CSU Gillette Museum, Colorado State University, Ft. Collins, CO
CUIC Cornell University Insect Collection, Ithaca, NY
ECK Edward C. Knudson Collection, Houston, TX
JRH J. Richard Heitzman Collection, Independence, MO (partly now at MGCL)
LACM Natural History Museum of Los Angeles County, Los Angeles, CA
MCZ Museum of Comparative Zoology, Harvard University, Cambridge, MA
MGCL McGuire Center for Lepidoptera & Biodiversity, Florida Museum of Natural History, Gainesville, FL
NSM Nova Scotia Museum of Natural History, Halifax, Nova Scotia, Canada
TAMU Texas A & M University Insect Collection, College Station, TX
UCB Essig Museum of Entomology, University of California, Berkeley, CA
UCD Bohart Entomological Museum, University of California, Davis, CA
USNM United States National Museum of Natural History, Smithsonian Institution, Washington DC
TNHC Texas Natural History Collections, Integrative Biology, University of Texas at Austin

I. kendallaria **n. sp.** was compared with holotypes of the following species in the The Natural History Museum, London, England, by the late D. S. Fletcher: *Acidalia spernata* Walker (1861), *Acidalia botydaria* Walker (1867), *Ptychopoda limitata* Warren (1897) and *Anteois pygmeata* Warren (1901) (all described from Venezuela). I compared it with the syntype ♂ of

Ptychopoda clothula Dyar (1914, type locality Panama) and the syntype ♂ of *Ptychopoda rufarenaria* Warren (1906, type locality Cayenne, French Guiana), both in the USNM. I compared *I. elizabetharia* **n. sp.** with the holotype ♂ of *I. skinnerata* (Grossbeck, 1907) from Arizona in the AMNH. I am convinced that *I. kendallaria* **n. sp.** and *I. elizabetharia* **n. sp.** are distinct from the species mentioned above.

Idaea knudsonaria Covell, **new species**
(Figs. 1 ♂ – 2 ♀, 13–14, 23)

Diagnosis: The sharply defined, nearly straight brown medial line on forewing and hindwing, and the terminal line, widest toward the forewing apex, are distinctive. Hindwing discal dot red. Male and female genitalia similar to *I. demissaria* (Figs. 17–18); valve broader-based and phallus with 35 or more spine-like cornuti (3 in *I. demissaria*); female ductus bursae shorter than that of *I. demissaria*, and straight; corpus bursae pyriform instead of ovate and recurved basally, projecting at an angle to ductus bursae; sclerotized strap-like process in corpus bursae (spinose in *I. demissaria*); corpus bursae lacks spicule lining present in *I. demissaria*.

Description (Figs. 1, 2): Head, antenna, thorax and abdomen yellowish buff; antenna fasciculate in male, simple in female. Front dark brown, interantennal fillet yellowish buff. Legs buff; male hindleg extremely reduced, with tibia subequal to tarsus in length, and both together shorter than middle tibia; no hair pencil. Forewing with one areole (accessory cell), which may not be closed. Wings pale yellowish buff. Forewing with narrow brown edging along costa; medial line absent; postmedial line brown, nearly straight; broader terminal line evenly narrowing from apex to tornus; discal dot slightly darker brown than medial line and sometimes partially enclosed in it. Pattern of hindwing a continuation of that on the forewing; postmedial line straight, with obscure discal dot represented by a few dark red scales within the postmedial line; terminal line moderately wide and fairly even. Fringe scales very long, yellowish buff. Underside glistening off-white, with pattern of upper side faintly expressed. Wing length: 6.5 – 8.5 mm.

Male genitalia (Fig. 13): Tegumen rounded, very similar to *I. demissaria* (Fig. 17) and related species. Uncus broad-based, curving ventrally, narrowing to a fine, sclerotized point; valve broad-based, slightly sinuous as it narrows to a slightly out-turned pointed apex; gnathos heavily sclerotized centrally, opposing uncus; juxta membranous; vinculum moderately deep and broadly rounded (lobe-like in *I. demissaria*); phallus dorsally recurved anterior to juncture with ductus ejaculatorius, and straight posterior to that juncture; one anterior and three posterior patches of 35–55 variably sized, similarly shaped, spine-like cornuti.

Female genitalia (Fig. 14): Somewhat similar to *I. demissaria* (Fig. 18), ductus bursae moderately long, straight, much more narrow than in *I. demissaria*. A wide heavily sclerotized band extends the length of the ductus bursae and into the pyriform corpus bursae; this band is recurved in corpus bursae where it is heavily spinose; no tiny spicules line corpus bursae.

Immature stages: Unknown.

Holotype (Fig. 1). ♂, Sierra Diablo Wildlife Management Area, 6000', Culberson Co., Texas, 29 May 1973, A. & M. E. Blanchard (USNM).

Paratypes (9): TEXAS. 1 ♂, same data as holotype, C. V. Covell Jr. genitalia slide #1,225 (USNM); 1 ♀, same location and collectors as holotype, 30 May 1973, C. V. Covell Jr. genitalia slide #1,226 (USNM); 1 ♂, Sierra Diablo WMA, Culberson Co., 27 June 1981, E. C. Knudson, C. V. Covell Jr. genitalia slide #1,359 (ECK); 1 ♀, same locality and collector as preceding, 11 June 1982, C. V. Covell Jr. genitalia slide #1,357 (ECK); 1 ♂, 3 ♀♀, same locality and collector as preceding, 18 August 1984 (ECK). MEXICO. 1 ♀, 6 mi. E[ast of] Est. [Estacion ?] Roberto, Nuevo Leon, 27 May 1981, J. Doyen, C. V. Covell Jr. genitalia slide #1,356 (UCB).

