

# Lepidoptera of North America

## 14. Geometroidea

Geometridae: Larentiinae: Eupitheciini (Part)



Contributions of the  
C.P. Gillette Museum of Arthropod Diversity  
Colorado State University

Cover illustration: *Eupithecia tricolorata* Cassino, photo by Clifford D. Ferris

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Geometridae: Larentiinae: Eupitheciini (Part)

by

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C.P. Gillette Museum of Arthropod Diversity

Colorado State University

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## Introduction

In 1949 J. H. McDunnough published the first comprehensive revision of the North American Eupitheciini including the genera *Eupithecia*, *Nasusina*, and *Prorella*. Other than some scattered papers of limited scope in scientific journals, no additional revision occurred until 1990 with K. B. Bolte's comprehensive guide to the Canadian *Eupithecia*. Bolte synonymized a number of the taxa that McDunnough treated as distinct species, as well as elevating others to species status. He described two new species: *lafontaineata* [MONA 7548.1] and *sharronata* [MONA 7537.1]<sup>1</sup>. Since 1949, sixteen additional species of *Eupithecia* (including the two in Bolte, 1990) and one species of *Nasusina* have been described, along with some additional proposed synonymies.

As knowledge of the North American *Eupithecia* grows some of Bolte's synonymies may prove to be premature. Much work remains to be done regarding barcoding of this genus. In the future, genomic sequencing and analysis of moths will undoubtedly include *Eupithecia* with likely new revelations. The McDunnough revision still forms a basis for information to anyone embarking on a serious study of the North American Eupitheciini, and it is available as a free PDF download from the American Museum of Natural History website. The Bolte publication is available from the Canadian Entomological Society. Although there has been some discussion among moth taxonomists that a comprehensive monograph covering the North American Eupitheciini should be produced (such as a MONA fascicle), to date, no potential author has come forward and agreed to embark on this project. It would be a formidable task since some 200 species are found in North America. Worldwide there are many hundred more. Consequently and in the interest of providing a timely update for this group, a decision has been made to produce an online monograph with the option of a free PDF download. This approach has the advantage of immediate availability to a wide audience and provides the opportunity for immediate updating as new information becomes available.

This web-based monograph is composed of a plate that illustrates for each species both sexes (when known, or available for study) of the adult moths and their associated

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<sup>1</sup> MONA numbers refer to Hodges et al., 1983. *Check List of the Lepidoptera of America North of Mexico*.

genitalia. Minimal accompanying text provides the following information: literature citation for the original description; type locality; location of the type; basic biology when known and flight period; geographic distribution; and key diagnostic characters. Many of the species illustrated were included by McDunnough (1949) but the genitalia were incompletely shown, or shown for only one sex.

The original web posting concentrated on the species found in western North America. This current version has been expanded to include all of the North American species of *Eupithecia*, as well as *Nasusina* and *Prorella*. Since this publication is still to some degree a work-in-progress, additional material will be added when specimens become available for study. Some species have not been available to date.

In several instances in the plates, genitalic slide numbers are included. These numbers refer to slides held in public museum collections. The author does not make permanent slides. The author's genitalia preparations are stored in glycerin-filled polyethylene vials attached to the specimen pins. Temporary slides for photography are prepared using glycerin as the supporting medium.

For many species the date when the holotype was collected is unknown, or not included in the original description. The date has been included when known, and is the case for recently described taxa.

It should be noted that most species of *Eupithecia* cannot be reliably identified by simple visual examination of the adults, since there are many look-alike species. Some institutional collections contain unreliably determined specimens and inclusion of data based on such material in publications and data-bases has introduced misleading information about their occurrence (Ferris and Opler, in preparation). Dissection of the genitalia is necessary, and in some instances the vesica of the phallus must be everted to visualize the chitinized armature and the diverticuli (when present). The genitalia terminology used in the plates is as follows: capsule = male genitalia with the phallus removed; phallus = aedeagus = penis; plate = ventral sclerotization of the eighth abdominal sternite; genitalia = complete female genitalia; bursa = corpus bursae with or without the ductus bursae and ostium bursae. In some instances, the male genital plate

may be exposed for viewing by gently brushing away the overlying scales. One must use caution, however, and make sure that the entire plate is visible.

### **Museum Acronyms and addresses**

- AMNH American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024.
- ANSP The Academy of Natural Sciences of Drexel University, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103.
- BM Museum of Natural History (formerly British Museum of Natural History), Cromwell Road, London, UK SW7 5BD.
- BMNH Now BM.
- CNC Canadian National Collection of Insects & Arachnids, K. W. Neatby Building, 960 Carling Ave., Ontario, Canada K1A 0C6.
- EME Essig Museum of Entomology – Berkeley Natural History Museums, 1170 Valley Life Sciences Bldg., Berkeley, CA 94720.
- GMAD C. P. Gillette Museum of Arthropod Diversity, Colorado State University, Ft. Collins, CO 80523.
- LACM Now NHM.
- MGCL McGuire Center for Lepidoptera & Biodiversity, Florida Museum of Natural History, University of Florida Cultural Plaza, 3215 Hull Road, Gainesville, FL 32611–2710.
- NHM Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, CA 90007.
- MCZ Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, MA 02138.
- NHRS Naturhistoriska Riksmuseet Frescativägen 40, 114 18 Stockholm, Sweden.
- NMNH National Museum of Natural History, Constitution Ave. NW & 14th St. NW, Washington, DC 20560.
- UBCV Beaty Biodiversity Museum, University of British Columbia, 2212 Main

Mall, Vancouver, British Columbia, Canada, V6T 1Z4.

USNM Now NMNH.

ZFMK Zoological Research Museum Alexander Koenig, Adenauerallee 160,  
53113 Bonn, Germany.

The species included herein as plates are listed below. The species are arranged in the presumed phylogenetic order following Pohl et al. (2016). The Pohl et al. assigned species number (in the MONA fascicle style) is shown in [ ] at the end of each entry. Most North American *Eupithecia* species have not been assigned common names and I have opted not to include in this monograph the few that exist.

### ***EUPITHECIA***

*palpata* Packard, 1873 [7449]  
*slossonata* McDunnough, 1949 [7451]  
*albimontanata* McDunnough, 1940 [7452]  
*peckorum* Heitzman & Enns, 1977 [7453]  
*longidens* (Hulst, 1896) [7454]  
*ornata* (Hulst, 1896) [7455]  
*monacheata* [Cassino & Swett], 1922 [7456]  
*terrestrata* McDunnough, 1944 [7457]  
*karenae* Leuschner, 1965 [7458]  
*columbiata* (Dyar, 1904) [7459]  
*maestosa* (Hulst, 1896) [7460]  
*matheri* Rindge, 1985 [7460.1]  
*subvirens* Dietz, 1875 [7461]  
*castellata* McDunnough, 1944 [7462]  
*chiricahuata* McDunnough, 1946 [7463]  
*insolabilis* (Hulst, 1900) [7464]  
*interruptofasciata* Packard, 1873 [7551]  
*catalinata* McDunnough, 1944 [7465]  
*edna* (Hulst, 1896) [7467]

*owenata* McDunnough, 1944 [7467]  
*longipalpata* Packard, 1876 [7468]  
*sabulosata* McDunnough, 1944 [7469]  
*macrocarpata* McDunnough, 1944 [7470]  
*placidata* Taylor, 1908 [7471]  
*unicolor* (Hulst, 1896) [7472]  
*vicksburgi* Rindge, 1985 [7472.1]  
*pseudotsugata* MacKay, 1951 [7473]  
*miserulata* Grote, 1863 [7474]  
*misturata* (Hulst, 1896) [7476]  
*bivittata* (Hulst, 1896) [7478]  
*pygmaeata obumbrata* Taylor, 1906 [7479]  
*bryanti* Taylor, 1906 [7480]  
*coloradensis* (Hulst, 1896) [7481]  
*regina* Taylor, 1906 [7483]  
*borealis* (Hulst, 1898) [7485]  
*jejunata* McDunnough, 1949 [7486]  
*subfuscata* (Haworth, 1809) [7487]  
*tripunctaria* Herrich-Schäffer, 1852 [7488]  
*harrisonata* MacKay, 1951 [7490]  
*fletcherata* Taylor, 1907 [7491]  
*fredericki* Blanchard & Knudson, 1985 [7491.1]  
*casloata* (Dyar, 1904) [7492]  
*sheppardata* McDunnough, 1938 [7494]  
*affinata* Pearsall, 1908 [7495]  
*rotundopuncta* Packard, 1871 [7496]  
*sierrae* (Hulst, 1896) [7497]  
*quakerata* Pearsall, 1909 [7499]  
*bolterii* (Hulst, 1900) [7500]

*plamata* [Cassino & Swett], 1922 [7501]  
*piccata* Pearsall, 1910 [7502]  
*pretansata* Grossbeck, 1908  
*neomexicana* McDunnough, 1946 [7504]  
*alpinata* Cassino, 1927 [7505]  
*prostrata* McDunnough, 1938 [7506]  
*persimulata* McDunnough, 1928 [7507]  
*exudata* Pearsall, 1909 [7508]  
*herefordaria* Cassino & Swett, 1923 [7509]  
*cazieri* Kirkwood, 1961 [7510]  
*macdunnoughi* Rindge, 1952 [7512]  
*nabokovi* McDunnough, 1946 [7513]  
*biedermanata* Cassino & Swett, 1922 [7514]  
*miamata* Cassino, 1925 = junior synonym of *biedermanata* [7582]  
*cupressata* Pearsall, 1910 [7515]  
*intricata taylorata* Swett, 1907 [7518]  
*uinta* Rindge, 1956 [7519]  
*satyrata dodata* Taylor, 1906 [7520]  
*nimbicolor* (Hulst, 1896) [7522]  
*strattonata* Packard, 1873 [7523]  
*macfarlandi* Ferris, 2007 [7523.1]  
*cimcifugata* Pearsall, 1908 [7524]  
*russeliata* Swett, 1908 [7526]  
*swettii* Grossbeck, 1907 [7530]  
*indistincta* Taylor, 1910 [7531]  
*zygadeniata* Packard, 1876 [7532]  
*cretacea* (Packard, 1874) [7533]  
*nimbosa* (Hulst, 1896) [7534]  
*behrensata behrensata* Packard, 1876 [7535]

*behrensata multiscripta* (Hulst, 1896) [7536]  
*sewardata* Bolte, 1977 [7537]  
*sharronata* Bolte, 1990 [7537.1]  
*gelidata* Möschler, 1860 [7538]  
*multistrigata* (Hulst, 1896) [7539]  
*perfusca* (Hulst, 1898) [7540]  
*annulata* (Hulst, 1896) [7543]  
*cognizata* Pearsall, 1910 [7547]  
*lachrymosa* (Hulst, 1900) [7548]  
*lafontaineata* Bolte, 1990 [7484.01]  
*lariciata* (Freyer, 1841) [7489.01]  
*niphadophilata* Dyar, 1904 [7552]  
*subcolorata* (Hulst, 1898) [7553]  
*appendiculata* McDunnough, 1945 [7554]  
*assimilata* Doubleday, 1856 [7528.01]  
*zelmira* Swett & Cassino, 1920 [7555]  
*segregata* Pearsall, 1910 [7557]  
*pinata* Cassino, 1925 [7558]  
*tenuata* Hulst, 1880 [7559]  
*phyllisae* Rindge, 1963 [7560]  
*agnesata* Taylor, 1908 [7561]  
*huachuca* Grossbeck, 1908 [7562]  
*woodgatata* (Cassino & Swett) [7563]  
*stellata* (Hulst, 1896) [7564]  
*bowmani* Cassino & Swett, 1923 [7565]  
*niveifascia* (Hulst, 1898) [7566]  
*broui* Rindge, 1985 [7565.1]  
*joanata* [Cassino & Swett], 1922 [7567]  
*flavigutta* (Hulst, 1896) [7568]