Distribution and flight period (Fig. 23): Known only from the type locality and an unidentified site in Nuevo Leon, Mexico. Collected between late May through June and in August.

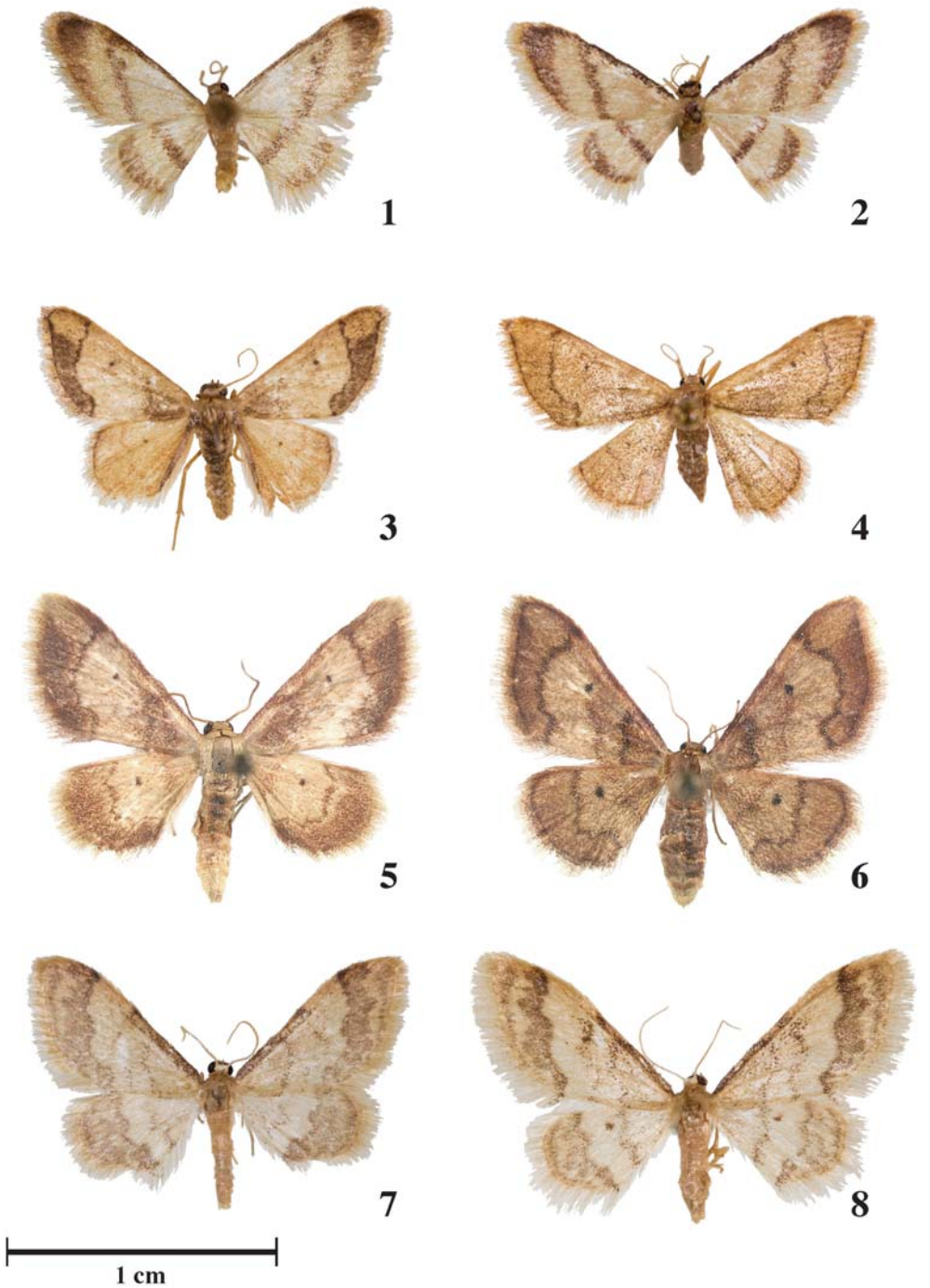
Discussion: The distinctive wing pattern is unlike that of any other known nearctic or neotropical Geometridae.

Etymology: This species is named in honor of Edward C. Knudson, who collected some of the type series and who has made many important contributions to our knowledge of American Lepidoptera—particularly those of Texas.

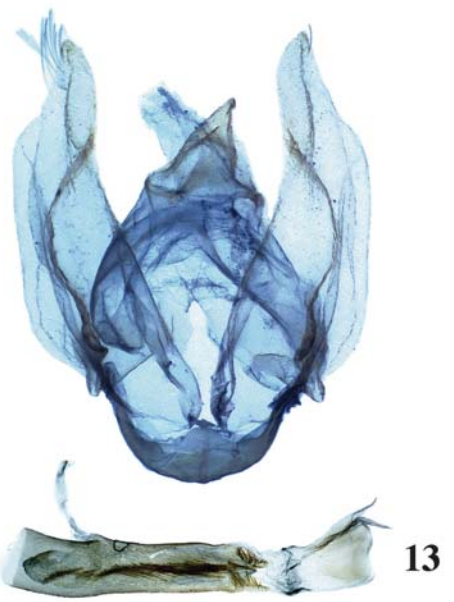
Idaea kendallaria Covell, **new species**
(Figs. 3 ♂–4 ♀, 15–16, 24)

Diagnosis: This species is very similar to reddish-shaded specimens of the common and widespread North American *I. demissaria* (Hübner 1831) in color, pattern and genital features. *I. kendallaria* is distinguished from most *I. demissaria* by being slightly smaller on average, with browner (less reddish) shading, and sharper contrast between the forewing pattern basad and distad of the postmedial line (Figs. 3–6). Females are often almost concolorous brown—a dimorphism absent in *I. demissaria*. The patch of ground color at the apex of the male forewing tends to terminate more cleanly above R_3, with subterminal shading appressed to outer side of postmedial line all the way to inner margin (often thin edging of ground color along outer side of posterior portion of postmedial line in *I. demissaria*). Hindwing without broad, subterminal reddish border of shaded specimens of *I. demissaria* (some variants lack shading). Male genitalia (Figs. 15, 17) with gnathos about half length of uncus (subequal in *I. demissaria*); broad costal spine of *I. demissaria* valve absent. Posterior end of cornutus terminates in two rounded nubs (two small sharp spines in same position in *I. demissaria*). The female genitalia with much wider ductus bursae than *I. demissaria* (Figs. 16, 18); with small spinose patch at basal end of corpus bursae (in *I. demissaria* there is only a vague sclerotized patch without spines); small membranous sac (appendix bursae) extends distally from the corpus bursae, not bearing spines—a structure absent in *I. demissaria*.

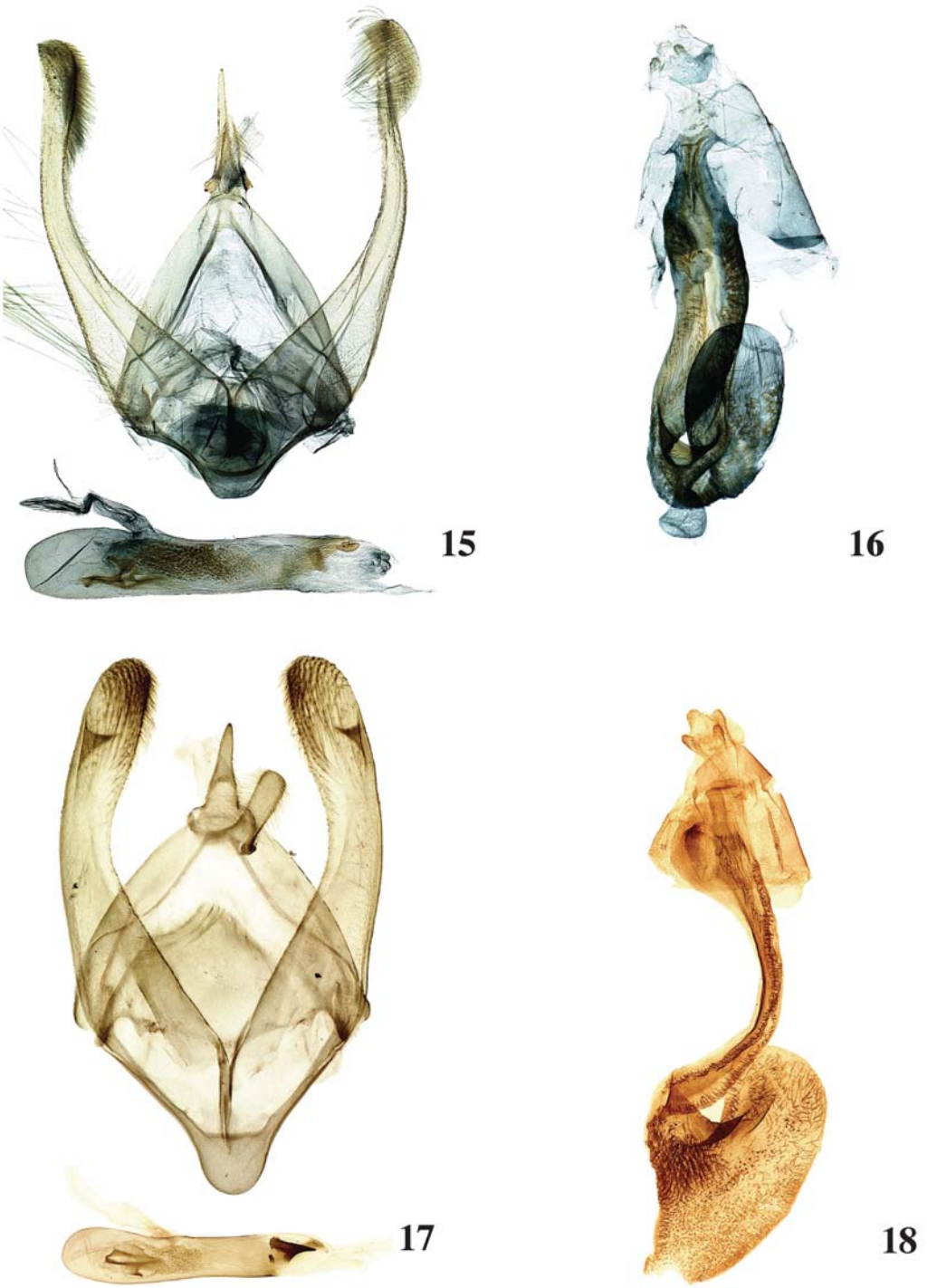
Description (Figs. 3–4): Head, thorax and abdomen orangish buff with front brown; antenna fasciculate in male, simple in female, orangish buff. Interantennal fillet and legs yellowish buff; male hind tibia greatly reduced, slightly shorter than length of tarsus, without hair pencil. Single areole of the forewing not closed in specimens