*sonora* Ferris & Opler, 2008 [7568.1]  
*sperryi* McDunnough, 1939 [7569]  
*johnstoni* McDunnough, 1945 [7570]  
*rindgei* McDunnough, 1949 [7572]  
*cocoata* Pearsall, 1908 [7573]  
*albicapitata* Pakard, 1876 [7574]  
*mutata* Pearsall, 1908 [7575]  
*columbrata* McDunnough, 1940 [7577]  
*helena* Taylor, 1906 [7576]  
*spermaphaga* (Dyar, 1917) [7578]  
*purpurissata* Grossbeck, 1980 [7579]  
*mystiata* Cassino, 1925 [7580]  
*gilvipennata* Pearsall, 1912 [7581]  
*scabrogata* Pearsall, 1912 [7583]  
*hohokamae* Rindge, 1963 [7584]  
*adequata* Pearsall, 1910 [7585]  
*acutipennis* (Hulst, 1898) [7586]  
*absinthiata* (Clerk, 1759) [7586.01] (formerly 7529)  
*subapicata* Guenée, [1858] [7587]  
*shirleyata* Cassino & Swett, 1922 [7588]  
*sinuata* McDunnough, 1946 [7589]  
*redingtonia* McDunnough, 1949 [7590]  
*gilata* Cassino, 1925 [7591]  
*jamesi* Ferris & Mironov, 2007 [7593.01]  
*anticaria* Walker, 1862 [7594]  
*nonanticaria* Ferris, 2007 [7594.1]  
*pertusata* McDunnough 1938 [7595]  
*tricolorata* Cassino, 1927 [7596]  
*carneata* McDunnough, 1946 [7597]



*classicata* Pearsall, 1909 [7598]  
*penumbrata* Pearsall, 1912 = junior synonym of *classicata* [7599]  
*graefii* (Hulst, 1896) [7600]  
*nevadata nevadata* Packard, 1871 [7601]  
*nevadata morensata* Cassino & Swett, 1922 [7601a]  
*implorata* (Hulst, 1896) [7602]  
*cestata* (Hulst, 1876) [7603]  
*cestatoides* McDunnough, 1949 [7604]  
*ravocostaliata* Packard, 1876 [7605]  
*penablanca* Ferris, 2007 [7605.2]  
Unknown (or Mexican) species 1  
Unknown species 2  
Unknown species 3  
Unknown species 4 – near *maestosa*  
Unknown species 5  
Unknown species 6  
Unknown species 7  
Unknown species 8  
Unknown species 9  
Unknown species 10  
Species near *palpata*

#### ***NASUSINA***

*inferior* (Hulst, 1896) [7606]  
*vallis* Ferris, 2004 [7606.1]  
*vaporata* (Pearsall, 1912) [7607]  
*minuta* (Hulst, 1896) [7609]

#### ***PRORELLA***

*gypsata* Grote, 1882 [7611]  
*discoidalis* (Grossbeck, 1908) [7612]

*leucata* (Hulst, 1896) [7613]  
*albida* Cassino & Swett, 1923 [7614]  
*ochrocarneata* McDunnough, 1949 [7615]  
*irremorata* (Dyar, 1923) [7616]  
*tremorata* McDunnough, 1949 [7617]  
*remorata* (Grossbeck, 1907) [7618]  
*desperata* (Hulst, 1896) [7619]  
*artestata* (Grossbeck, 1908) [7620]  
*mellisa* (Grossbeck, 1908) [7621]  
*insipidata* (Pearsall, 1910) [7622]  
*opinata* (Pearsall, 1909) [7623]  
*protoptata* (McDunnough, 1938) [7624]  
Unknown species 1  
Unknown species 2  
Unknown species 3

The plates for a few species are incomplete in that one sex is missing. When/if specimens become available, these plates will be updated. Specimens of some species were not available for study initially, and some remain unavailable. The additional species have been placed in the plate appendix with plate numbers starting at 176. Additions are (and will be) by plate number order rather than phylogenetic order. This is so that the entire plate sequence does not have to be renumbered to accommodate additions. The species not currently included are: *Eupithecia pusillata* (see plate 188 for comments), *cretata*, *litoris*, *albigrisata*, *ammonata*, *olivacea*, *vitreotata*, *dichroma*, *plumasata*, *succenturiata*; *Nasusina mendicata*; *Prorella emmendonina*.

#### **Additional information and discussion for selected species in the plate series**

7486 *Eupithecia jejuna*. This species has been confused with *E. herefordaria* and *E. matheri* because of the superficial similarity of the male genital plates.

7503 *Eupithecia pretansata*. Until recently this species was known only from the female holotype placed in ANSP. Through the courtesy of Jason D. Weintraub at ANSP, I was able to borrow the abdomen and make a dissection. The holotype and genitalia are shown in Plate 190. It turns out this species has a moderately wide, but disjunct, geographic distribution from southeastern Arizona to western Texas. I was able to collect a small series during the past decade and thought the moth to be an undescribed *Prorella* based upon the genitalia. Both sexes and accompanying genitalia are illustrated in Plate 191. Although I have collected in Carr Canyon (the type locality) on many occasions, I have not found *E. pretensata* there or at any other sites in the Huachuca Mountains.

7508 *Eupithecia exudata*. This is an enigmatic species, still known apparently only from the unique type specimen. The genitalia were damaged by Cassino when he made the slide. In recent years, various collectors have considered *E. exudata* to be the same as *E. matheri* Rindge. In the 1985 article in which he described *matheri*, Rindge included line illustrations of the phallus and plate of *exudata* (text figs. 27–28), presumably reconstructed from what he could see from Cassino's slide. The phallus agrees closely with that of *annulata*. The plate in his drawing, however, is more deeply incised than in *annulata*. McDunnough (1949, p. 595) thought from what he could see of the plate that it was close to *prostrata*, which is not so deeply incised as in Rindge's drawing. Rindge's illustrations of the male genitalia of *matheri* are quite distinct from his rendering for *exudata*. Based on what can be inferred from the slide and the habitus of the moth, as well as the early-season flight and size, suggest a form of *E. annulata*. *E. annulata* may prove to be a species complex, rather than a single species.

7509 *Eupithecia herefordaria* and *E. matheri*. McDunnough (1949, fig. 7E) illustrated as *E. herefordaria* the genitalia of *E. matheri*, as corrected in 1985 by Rindge. To date, *E. herefordaria* is known only from Cochise Co., in southeastern Arizona. *E. matheri* is widely distributed from Ontario south to Mississippi and westward through Louisiana to western Texas (Jeff Davis Co.).

7551 *Eupithecia interruptofasciata* Packard, 1873. This taxon has been treated as a full species and as a subspecies of the Old World *E. pusillata* (see below), which is widely distributed in the Palaearctic region eastward to Kamchatka and Sakhalin, and westward to Iceland and SW Greenland (ssp. *scoriata* Staudinger, 1857), and the Canary Islands (Mironov, 2003). The BOLD sites list the two entities as separate species. Bolte, 1990 illustrated the adults and genitalia of *interruptofasciata*, including the everted vesica of the male genitalia, but not all of the features of the female genitalia.

*Eupithecia pusillata* [Dennis & Schiffermüller, 1775], Juniper Looper, Juniper Pug [type locality, Vienna region, Austria]. Presence of this species in North America in British Columbia, Canada has been confirmed by barcoding as reported by deWaard, et al., 2010. Mironov, 2003 illustrated the adults and genitalia of both sexes, but not the everted vesica of the phallus. Based on the illustrations in Bolte and Mironov, there appear to be some subtle genitalia differences between the two species.

7533 *Eupithecia cretacea*. This species has a wide distribution in North America from Alaska south to California thence eastward across most of southern Canada and the bordering U.S. states to western New Brunswick and Vermont. In the Rocky Mountain region it occurs from Idaho, Wyoming, Colorado to northern New Mexico. The subspecies *E. cretacea fenestrata* Millère, 1874 has a wide distribution in Europe from France to central Italy, Greece and the Balkan Peninsula (Mironov, 2003). The moths of this subspecies are large and white and resemble the phenotype found in California and the Rocky Mountain region. Elsewhere in North America, some geographic populations consist of smaller gray individuals although the genitalia show no variation from western specimens. The BOLD barcoding project species page for *E. cretacea* summarizes the barcode results from 233 specimens representing various phenotypes.

7335/7336 *Eupithecia b. behrensata* Packard, 1876/*E. b. multiscripta* (Hulst, 1896). Recent barcoding suggests that *E. behrensata* and *E. multiscripta* represent geographic races of a single species. The coastal *b. behrensata* is darker and less distinctly maculated than the paler gray stronger maculated *b. multiscripta* found in the Rocky Mountain region.

7573 *Eupithecia cocoata* Pearsall, 1908. This taxon was described from a single female specimen collected on Plummer's Island, Maryland, and illustrated by McDunnough, 1949. Heitzman & Enns (1977) described the male and illustrated the adult and genitalia. They also reported the species' occurrence in Arkansas and Missouri. Blanchard & Knudson (1985) reported the capture of three specimens in Brown Co., Texas.

7593.01 *Eupithecia jamesi* Ferris & Mironov, 2007. This is a replacement name for *E. deserticola*, McDunnough, 1946. The name *deserticola* McD. is a junior secondary homonym of *Tephroclystia deserticola* Turati, 1934 [type locality North Africa (Libya)] and now placed in genus *Eupithecia*.

7605.1 *Eupithecia succenturiata* (Linneaus, 1758). There are two Alaska records based on barcode analysis. This is a Euro–Siberian species that is widespread in Europe. The central area of the forewings is broadly orange in fresh examples.

**Genus *Prorella*.** McDunnough (1949, p. 692) discussed *Prorella* relative to *Eupithecia*. Currently fifteen species are recognized, but they have been little studied and the biology for all of them is unknown. Most of the species fly late in the season from August to October. The female genitalia are usually characterized by extremely long apophyses. All of the species occur in the region of western North America from Texas to California, and at least one species ranges northward to Montana. The majority, however, occur in the band from western Texas through New Mexico to Arizona. During the course of this project three additional *Prorella* species were uncovered from Arizona and New Mexico. They are apparently undescribed and plates are included should users of this web monograph encounter them.

**The *Prorella artestata–insipidata–mellisa* complex.** The *artestata–insipidata–mellisa* species group is particularly vexing. The type specimen adults and the genitalia of *artestata* and *insipidata* have been examined from high-resolution digital photographs. Only the adult female holotype of *artestata* is in good condition, but the genitalia were over-cleared with some loss of detail. The male holotype of *mellisa* is in poor condition with the abdomen, antennae, and right hindwing missing. A large wedge-shaped portion

of the left hindwing is also missing. The forewings, however, do clearly show the tawny coloration ascribed to this species. The wings of the male holotype of *insipidata* are totally intact, but they are badly rubbed, making it difficult to see the maculation, making one wonder how Pearsall was able to make such a detailed written description. The genitalia slide medium has yellowed with age and it is difficult to see the cornuti in the phallus clearly. I can't fully reconcile McDunnough's drawing of the phallus (1949, text fig. 20G) with the holotype slide. An additional problem associated with these three species is that the presumed males and females of each species were collected at different localities, with some widely spaced geographically. *P. artestata* was described from a single female from Carr Canyon in the Huachuca Mts. of Cochise Co., Arizona. The presumed associated males have been collected flying with females in a number of sites in southeast Arizona and southwest New Mexico, and agree in habitus with the holotype. *P. mellisa* was described from a single male collected in September in Yavapai Co., Arizona. McDunnough (1949) illustrated the holotype (then in much better condition than now) and the genitalia from a presumed female from Texas. Generally this species is easily recognized by the distinctive tawny or ochreous ground color of the central portion of the forewings, although some examples (males especially) may be rather dusky. The female cotype of *P. insipidata* was collected in Havilah, California, and because of its ochreous color, it is most probably *mellisa*, thus further confusing the separation of these three species, if they are all separate.