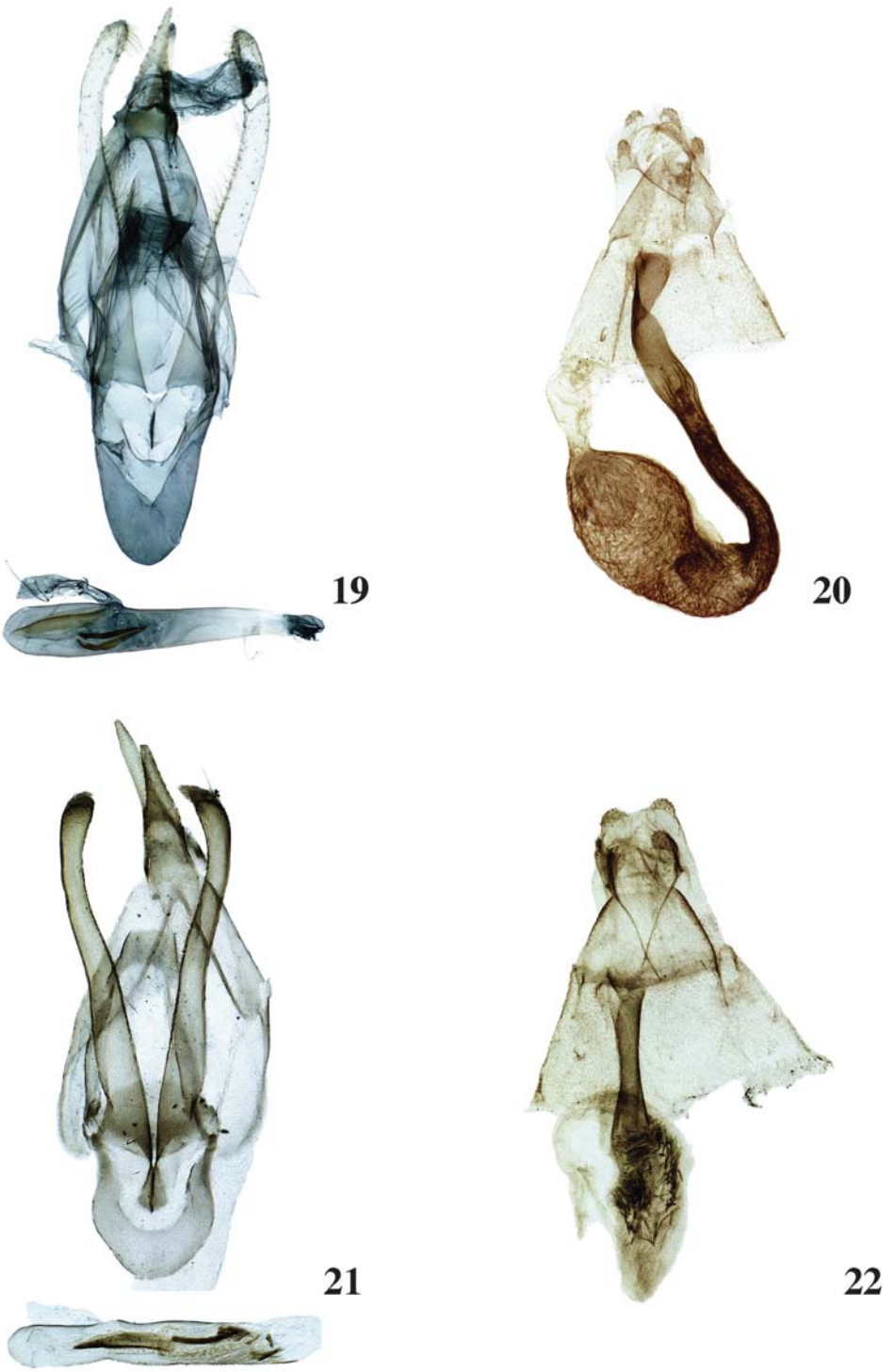
FIGS. 1–8. **1.** *Idaea knudsonaria*, **n. sp.** , holotype ♂, Sierra Diablo Wildlife Management Area, Culberson Co., TX **2.** *Idaea knudsonaria*, **n. sp.** , ♀, same locality as holotype **3.** *Idaea kendallaria* **n. sp.** , holotype ♂, Santa Ana Refuge, Hidalgo Co., TX **4.** *Idaea kendallaria* **n. sp.** ♀, Mountain View Acres, Bexar Co., TX **5.** *Idaea demissaria* (Hübner), ♂, Fluker, Tangipahoa Parish, LA **6.** *Idaea demissaria* (Hübner), ♀, Wedge Plantation, McClellanville, SC **7.** *Idaea elizabetharia* **n. sp.** , holotype ♂, Madera Canyon, Santa Cruz Co., AZ **8.** *Idaea elizabetharia* **n. sp.** , ♀, same locality as holotype



FIGS. 9–14. **9.** *Idaea skinnerata* (Packard), ♂, Cochise Co., AZ **10.** *Idaea skinnerata* (Packard), ♀, Palmerlee, AZ **11.** *Idaea elizabetharia*, ♂ antenna **12.** *Idaea skinnerata*, ♂ antenna **13.** *Idaea knudsonaria* **n. sp.** , ♂ genitalia **14.** *Idaea knudsonaria* **n. sp.** , ♀ genitalia



FIGS. 15.–18. *Idaea kendallaria* **n. sp.** , ♂ genitalia, **16.** *Idaea kendallaria* **n. sp.** , ♀ genitalia, **17.** *Idaea demissaria* (Hübner), ♂ genitalia, **18.** *Idaea demissaria* (Hübner), ♀ genitalia



FIGS. 19–22. **19.** *Idaea elizabetharia* **n. sp.** , ♂ genitalia, **20.** *Idaea elizabetharia* **n. sp.** , ♀ genitalia, **21.** *Idaea skinnerata* (Grossbeck), ♂ genitalia **22.** *Idaea skinnerata* (Grossbeck), ♀ genitalia

FIG. 23. *Idaea knudsonaria* distribution map

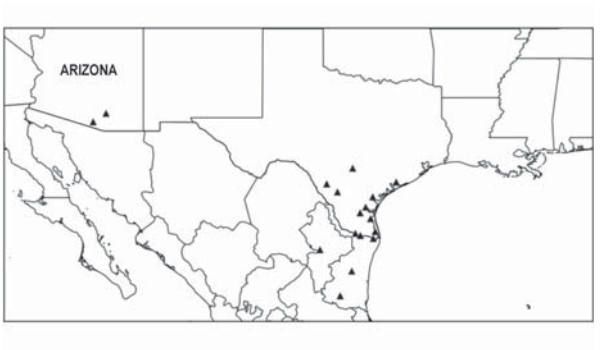


FIG. 24. *Idaea kendallaria* distribution map

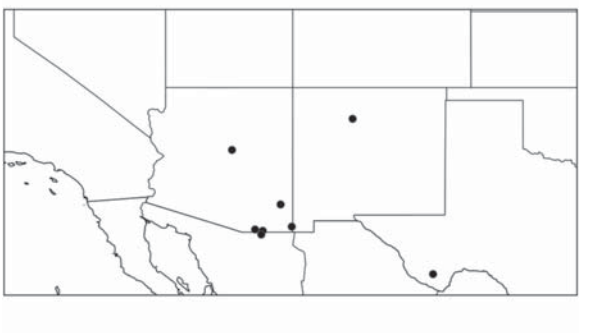


FIG. 25. *Idaea elizabetharia* distribution map

examined. Wings orangish buff with scattered dark reddish brown scales in male, uniformly suffused with brown in female; antemedial line straight, dark brown, not complete to costa; faint trace of brown median line in posterior half of forewing; postmedial line sharp, complete, finely scalloped, dark brown; terminal line dark brown. Male with dark reddish brown shading in posterior half of basal area and distad of postmedial line except for a small elongate patch of orangish buff below apex. Fringe orangish buff, with diffuse brownish spots at ends of veins. Hindwing colored as forewing, with medial and postmedial lines often obscure. Small, sharply defined blackish discal dot on forewing and usually larger one on hindwing. Underside glistening yellowish with markings of the upperside repeated faintly. Long yellowish hair pencil from male hindwing base, appressed along anal margin. Forewing length: 6.0–8.0 mm.

Male genitalia (Fig. 15): Uncus rounded at apex, narrower than gnathos. Gnathos broad-based, narrowing to a blunt tip and one-half to two-thirds length of uncus. Valve simple, rounded terminally, fused with other valve at base; broad sclerotized spine absent. Large tuft of long hair-scales inserted laterally at valve base (easily lost during dissection). Phallus large, longer then genital capsule, with large, complex cornutus with an anteriorly twisted heavily sclerotized, plate-like structure pointed at its basal corners; middle portion is marked by many very small spicules; and two short, rounded to bluntly pointed spines at posterior end. Dense expandable tufts of deciduous hair scales on 8th segment.

Female genitalia (Fig. 16): Ductus bursae short, wide, heavily sclerotized, flared at ostium, opening to wider, elongate basal portion of corpus bursae in which is a small basal plate of spines; narrower portion of the corpus bursae doubles back and widens to form ovoid terminal sac; a long, moderately sclerotized, heavily spinose band lines the corpus bursae, ending in terminal sac lined with many small spicules and moderately large spines. A small, membranous sac (appendix bursae) projects from curved portion of corpus bursae..

Immature stages: The late Roy O. Kendall reared this species on southern live oak, *Quercus virginiana* Miller, but did not make notes on the life stages (R. O. Kendall pers. comm.).

Holotype (Fig. 3). ♂, Santa Ana Refuge, Hidalgo County, Texas, 13 Nov., 1971, A. & M. E. Blanchard (USNM).