7623 *Prorella opinata* (Pearsall, 1909). There are two distinct phenotypes, as noted with adults illustrated by McDunnough (1949), and illustrated by plates in this monograph. The pale or ochreous form has a limited distribution in Colorado, Wyoming, and Utah. In Albany Co., Wyoming the two color forms can be collected at the same site, thus suggesting a single species. The genitalia (both sexes) appear to be identical.

*Prorella* species 1. Adults can be confused with both *P. desperata* and *opinata*. The genitalia provide immediate separation.

*Prorella* species 2. The peculiar form of the female genitalia suggests affinity to *Prorella*. I have only this single somewhat worn specimen.

*Prorella* species 3. This may be just a variant of *P. insipidata*, but the vesica armature appears to be slightly different from what can be discerned from the slide of the holotype of *insipidata*.

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### **Literature cited (with annotations)**

For those users of this site who might wish to check published original descriptions that appear in older journals, the Biodiversity Heritage Library is an excellent resource: [www.biodiversitylibrary.org](http://www.biodiversitylibrary.org).

Blanchard, A. & Knudson, E. C., 1985. The *Eupithecia* of Texas, with the description of a new species. *Proceedings of the Entomological Society of Washington* 87(3): 662–674, figs. 1–75. Original description of *E. fredericki* and discussion of 22 additional species.

Boisduval, J. B. & Guenée, A., [1858]. *Histoire naturelle des Insectes (Spécies général des Lépidoptères)*. 10:331.

Bolte, K. B., 1977. A new species of *Eupithecia* (Lepidoptera: Geometridae) from Alaska. *The Canadian Entomologist* 109(7):1019, figs. 1–3. Original description of *E. seawardata*.

- , 1990. Guide to the Geometridae of Canada (Lepidoptera) VI. Subfamily Larentiinae 1. Revision of the Genus *Eupithecia*. Memoirs of the Entomological Society of Canada 151:1–253. The first major revision of genus *Eupithecia* since McDunnough, 1949. Color photographs of adults, drawings of male and female genitalia, distribution maps, and SEM photographs of various anatomical structures are included. Many previous names are synonymized. Two new species are described (*E. lafontaineata* and *E. sharronata*). Coverage is limited to species found in Canada.
- Cassino, S. E., 1925a. Some new Geometridae. *The Lepidopterist* 4(6–7):41–56. Original description of *E. miamata*.
- 1925b. *Proceedings of the Entomological of Washington* 12(3):144.
- 1927a. Some new Geometridae. *The Lepidopterist* 4(8–9):57–71. Original description of *E. alpinata* and other species.
- 1927b. Some New Geometrids. *The Lepidopterist* 4(11):84–88. Original description of *E. tricolorata*.
- Cassino, S. E. & Swett, L. W., 1922a. Some new Geometrids. *The Lepidopterist* 3(6–7):144–150.
- 1922b. New Geometrids. *The Lepidopterist* 3(9):157–166.
- [1922c]. Some new Geometridae. *The Lepidopterist* 3(10):167–174. Original description of *E. biedermaana*, *E. monacheata* and *E. joanata*.
- [1922d]. Some new Geometrids. *The Lepidopterist* 3(11):178.
- 1923. Some new Geometrids. *The Lepidopterist* 4(3):18–24. Original description of *E. herefordaria*.
- Clerk, C. A., 1759. *Icones Insectorum Rariorum cum nominibus eorum Holmiae*. V. 84 pp.
- deWaard, J. R., Humble, L. M., & Schmidt, B. C., 2010. DNA barcoding identifies the first North American records of the Eurasian moth, *Eupithecia pusillata* (Lepidoptera: Geometridae). *Journal of the Entomological Society of British Columbia* 107:1–7.



- Dietze, K. von., 1875. Beitrage zur Kenntniss der arten der Gattung *Eupithecia* Curt.  
*Stettiner Entomologische Zeitung* 36:236–256.
- Doubleday, H., 1856. List of the British *Eupithecia* with notes on some of the species.  
*The Zoologist* 14:5139–5144.
- Dyar, H. G., 1904. The Lepidoptera of the Kootenay District of British Columbia.  
*Proceedings of the U.S. National Museum*. 27:888–901.
- 1917. Miscellaneous new American Lepidoptera. *Insecutor Inscitiae Menstruus* 11(4–6):65–69.
- 1923. New American Lepidoptera. *Insecutor Inscitiae Menstruus* 11(1–3):  
12–30.
- Ferris, C. D., 2004a. A new species of *Nausina* Pearsall from Colorado (Lepidoptera:  
Geometridae: Eupitheciini). *Zootaxa* 467:1–9, figs. 1–23. Original description of  
*N. vallis*.
- 2004b. Taxonomic note on four poorly known Arizona *Eupithecia* Curtis  
(Lepidoptera: Geometridae: Eupitheciini). *Zootaxa* 738:1–19, figs. 1–22. *E.*  
*miamata* is placed as a junior synonym of *E. biedermanata*; *E. penumbrata* is  
placed as a junior synonym of *E. classicata*. *E. gilvipennata* is also discussed.
- 2006. Taxonomic note on *Eupithecia cupressata* Pearsall (Lepidoptera:  
Geometridae: Eupitheciini). *Zootaxa* 1255:63–68, figs. 1–12. The male of *E.*  
*cupressata* is described with illustrations of adults and genitalia of both sexes.
- 2007. Three new species of *Eupithecia* Curtis from Arizona and New  
Mexico with discussion of associated species (Lepidoptera: Geometridae:  
Eupitheciini). *Zootaxa* 1516:49–60, figs. 1–62. Original descriptions of *E.*  
*macfarlandi*, *nonanticaria*, *penablanca*. *E. anticaria* is discussed.
- Ferris, C. D. & Mironov, V., 2007. Replacement name for *Eupithecia deserticola*  
(Lepidoptera: Geometridae: Eupitheciini). *The Canadian Entomologist* 139:1312–  
132, figs. 1–3. *E. jamesi* is proposed as a replacement name for *E. deserticola*  
McD., preoccupied by *E. deserticola* (Turati).

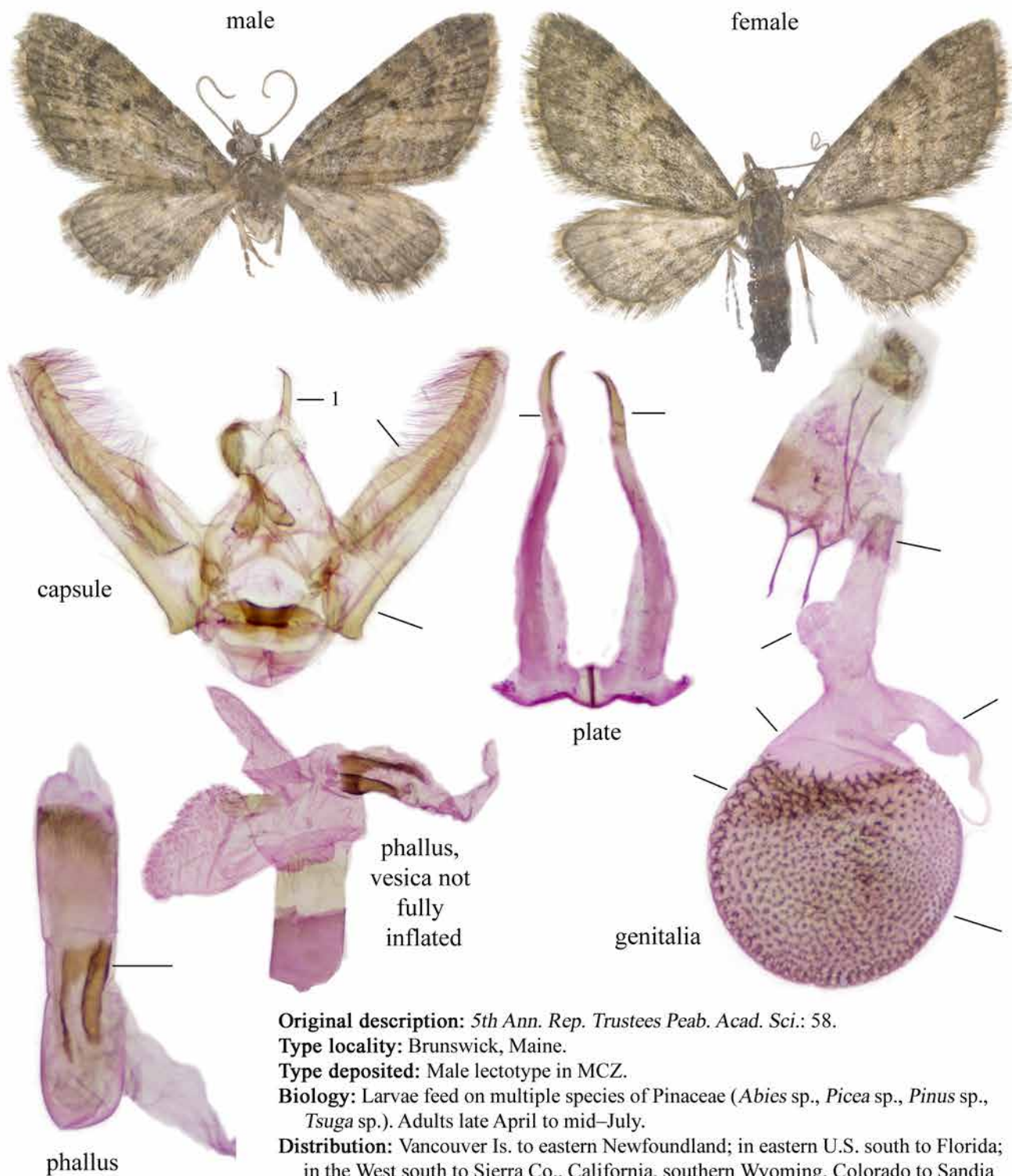
- Ferris, C. D. & Opler, P. A., 2008. A new species of *Eupithecia* Curtis (Lepidoptera: Geometridae: Eupitheciini) from Arizona and New Mexico, USA, and Sonora, Mexico. *Proceedings of the Entomological Society of Washington* 110(1):87–94, figs. 1–28. *E. sonora* is described and compared with *E. flavigutta*.
- Freyer, C. F., 1841. *Neurere Beitrag Schmettkde* 4(6):135. plate 366.
- Grossbeck, J. A., 1907. Notes on *Eupithecia*, with descriptions of new species. *Entomological News* 18(8):342–350.
- 1908. New moths of the family Geometridae. *Journal of the New York Entomological Society* 16(1):10–31.
- Grote, A. R., 1863. Additions to the Catalogue of U.S. Lepidoptera, No. 3. *Proceedings of the Entomological Society of Philadelphia* 2:30–32.
- 1882. New Moths. *The Canadian Entomologist* 14(10):188.
- Guenée, A., [1858]. In Boisduval, Boisduval & Guenée, *Histoire naturelle des Insectes (Spécies général des Lépidoptères)*. 10:331.
- Haworth, A. H., 1803–1828. *Lepidoptera Britannica*. London. 609 pp.
- Heitzman, R. L. & Enns, W. R., 1977. Descriptions of a new species of *Eupithecia* and the male of *E. cocoata* Pearsall (Geometridae). *Journal of Research on the Lepidoptera* 16(2):75–82, pl. I figs. 1–6, pl. II, figs. 7–10. Original description of *E. peckorum* and description of the male of *E. cocoata* (pl. I figs. 4–6, pl. II fig. 8).
- Herrich-Schäffer, G. A. W., 1850–1858. Sammlung neuer oder wenig bekannter ausser-europaischer Schmetterlinge. Regensburg.
- Hodges, Ronald W., et al., 1983. *Check List of the Lepidoptera of America North of Mexico*. E. W. Classey Ltd., London.
- Hulst, G. D., 1880. Description of some new species of Geometridae. *Bulletin of the Brooklyn Entomological Society* 3:41–45.
- 1896. A classification of the Geometrina of North America, with descriptions of new genera and species. *Transactions of the American Entomological Society* 23:245–386.