Paratypes (77): ARIZONA. 1 ♂, Baboquivari Mts., Pima Co., 15–30 Aug., 1923, O. C. Poling (USNM); 1 ♂, Tucson, Pima Co., 6600 N Galaxy Rd., UV, 1 Nov., 1999, C. V. Covell Jr. genitalia slide #1377 (MGCL). TEXAS. 1 ♀, Artesia Wells, La Salle Co., June 12, 1972, D. C. Ferguson (USNM); 2 ♀♀, same locality and collector, June 13, 1972 (USNM); 1 ♂, 1 ♀, same locality and collector, June 20, 1972 (USNM); 3 ♂♂, same locality and collector, June 21, 1972, (USNM); 1 ♂, Bentson Rio Grande State Park, Hidalgo County, 9 Oct. 1985, T. C. MacRae (GJB); 1 ♂, Aransas Co., Goose Island State Park north of Aransas Pass, June 13, 1968, J. R. Heitzman (JRH); 1 ♂, same locality as preceding, June 13, 1969, R. L. Heitzman (JRH); 2 ♂♂, Hidalgo Co., Bentsen-Rio Grande Vlly. SP, Oct. 11, 1980, E. C. Knudson (ECK); 1 ♂, same locality, 15 Nov. 1990, P. A. Opler (CSU); 3 ♂♂, Laguna Atascosa, Cameron County, 9 March 1975, A. & M. E. Blanchard (one is C. V. Covell Jr. genitalia slide #1521) (USNM); 1 ♂, Santa Ana Wildlife Ref. (Hidalgo), 18 Nov. 1966, A. & M. E. Blanchard, (USNM); 1 ♂, same locality, Oct. 27, 1979, E. C. Knudson (ECK); 1 ♂, same locality, Nov. 18, 1984, E. C. Knudson (ECK); 2 ♂♂, Deutschburg, Jackson Co., 7 Oct. 1974, A. & M. E. Blanchard (USNM); 1 ♂, Brownsville, "5 – 11", Geo. Dorner, (F. H. Benjamin genitalia slide #651) (USNM); 1 ♂, same locality, 10 March 1929, O. Bucholz coll., C. V. Covell Jr. genitalia slide #847 (AMNH); 1 ♂, same locality, 22 May 1928, F. H. Benjamin (AMNH); 1 ♂, same locality, 18 Oct. 1939, J. Sperry (AMNH); 1 ♂, same locality, 8 March (no year), J. A. Grossbeck (AMNH); 1 ♂, same locality, 9 Nov. 1969, A. & M. E. Blanchard (USNM); 1 ♂, same locality, 4 March 1937, T. N. Freeman (CNC); 1 ♂, same locality and collector, 22 March 1937 (CNC); 5 ♂♂, 3 ♀♀, Mtn. View Acres, Bexar Co., June 20, 1972, C. V. Covell Jr., (MGCL); same locality and collector, June 21 1972, C. V. Covell female genitalia #1254 (MGCL); 1 ♂, Mtn. View Acres, Ebony Hill Research Station, Bexar Co., 1 Sep. 1971, R. O. and C. A. Kendall (TAMU); 1 ♂, same locality and collectors, 29 Sept. 1973 (TAMU); 2 ♂♂, same locality and collectors, 27 March 1972 (TAMU); 1 ♂, ex ovum, *Quercus virginiana*, WWFR, San Patricio Co., 31 May 1962 (TAMU); 1 ♂, same locality, host plant and collectors, 1 June 1962 (TAMU); 1 ♂, same locality and collectors *ex* foodplant *Quercus virginiana*, 3 June 1962, C. V. Covell Jr. genitalia slide #849 (AMNH); 1 ♂, same locality, host plant and collectors, 5 June 1962, C. V. Covell Jr. genitalia slide #1562 (TAMU); 1 ♂, same locality, host plant and collectors, 19–20 June, 1962, C. V. Covell Jr. genitalia slide #668 (AMNH); 1 ♂, Welder Wildlife Refuge nr. Sinton, San Patricio Co., 6 July 1963, R. O. & C. A. Kendall, (TAMU); 3 ♂♂, same locality and collectors, 14 Oct. 1963 (AMNH); 1 ♀, same locality, collectors and date, with note "feeds on *Quercus* in larval stage", C. V. Covell Jr. genitalia slide #855 (AMNH); 1 ♂, Crystal City, Zavala Co., 26 June 1969, Barry Wright (NSM); 1 ♂, Chaparral Wildlife Management Area, near Artesia Wells, 12 June 1972, Barry Wright (NSM); 1 ♀, same locality and collector, 11 June 1972 (NSM); 1♂, Kingsville, Kleburg Co., 1971, J. E. Gillaspy (UTA); 1 ♂, same locality and collector, 6 July 1981 (UTA); 2 ♂♂, same locality and collector, 12 Nov 1980 (one is C. V. Covell Jr. genitalia slide #1349) (UTA); 1 ♂, same locality and collector,