- 1898. Descriptions of new genera and species of the Geometrina of North America. *The Canadian Entomologist* 30(5):113–121.
- 1900a. Some new species of Geometridae. *The Canadian Entomologist* 32(4):102–107. Description of *E. bolterii*.
- 1900b. New species of Lepidoptera. *Journal of the New York Entomological Society* 8(4):215–225.
- Kirkwood, C. A., 1961. A new *Eupithecia* from Arizona (Lepidoptera, Geometridae). *Bulletin of the Southern California Academy of Sciences* 60, Part 1:45–46, pl. 16, figs. A–D. Original description of *E. cazieri*.
- Leuschner, R. H., 1965. California coastal *Eupithecias* with description of a new species (Geometridae). *Journal of Research on the Lepidoptera* 4(3):191–197, fig. 1A–D. Original description of *E. karenae*.
- MacKay, M. R., 1951. Species of *Eupithecia* reared in the Forest Insect Survey In British Columbia (Lepidoptera: Geometridae), *The Canadian Entomologist* 83(4):77–91.
- McDunnough, J. H., 1938. Some apparently new Texan *Eupithecias*. *The Canadian Entomologist* 70(11):236–242, pl. 20 figs. 3a–e, 4a–b. Original descriptions of *E. pertusata*, *E. persimulata* and *E. prostrata*, and additional species.
- 1939. New species of Geometridae with notes. I (Lepid.). *The Canadian Entomologist* 71(12):249–258.
- 1940. *Eupithecia* notes. *The Canadian Entomologist* 72(1):35–40 pl. 3 fig. 2.
- 1944. The *palpata* group of the genus *Eupithecia* with notes and descriptions (Lepidoptera, Geometridae). *The Canadian Entomologist* 76(3):45–56.
- 1945 [1946]. New North American *Eupithecias* I (Lepidoptera Geometridae). *The Canadian Entomologist* 77(9):168–176, pl. 9, figs. 2, 2a. Original description of *E. nabokovi*.
- 1946b. New North American *Eupithecias*, II (Lepidoptera Geometridae). *The Canadian Entomologist* 78(4):86–89, figs. 1, 4. Original description of *E. deserticola*, *E. sinuata* and *E. plumasata*.

- 1949. Revision of the North American Species of the Genus *Eupithecia* (Lepidoptera, Geometridae). *Bulletin of the American Museum of Natural History* 93(8):535–728, figs. 1–20, pl. 26–32. The first major revision of genus *Eupithecia*. Contains the original description of *E. jejunata*.
- Mironov, V., 2003. The Geometrid Moths of Europe, vol. 4 Larentiinae II (Perizomini and Eupitheciini), pp. 1–464. Apollo Books, Stenstrup. Presents color photographs of all species covered and drawings of male and female genitalia. Some of the species included also occur in North America.
- Möschler, H. B., 1860. Beitrage zur Lepidopteren–Fauna von Labrador. *Wiener entomologische Monatsschrift* 44:114–127.
- Packard, A.S., 1871. Catalogue of the Phalaenidae of California. *Proceedings of the Boston Society of Natural History* 13:381–405.
- 1872–1873. Notes on North American moths of the families Phalaenidae and Pyralidae in the British Museum. *5th Annual Report of the Peabody Academy of Science*: 59.
- 1873. Descriptions of new North American Phalaenidae. *6th Annual Report of the Peabody Academy of Science*: 40.
- 1874. Catalogue of the Phalaenidae of California. *Proceedings of the Boston Society of Natural History* 16:13–40.
- 1876. A monograph of the Geometrid moths or Phalaenidae of the United States. *Report U.S. Geol. Surv. Territ.* 10:1–607.
- Pearsall, R. F., 1908. Eastern and Central *Eupithecias*. *Journal of the New York Entomological Society* 16:103. Description of the female holotype of *E. cocoata*.
- 1909. New Geometridae and notes. *Proceedings of the Entomological Society of Washington* 11(3):119–132.
- 1910a. *Eupithecias* that appear to be undescribed. *Entomological News* 21(4):158.
- 1910b. *Eupithecias* that appear to be undescribed. *Entomological News* 21(10):404.

- 1910c. Vagrant *Eupithecias*. *Proceedings of the Entomological Society of Washington* 12:138-145. Original description of *E. cupressata*.
- 1912. Geometridae as yet undescribed. *The Canadian Entomologist* 44(1):28–31. Original description of *E. scabrogata* and *E. penumbrata*.
- Pohl, G. R., Patterson, B., & Pelham, J. P., 2016. Annotated taxonomic checklist of the Lepidoptera of North America, North of Mexico. Working paper published online by the authors at ResearchGate.net. 766 pp.
- Rindge, F. H., 1952. Taxonomic and life history notes on North American *Eupithecia* (Lepidoptera, Geometridae). *American Museum Novitates* 1569:1–27, figs. 1–8. Original description of *E. macdunnoughi*; other species discussed: *E. bryanti*, *castigata*, *suspiciosata*, *coagulata*, *fumosa*, *johnstoni*, *emmendonina*, *palpata*, *transcanadana*, *ornata*, *c. colombiana*, *m. maestosa*, *placidata*, *unicolor*, *pseutosugata*, *miserulata* *zealandensis*, *m. misturata*, *castigata*, *albipunctata*, *luteata*, *bifasciata*, *fletcherata*, *arceuthata*, *satyrata*, *fumata*, *strattonata*, *r. russeliata*, *filmata*, *annullata*, *georgii*, *acutipennis*, *shirleyata*, *anticaria*, *ravocostaliata*, *Prorella mellisa*.
- 1956. Description of and notes on North American Geometridae (Lepidoptera). *American Museum Novitates* 1784:1–19, figs. 1–19. Original description of *E. uinta* (genitalia only) and illustrations of *E. jejuna* genitalia; other genera included.
- 1963. Notes on and descriptions of North American *Eupithecia* (Lepidoptera, Geometridae). *American Museum Novitates* 2147:1–23, figs. 1–7. Original descriptions of *E. hohokamiae* and *E. phyllisae*; other species discussed.
- 1985. The *Eupithecia* (Lepidoptera, Geometridae) of Mississippi and Louisiana. *American Museum Novitates* 2809:1–18, figs. 1–38. Species described and discussed: *E. peckorum*, *miserulata*, *herefordaria*, *matheri*, *jejuna*, *swettii*, *vicksburgi*, *broui*.
- Swett, L. W., 1907. Geometrid notes, with descriptions of new species. *The Canadian Entomologist* 39:377–379.

- 1908. Geometrid notes, with descriptions of new species. *The Canadian Entomologist* 40:245–247.
- 1911. Geometrid notes. A new *Eupithecia*. *The Canadian Entomologist* 43:255–256.
- Swett, L. W. & Cassino, S. E., 1920. Some new Geometrids. *The Lepidopterist* 3(3): 113.
- Taylor, G. W., 1906a. On the species of *Eupithecia* occurring at Calgary, Alberta with descriptions of four supposed to be new. *The Canadian Entomologist* 38:101–104.
- 1906b. On some new species of Geometrid moths from Arizona and California. *Entomological News* 17(6):188–192.
- 1907a. On some species of Geometridae from western Canada. *Transactions of the Royal Society of Canada*, 3rd series, vol. 1:199–203.
- 1907b. Description of *Eupithecia fletcherata*, a Geometrid moth from Ottawa, new to science. *The Ottawa Naturalist* 20(10):200–202.
- 1908. Notes on the Lepidoptera of Kaslo, B.C., with descriptions of seven new species. *The Canadian Entomologist* 40:54–60.
- 1909. The *Eupithecia* of Eastern North America. No. 3. *The Canadian Entomologist* 41: 425–428.
- 1910. Descriptions of new species of *Eupithecia* from eastern North America. *The Canadian Entomologist* 42:77–83.
- Walker, F., 1862. *Catalogue of the Lepidoptera Heterocera in the British Museum*. Part 24, pp. 1021–1280.

*Eupithecia palpata* Packard, 1873

**Original description:** 5th Ann. Rep. Trustees Peab. Acad. Sci.: 58.

**Type locality:** Brunswick, Maine.

**Type deposited:** Male lectotype in MCZ.

**Biology:** Larvae feed on multiple species of Pinaceae (*Abies* sp., *Picea* sp., *Pinus* sp., *Tsuga* sp.). Adults late April to mid-July.

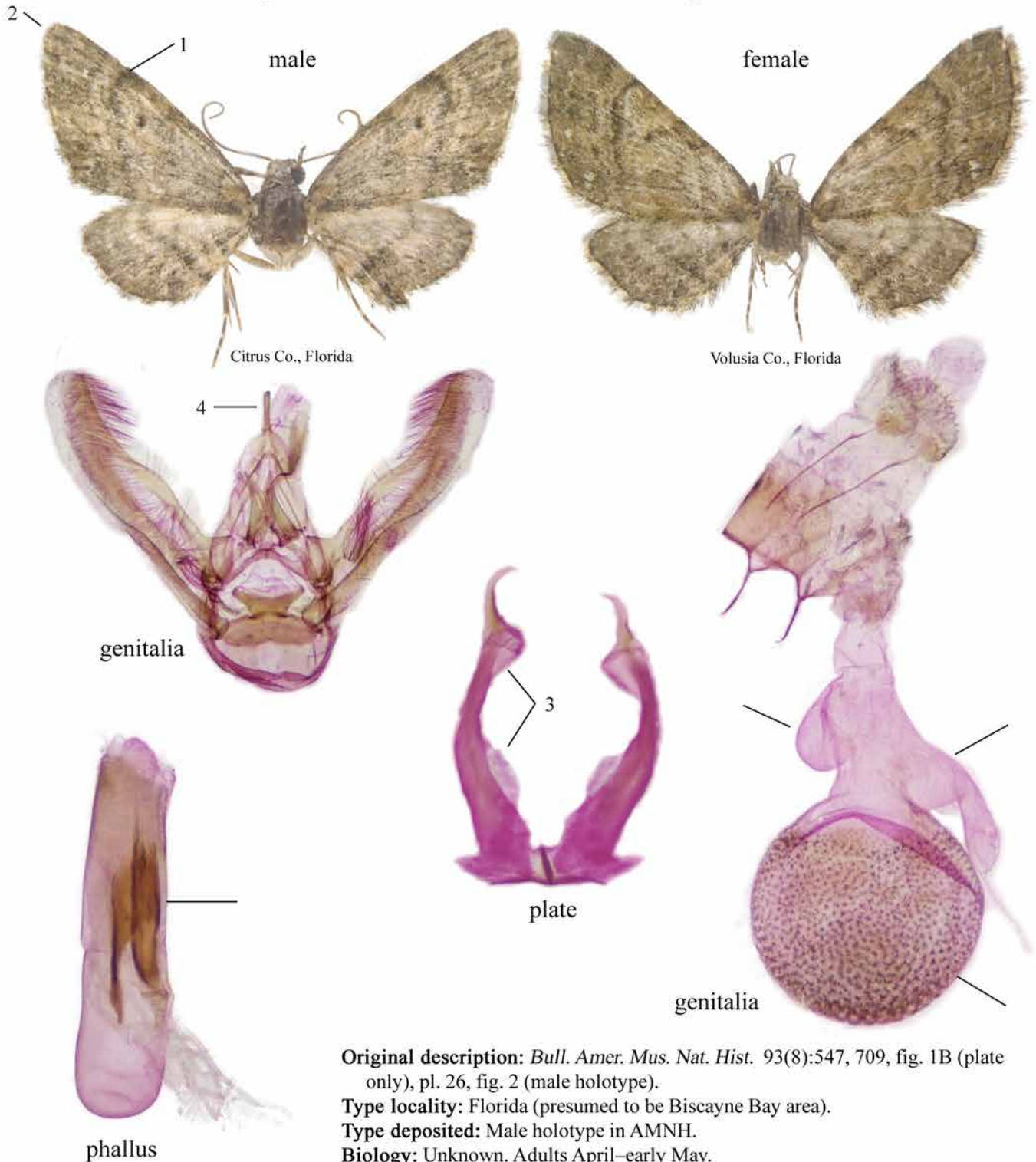
**Distribution:** Vancouver Is. to eastern Newfoundland; in eastern U.S. south to Florida; in the West south to Sierra Co., California, southern Wyoming, Colorado to Sandia Mts. in New Mexico.

**Diagnostic characters:** 1. Uncus slender with hooked tip; pointers indicate other diagnostic features.

**References:** Bolte, K. B., 1990: p. 20; p. 195; figs. 67–68.

McDunnough, J. H., 1949: p. 546; p. 709 fig. 1A; Pl. 26 fig. 1.



*Eupithecia slossonata* McDunnough, 1949

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):547, 709, fig. 1B (plate only), pl. 26, fig. 2 (male holotype).

**Type locality:** Florida (presumed to be Biscayne Bay area).

**Type deposited:** Male holotype in AMNH.

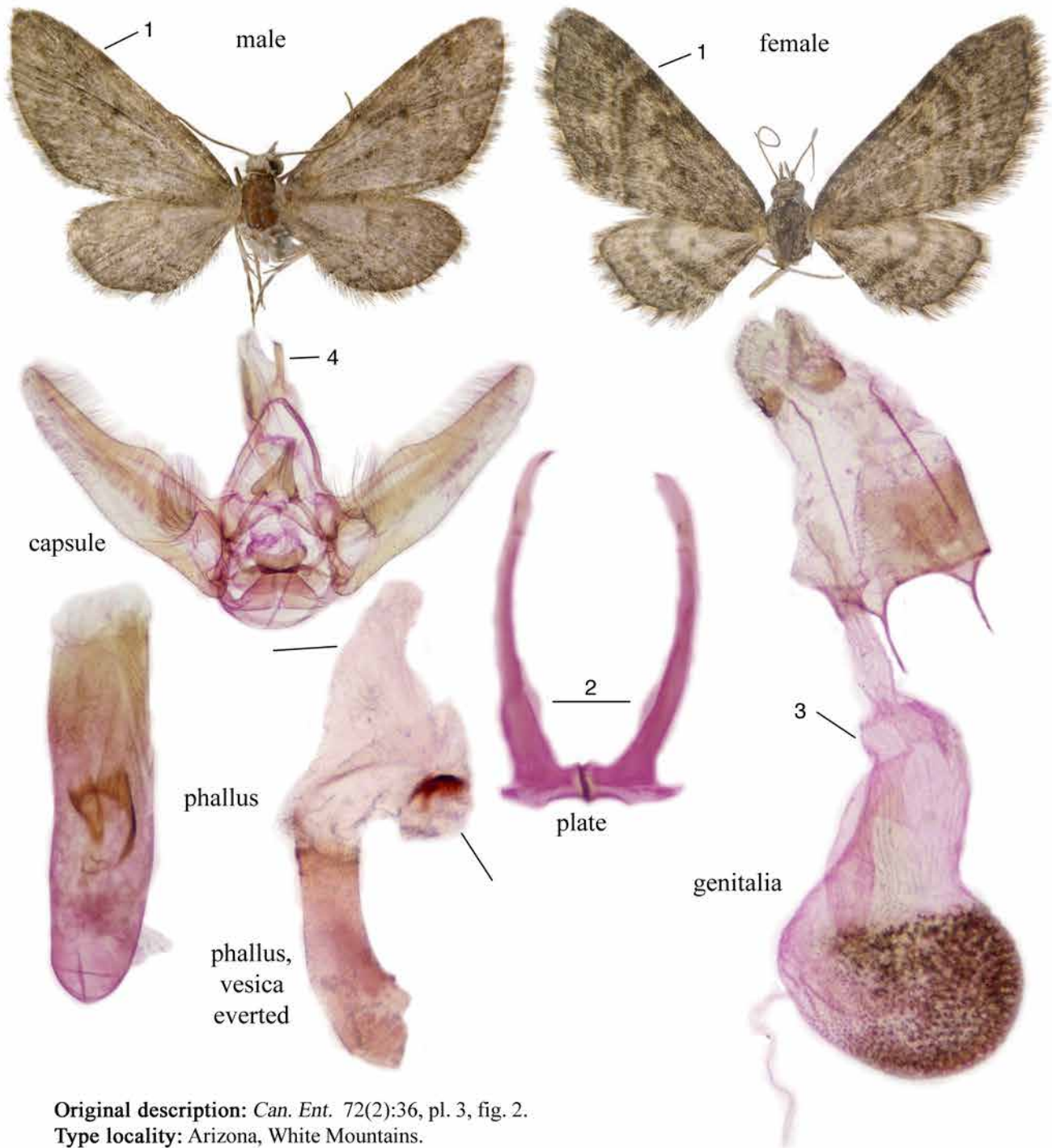
**Biology:** Unknown. Adults April–early May.

**Distribution:** Florida; New Jersey, Ocean Co., Lakehurst, one male. The specimen illustrated above is from Citrus Co., Florida, 10 April, 1917, J. Troubridge leg.

**Diagnostic characters:** 1. DFW narrow black band; 2. triangular wing shape with acute apex; 3. plate projections; 4. simple hooked uncus.

**Comment:** McDunnough described this species based on the shape of the genital plate, which is unique. Otherwise the moth resembles *E. palpata*, and it may prove to be a geographic variant or aberrational form of the latter. Females have not been available for study.



*Eupithecia albimontanata* McDunnough, 1940

**Original description:** *Can. Ent.* 72(2):36, pl. 3, fig. 2.

**Type locality:** Arizona, White Mountains.

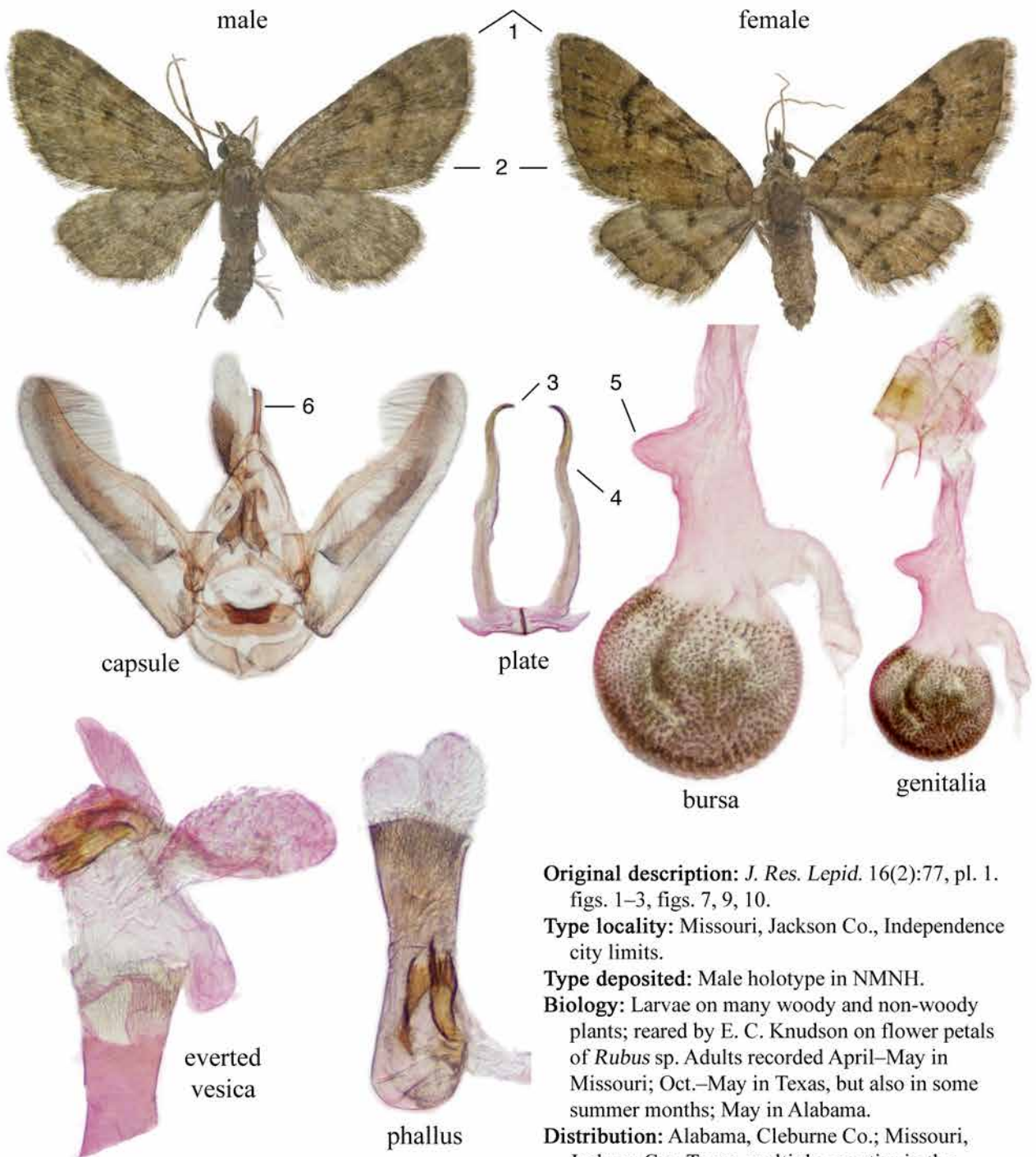
**Type deposited:** Female holotype in CNC.

**Biology:** Unknown. Adults June–August.

**Distribution:** Arizona, Cochise Co. (Chiricahua Mts.), Coconino Co. (Walnut Canyon), White Mts.; Colorado, Larimer Co. (Estes Park); New Mexico, Grant Co. (Black Range); Wyoming, Washakie Co., (Big Horn Mts.).

**Diagnostic characters:** 1. dark band incurving at costa; 2. narrow inward projections; 3. no prominent diverticulum; 4. simple uncus with terminal hook.