13 June 1989 (UTA); 1 ♂, same locality and collector, 22 July 1973 (UTA); 1 ♂, same locality and collector, 14–17 March 1982 (UTA); 1 ♂, same locality and collector, 30 March 1981, C. V. Covell Jr. genitalia slide #1348 (UTA); 1 ♀, same locality and collector, 10 June 1985, C. V. Covell Jr. genitalia slide #1256 (UTA); 1 ♂, Brooks Co., Falfurrias, 18 May 1983, Cavasos and Gillaspy (UTA); 2 ♂♂, 2 ♀♀, same locality and collectors, 18 June 1983, C. V. Covell Jr. ♂ genitalia slide #1253 and ♀ genitalia slides #1255 and #1350 (UTA); 1 ♂, Pharr, 30 March 1948, O. Bucholz, C. V. Covell Jr. genitalia slides #848 (AMNH); 1 ♂, Kenedy Co., Riskin Ranch, 17 Aug. 1976, J. E. Gillaspy (UTA); 1 ♂, Hidalgo Co., Santa Ana NWR, 14 Nov. 1990, P. A. Opler (CSU); 1 ♂, 1 ♀, same locality and collector, 30 Nov. 1990 (CSU); 1 ♂, Cattail Lake, same locality and collector as preceding, 13 Nov. 1990 (CSU). MEXICO. 1 ♂, Nuevo Leon, door light, Cola de Caballo (horsetail falls), 27 Oct. 1979, R. O. & C. A. Kendall (TAMU); 1 ♂, 1♀, Tamualipas, Nacimiento del Rio Frio, Gomez Farias, 16 March 1981, Gillaspy and Lara (UTA); 1♂, same locality and collectors, 30 March 1983 (UTA); Tamualipas, Rio Vergel, 25 km SW C. Victoria, 14–17 March 1982, J. E. Gillaspy (UTA).

Distribution and flight period (Fig. 24). This species is known from southern Texas (north to the vicinity of San Antonio, Bexar County) and northern Mexico, west into Arizona. It can be common in southern Texas. Capture records are for February into November.

Discussion: While in North America *I. kendallaria* most closely resembles the widespread *Idaea demissaria* (Hübner, 1831)—the only species with which it can easily be confused—*I. kendallaria* is also very similar in size, color, and pattern to other species not yet recorded in the United States. *Idaea spernata* (Walker, 1861)—and its synonyms, *I. botydaria* Walker (1863), *I. limitata* Warren (1897) and *I. pygmeata* Warren (1901)—all described from Venezuela, and *I. clothula* (Dyar, 1914) from Panama, resemble *I. kendallaria*. Their types differ in genital features from both *I. kendallaria* and *I. demissaria*.

Etymology: This species is named in fond memory of the late Roy O. Kendall, who with the help of his wife Connie contributed immensely to the knowledge of the Lepidoptera of Texas and northern Mexico.

Idaea elizabetharia Covell, **new species**
(Figs. 7 ♂ – 8 ♀, 11, 19–20, 25)

Diagnosis: Very similar in size, color and pattern to *Idaea skinnerata* (Grossbeck, 1907) (Figs. 9 ♂ and 10 ♀, 12, 21, 22), but male antenna has most segments with two pairs each of long setae, while antennal segments of *I. skinnerata* have fascicles of many and much shorter setae. Antemedial line of *I. elizabetharia* forewing usually indistinct or absent, but straight if present, not sharply angled in anterior third as in *I. skinnerata*. Basal area of *I. elizabetharia* has no darker brown shading as has *I. skinnerata*. Postmedial line of *I. elizabetharia* less strongly sinuous than in *I. skinnerata*, especially toward inner margin where that of *I. skinnerata* makes a strong curve toward wing base; *I. elizabetharia* has no dark outer shading of anterior two thirds of postmedial line as in most *I. skinnerata*. Male genitalia very similar to those of *I. skinnerata* (Fig. 21), but valve straight and blunt terminally in *I. elizabetharia* while that of *I. skinnerata* is bent dorsad and ends in a point. Phallus of *I. elizabetharia* has three large cornuti, two almost identical in size and curved alike and lying close together; that of *I. skinnerata* has two large cornuti and two clusters of many small straight, spine-like cornuti. Ductus bursae of *I. elizabetharia* shorter and less heavily sclerotized than that of *I. skinnerata* (Fig. 22); corpus bursae long, basally narrow, recurved and lined except in ovate terminal end with many small spines. Corpus bursae in *I. skinnerata* much shorter, pyriform, not recurved, with two semicircular patches of numerous moderately large spines.

Description (Figs. 7–8): Moderately small with body, legs and wings pale grayish tan. Front and palpi dark brown; interantennal fillet and antenna white to whitish tan. Male antenna with two triplets of long setae on most segments, each seta more than twice the length of antennal width; female antenna simple. Male hind tibia reduced but not flattened, and with neither spurs nor hair pencils. Maculation slightly contrasting with the ground color. Forewing brown along costa, heaviest toward base. Antemedial and medial lines faint, light brown, sometimes obscure, nearly straight; no basal dark brown shading. Discal dots present or absent. Postmedial line heaviest and most complete line, doubly bulging outward, then curved in toward base before reaching inner margin. Brown shading beyond postmedial line most extensive in anterior half of subterminal area, leaving a narrow band of ground color before outer margin. Hindwing pattern continues that of forewing. Underside shiny yellowish tan with postmedial line and shading pale brown. Forewing length: 8.0–9.5 mm.

Male genitalia (Fig. 19): Capsule very small, narrow with very large, straight phallus. Valve slightly turned inward, setose along inner side, rounded terminally. Uncus and gnathos oppose each other, uncus slightly longer than gnathos. Juxta subrectangular, membranous. Vinculum narrow and deep. Phallus with one large plate-like, spiculate cornutus and two medium-sized, nearly identical curved, pointed cornuti lying closely together in uninverted vesica.