**Reference:** McDunnough, J. H., 1949: p. 548; p. 709 fig. 1C; pl. 26 fig. 3.



**Original description:** *J. Res. Lepid.* 16(2):77, pl. 1. figs. 1–3, figs. 7, 9, 10.

**Type locality:** Missouri, Jackson Co., Independence city limits.

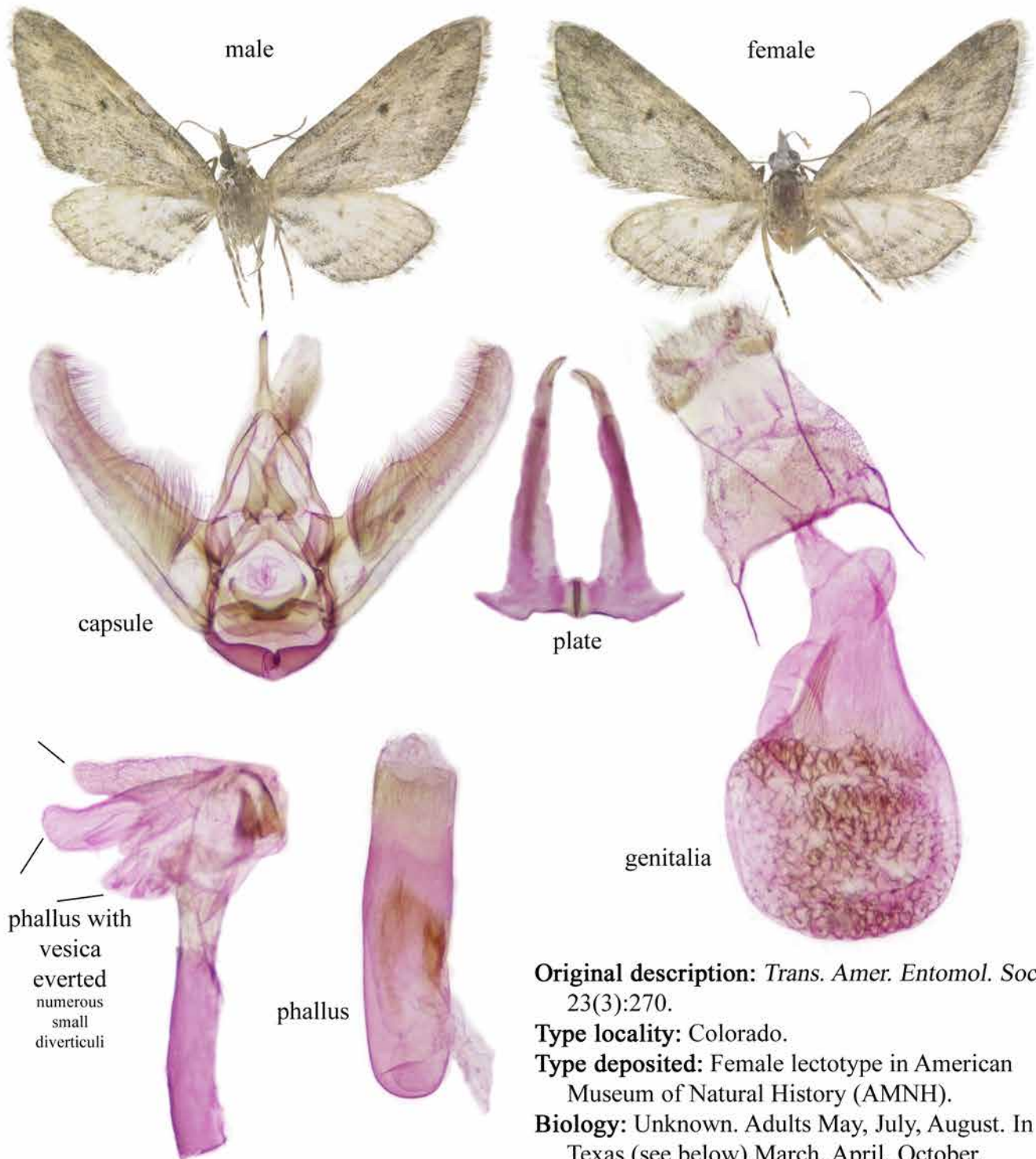
**Type deposited:** Male holotype in NMNH.

**Biology:** Larvae on many woody and non-woody plants; reared by E. C. Knudson on flower petals of *Rubus* sp. Adults recorded April–May in Missouri; Oct.–May in Texas, but also in some summer months; May in Alabama.

**Distribution:** Alabama, Cleburne Co.; Missouri, Jackson Co.; Texas, multiple counties in the eastern half; Mississippi; presumed to occur in neighboring states. Apparently widely distributed.

**Diagnostic characters:** 1. sharp apex; 2. orange brown-color; 3. sharply-pointed in-curving tips; 4. concave margin; 5. prominent diverticulum; 6. uncus simple with terminal hook.



*Eupithecia longidens* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):270.

**Type locality:** Colorado.

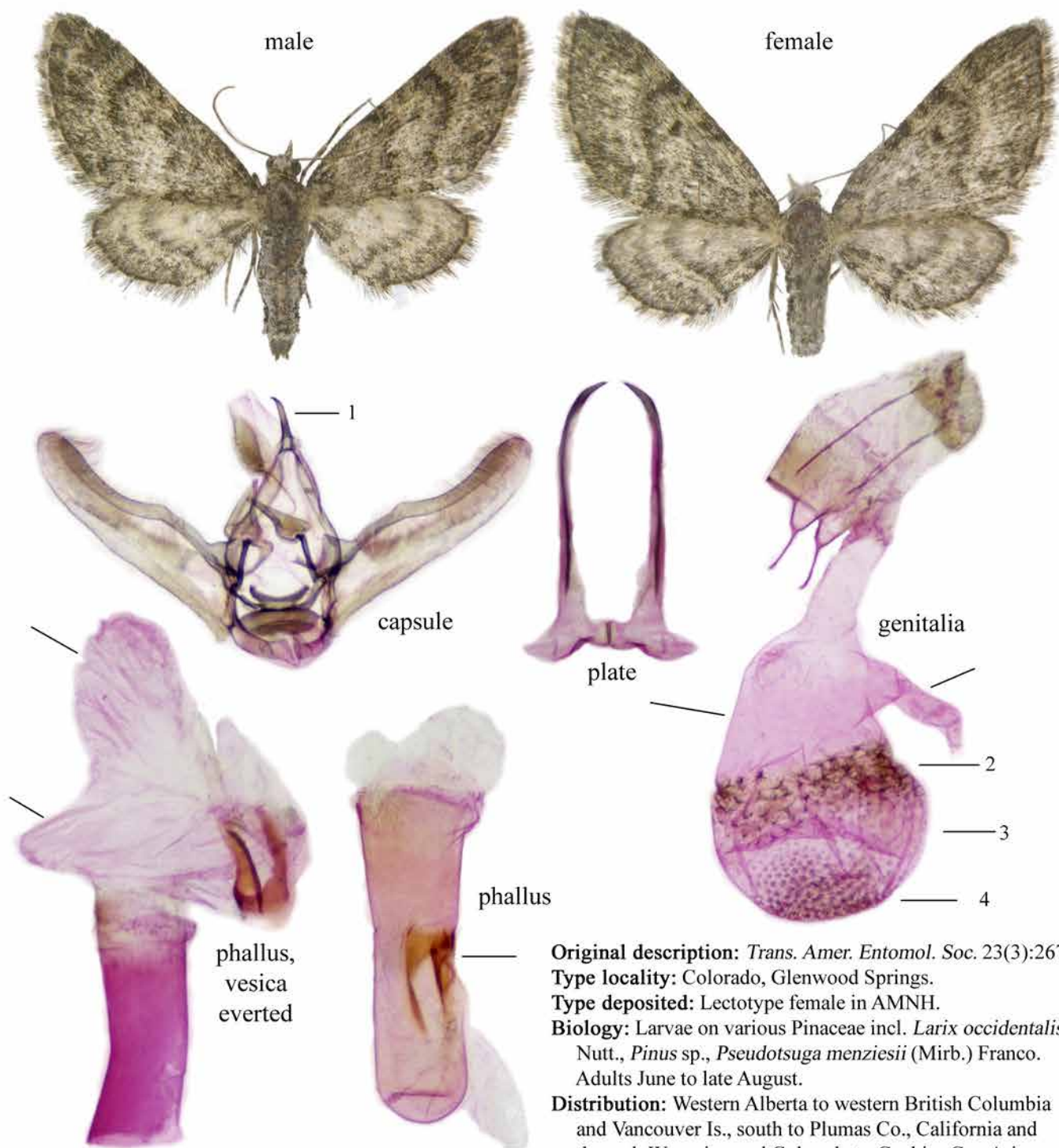
**Type deposited:** Female lectotype in American Museum of Natural History (AMNH).

**Biology:** Unknown. Adults May, July, August. In Texas (see below) March, April, October.

**Distribution:** Arizona (Coconino Co.); Colorado (Garfield Co.); Idaho (Cassia Co.); New Mexico (Sandoval, San Miguel cos.); Texas (ssp. *kerrvillaria*, Bell, Bexar, Bosque, Kerr cos.); Utah (Juab, San Pete cos.).

**Note:** A subspecies *kerrvillaria* was described by Cassino & Swett, 1924, *Lepidopterist* 4(4):27 from Kerrville, Texas; male holotype in Museum of Comparative Zoology (MCZ).

**Reference:** McDunnough, J. H., 1949. *Bulletin. Amer. Mus. Nat. Hist.*, 93(8):549, 709 figs. 1D, E, pl. 26, figs. 4, 5.

*Eupithecia ornata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):267.

**Type locality:** Colorado, Glenwood Springs.

**Type deposited:** Lectotype female in AMNH.

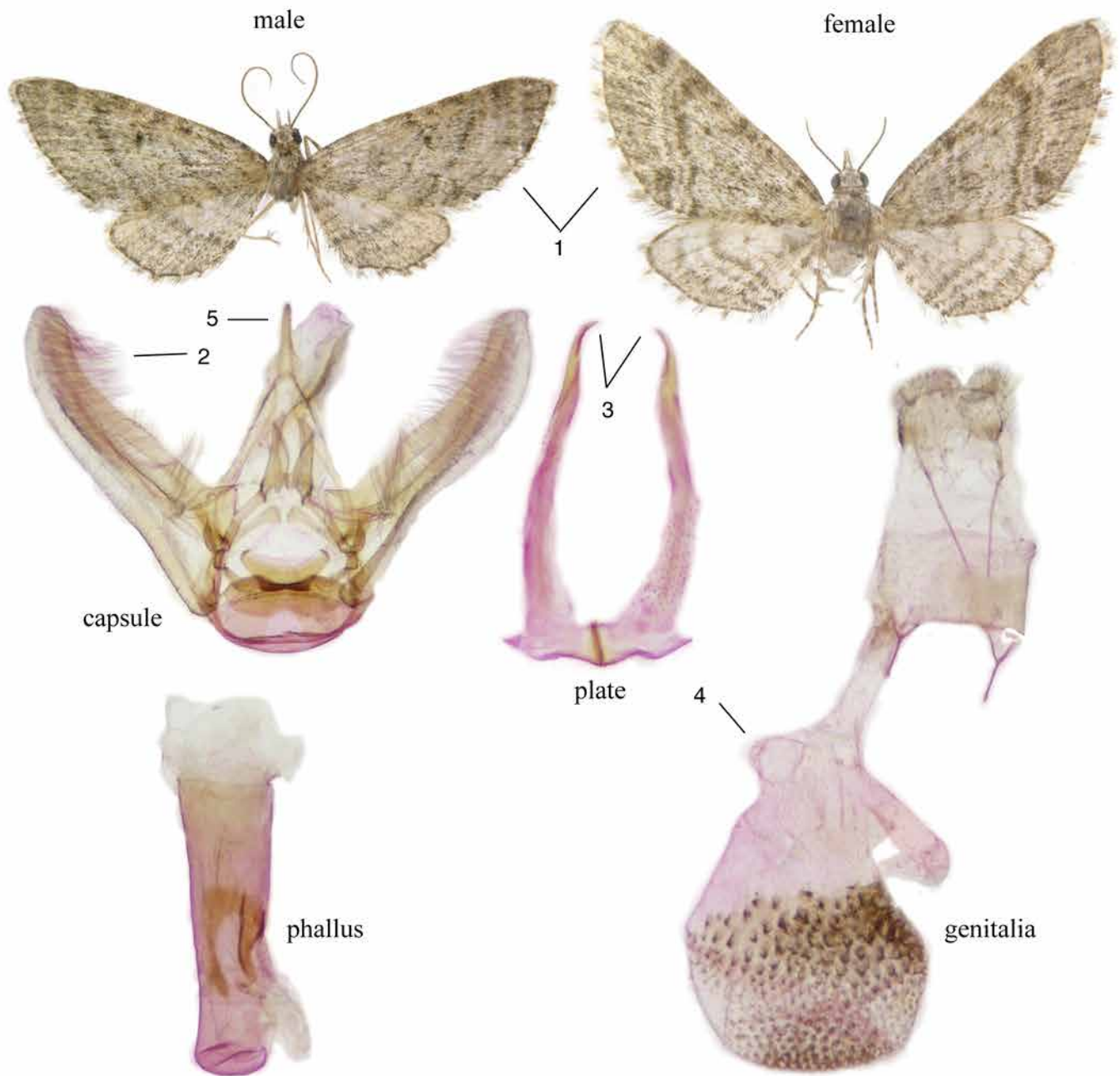
**Biology:** Larvae on various Pinaceae incl. *Larix occidentalis* Nutt., *Pinus* sp., *Pseudotsuga menziesii* (Mirb.) Franco. Adults June to late August.

**Distribution:** Western Alberta to western British Columbia and Vancouver Is., south to Plumas Co., California and through Wyoming and Colorado to Cochise Co., Arizona and Grant Co., New Mexico.

**Diagnostic characters:** Adults with dark bands on forewings and hindwings; 1. Uncus slender with hooked tip; 2. spinose band; 3. fundus covered with small spines; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 19; p. 193; figs. 63–64. McDunnough, J. H., 1949: p. 549; p. 709 fig. 1F, plate 26 fig. 6.





**Original description:** *Lepidopterist* 3(10):169.

**Type locality:** California. Monachee Meadows, Inyo Co., 8000'.

**Type deposited:** Male holotype in NMNH.

**Biology:** Unknown. Adults May–June.

**Distribution:** California, high elevation in the Sierras (Inyo, Sierra cos., etc.); Nevada (Charleston Mts.).

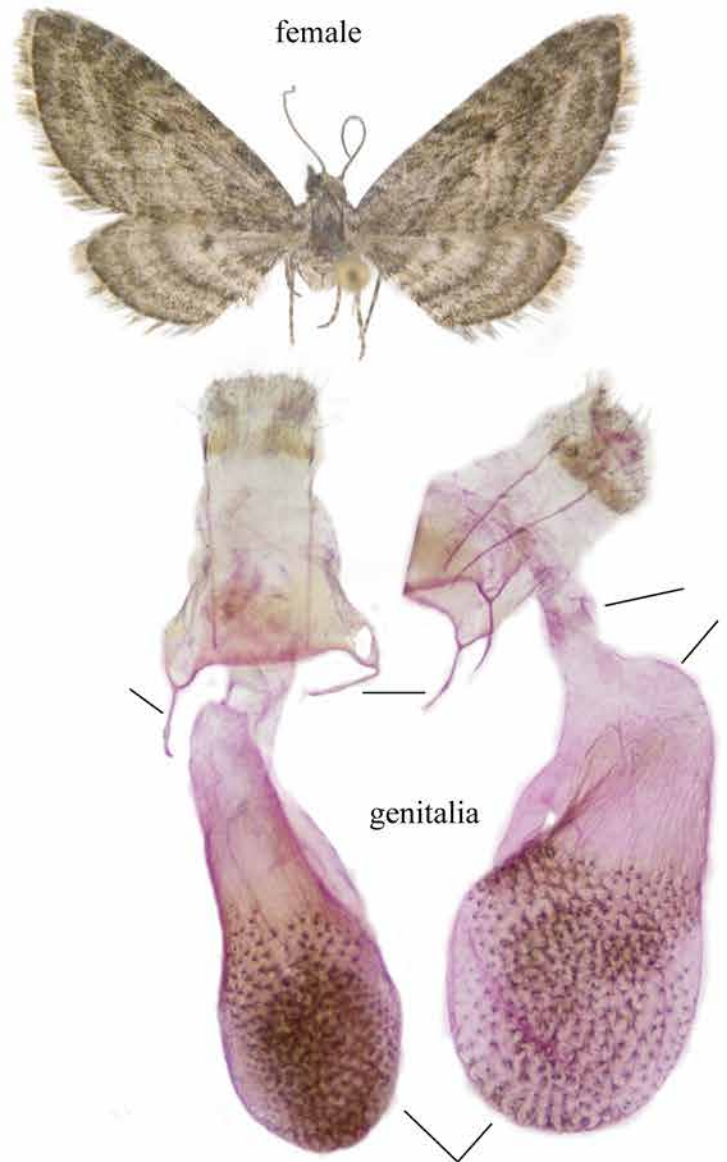
**Diagnostic characters:** 1. wings well marked by multiple wavy lines; 2. valve tapering toward apex; 3. sharply pointed inwardly curving tips; 4. diverticulum opposite origin of ductus seminalis; 5. uncus simple with terminal hook.

**Discussion:** This moth may be simply a form of *E. ornata* and additional study with barcoding is required. The genitalia in both sexes suggest *E. ornata*.

**Reference:** McDunnough, J. H., 1949: p.550; p. 709 fig. 1G; pl. 26 fig. 7. Male adult and female genitalia not illustrated,

*Eupithecia terrestrata* McDunnough, 1944

male  
not available



**Original description:** *Can. Ent.* 76(3):48, pl. 4, figs. 3, 7.

**Type locality:** Arizona, [Gila Co.], Globe.

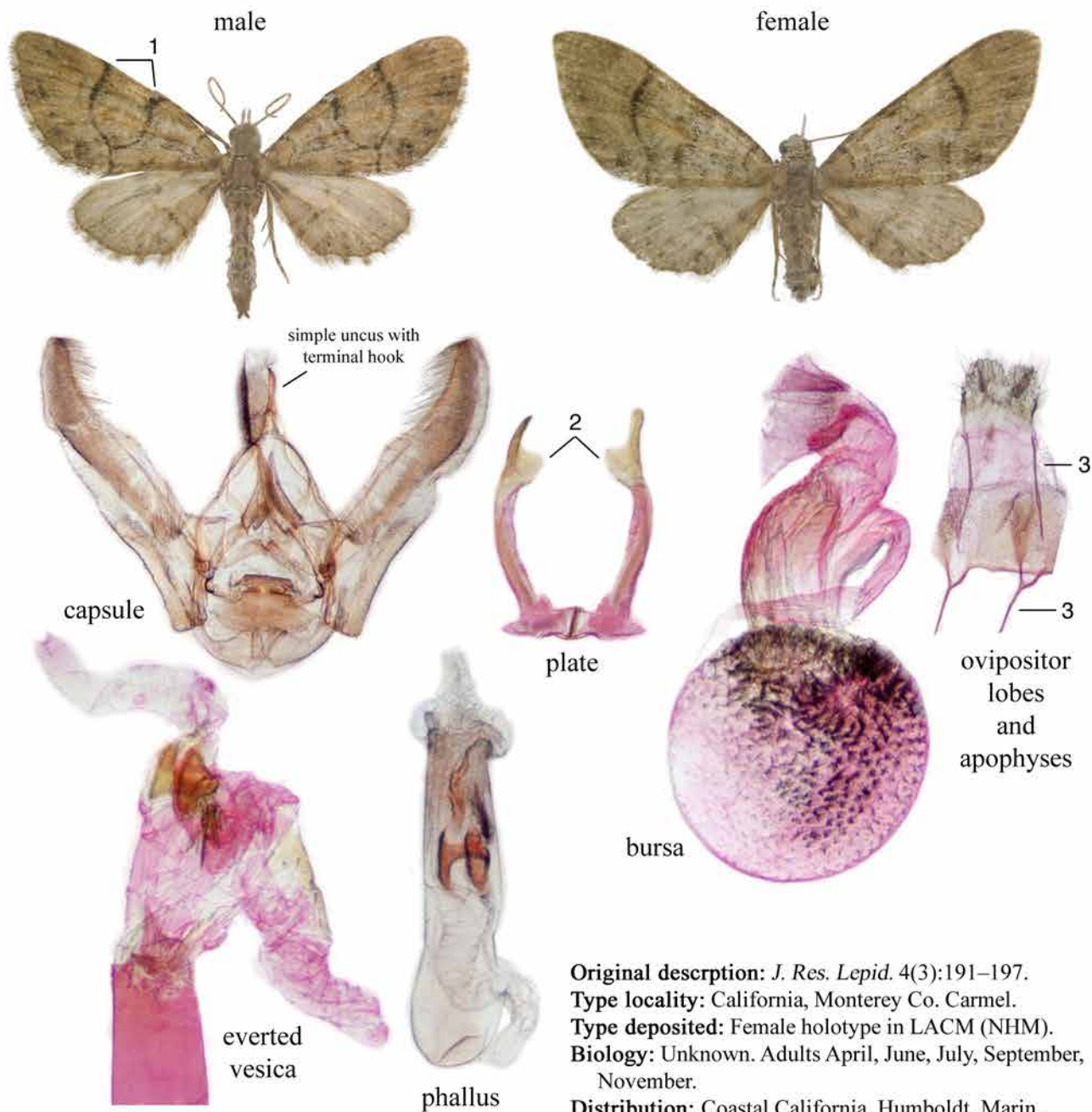
**Type deposited:** Female holotype in CNC.

**Biology:** Unknown. Adults July–September.

**Distribution:** Arizona, Gila Co. and Santa Catalina Mts.; New Mexico, Harding and Sandoval cos.

**Diagnostic characters:** Adult with well-defined dark bands on the hind wing. Female genitalia without a well-defined colliculum; spines restricted to lower half of corpus bursae; anterior apophyses short.