Female genitalia (Fig. 20): Papillae anales each divided into two lobes. Small ostium bursae opens into evenly wide, moderately sclerotized ductus bursae; long basal neck of the corpus bursae narrower than ductus bursae, heavily spined, and recurved like letter "J" before swelling to a subovoid, relatively small membranous sac; ductus seminalis arises from the corpus bursae opposite its connection with the ductus bursae. Signum absent, but some spines line corpus bursae in no definite pattern.

Immature stages: Unknown.

Holotype (Fig. 7). ♂, Madera Canyon, 5600', Santa Rita Mts., Santa Cruz Co., Ariz., 25 June 1963, J. G. Franclemont (CUIC).

Paratypes (27): ARIZONA. 1 ♀, Madera Canyon, 5600', Santa Rita Mts., Santa Cruz Co., 26 June 1963, J. G. Franclemont (CUIC); 1 ♂, Ash Canyon, Cochise Co., 23 June 1988, C. V. Covell Jr., C. V. Covell Jr. genitalia slide #1360 (MGCL); 1 ♀, Cave Creek, Chiricahua Mts., Cochise Co., 21 Aug. 1951, Lloyd Martin (LACM); 2 ♂♂, 1 ♀, Pine Crest, Mt. Graham, Pinaleno Mts., Graham Co., 7300', June 28, 1955, Lloyd M. Martin, C. V. Covell Jr. genitalia slide #1233 (LACM); 1 ♂, same location, June 29, 1955, Wm. Rees, C. V. Covell Jr. genitalia slide #1231 (LACM); 3 ♂♂, 1 ♀, camp, Oak Creek Canyon, Coconino Co., 5000', July 19, 1957, R. H. Leuschner, C. V. Covell Jr. ♂ genitalia slides #1362 & #1365 (MGCL); 1 ♂, 1 ♀, Oak Creek Canyon, Coconino Co., 5500', 11 July 1988, R. H. Leuschner, C. V. Covell Jr. ♀ genitalia slide #1368 (MGCL); 1 ♂, 1 ♀, Madera Cyn., Santa Cruz Co., 5600 ft., 6 July 1963, W. R. Bauer and J. S. Buckett, C. V. Covell Jr. ♂ genitalia slide #1367 (UCD); 1 ♀, Madera Cyn., Santa Cruz Co., 4880 ft., 6 July 1963, W. R. Bauer and J. S. Buckett (UCD); 5 ♂♂, Stewart campground, Portal, 5000 ft., Cochise Co., 2–3 July 1987, J. B. Heppner, C. V. Covell Jr. genitalia slide #1366 (MGCL); Palmerlee, Cochise Co. (USNM); 1 ♂, Miller Canyon, Huachuca Mts., Cochise Co., June 25, 1955, Lloyd Martin, C. V. Covell Jr. genitalia slide #1373 (LACM); Sierra Anche Exper. Sta. El. 5000', Gila Co., August 23–25, 1958, R. H. Leuschner, Coll., C. V. Covell Jr. genitalia slide #1375 (MGCL); Tonto Creek Camp Ground, near Kohls Ranch, Gila Co., June 28, 1956, L. M.

Martin, J. A. Comstock and W. A. Rees (LACM). NEW MEXICO. 1 ♀, Jemez, July 25, '19, C. V. Covell Jr. genitalia slide #1370 (MCZ). TEXAS. 1 ♂, Davis Mtns., 6000', J. Davis Co., 13 Aug. 1987, R. L. Leuschner, C. V. Covell Jr. genitalia slide #1374 (MGCL); 1 ♂, Dog Canyon, 6400 ft., Guadalupe Mts. N.P., Culberson Co., 7–9 June 1991, E. C. Knudson (ECK).

Distribution and flight period (Fig. 25). Western Texas through New Mexico into Arizona. June to late August.

Discussion: These two species are sympatric in a large portion of their known ranges, although *I. skinnerata* has been found as far north as Colorado but not *I. elizabetharia*. On the basis of specimens examined, the flight information differs slightly: *I. skinnerata* has been collected from July 22 to Sept. 2, while *I. elizabetharia* has been recorded from June 23 to Aug. 23. Recorded altitudes differ slightly: *I. skinnerata*, 5,000–8,400 ft. elev.; *I. elizabetharia*, 4,880–7,300 ft. elev.

Etymology: I take great pleasure in naming this species in honor of my dear wife Elizabeth Barnes Covell, with thanks for her many years of devoted support of my entomological pursuits.

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LITERATURE CITED

COVELL, C. V. Jr. 2011. *Idaea asceta* (Prout) (Geometridae: Sterrhinae) from Texas, new to the North American fauna. News Lepid. Soc. 53: 79, 2 figs.

DYAR, H. G. 1914. Report on the Lepidoptera of the Smithsonian Biological Survey of the Panama Canal Zone. Proc.U.S.N.M. 47, no. 2050: 139–350.

GROSSBECK, J. A. 1907. A new genus and two new species of Geometridae. Ent. News 18: 252–253.

HAUSMANN, A. 2004. The Geometrid Moths of Europe. Volume 2: Sterrhinae. Apollo Books, Stenstrup, Denmark. 600 pp.

HODGES, R. W., T. DOMINICK, D. R. DAVIS, D. C. FERGUSON, J. G. FRANCLEMONT, E. G. MUNROE, & J. A. POWELL (eds.). 1983. Check List of the Lepidoptera of America North of Mexico. The Wedge Entomological Research Foundation. 284 pp.

TREITSCHKE, G. F. 1825. Schmetterlinge von Europa, 5: 446.

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