**Reference:** McDunnough, J. H., 1949: p. 551; p. 708 fig. 1H; pl. 26 fig. 8.

*Eupithecia karenae* Leuschner, 1965

**Original description:** *J. Res. Lepid.* 4(3):191–197.

**Type locality:** California, Monterey Co. Carmel.

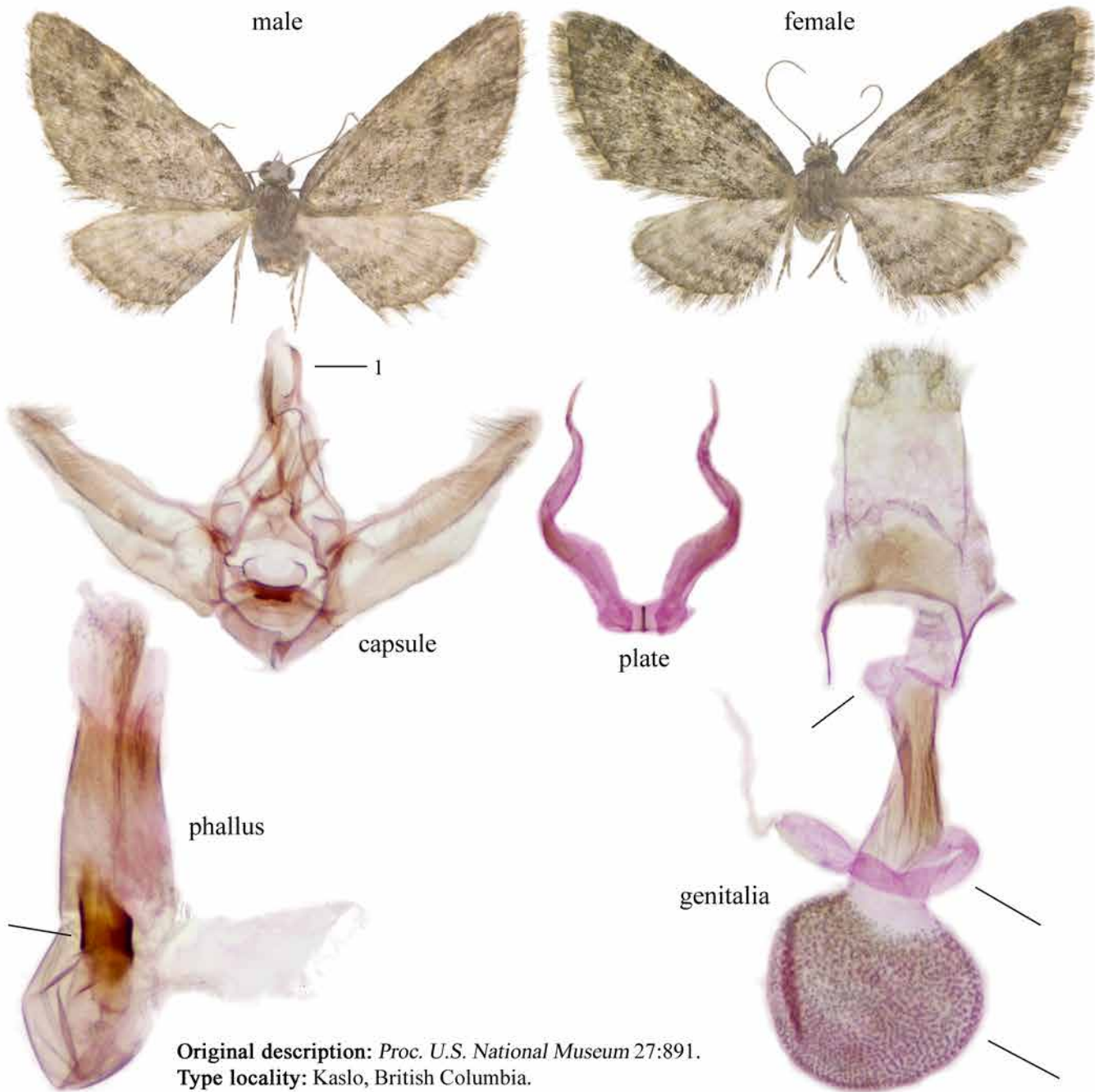
**Type deposited:** Female holotype in LACM (NHM).

**Biology:** Unknown. Adults April, June, July, September, November.

**Distribution:** Coastal California, Humboldt, Marin, Monterey, San Luis Obispo cos.

**Diagnostic characters:** 1. thin black lines forming a modified "Y"; 2. well developed inward "flanges"; 3. short apophyses. Wing color in fresh specimens red or golden brown.



*Eupithecia columbiata* (Dyar, 1904)

**Original description:** *Proc. U.S. National Museum* 27:891.

**Type locality:** Kaslo, British Columbia.

**Type deposited:** Female holotype in NMNH.

**Biology:** Larvae usually on *Salix* and occasionally on other hosts including *Prunus* sp., *Alnus* sp., *Betula* sp., *Amelanchier* sp., *Rhamnus purshiana* DC., and others. Hibernation as pupae. Adults late April to late June.

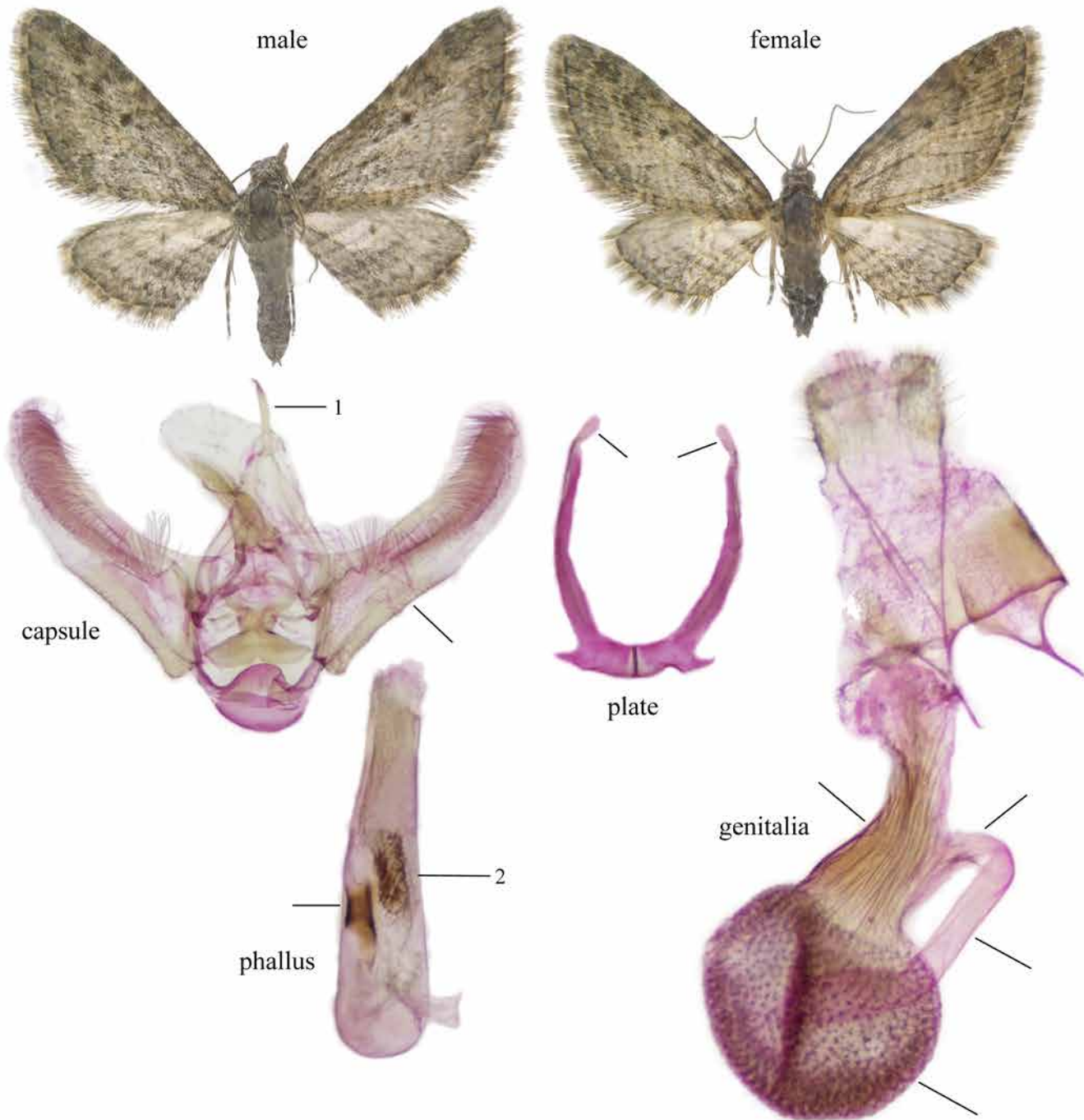
**Distribution:** Eastern Newfoundland to western British Columbia and south to northern Colorado and North Carolina.

**Diagnostic characters:** The shape of the plate is unique among North American *Eupithecia*; 1. uncus is simple with apical hook; other characters indicated by pointers.

**References:** Bolte, K. B., 1990: p. 26; p. 200; figs. 77–78.

McDunnough, J. H., 1949: p. 551; p. 709, fig. 11; pl. 26 fig. 9.



*Eupithecia maestosa* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):269.

**Type locality:** Colorado.

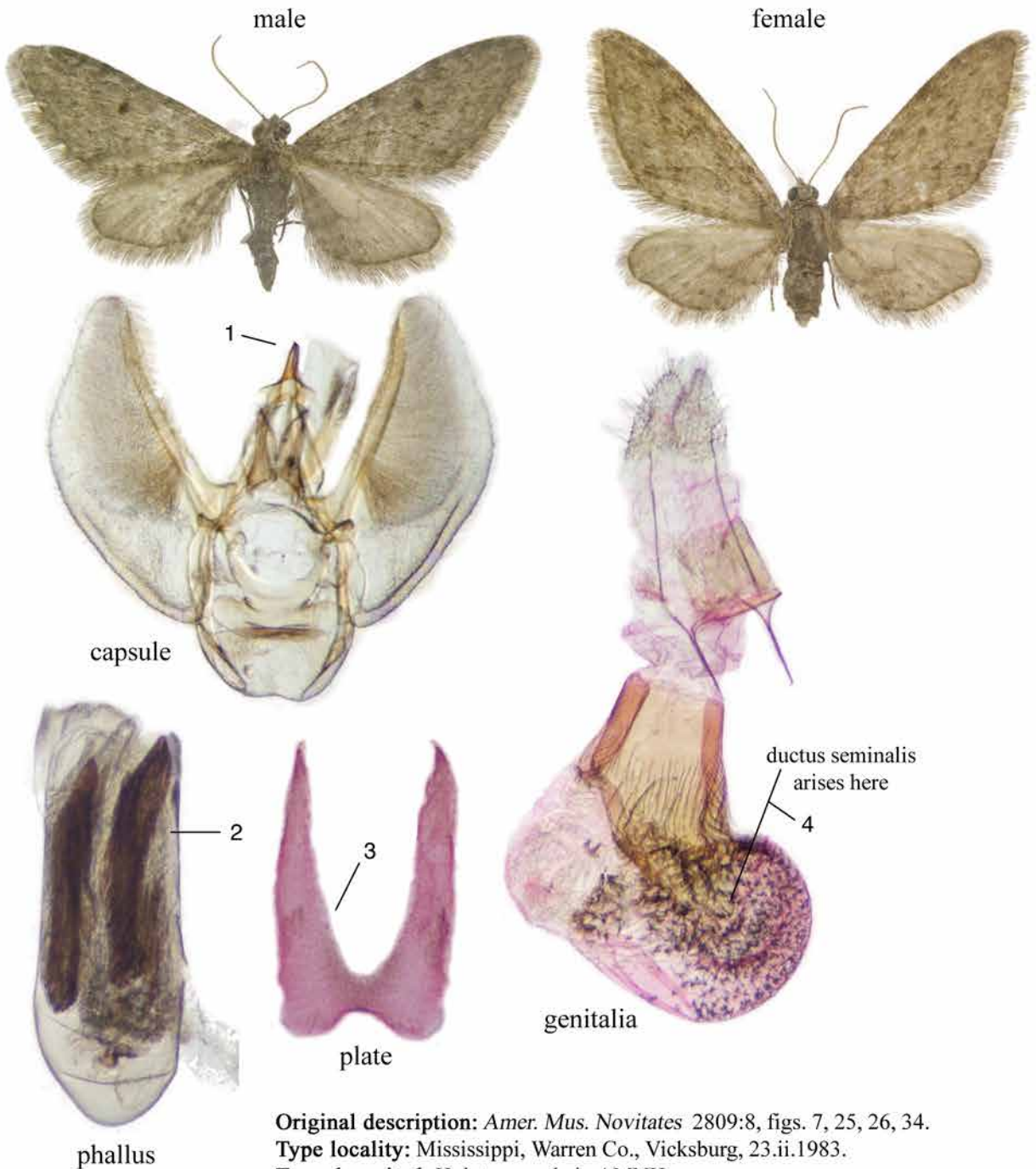
**Type deposited:** Female holotype in AMNH.

**Biology:** Larvae on multiple hosts including Betulaceae (*Alnus* sp.), Ericaceae, Fagaceae (*Quercus* sp.), Rosaceae (*Malus* sp, *Prunus* sp.), and Salicaceae (*Salix*). Adults late March to October, depending on locality. Pupae hibernate.

**Distribution:** Western Alberta to western British Columbia and southward into California to at least San Luis Obispo Co. and Santa Catalina Is.; generally distributed in the Rocky Mountain region to southern New Mexico and the Big Bend area of Texas.

**Diagnostic characters:** 1. uncus slender, simple, with down-turned apical hook; 2. spinose patch; other features as indicated.

**References:** Bolte, K. B. 1990: p. 24; p. 199; figs. 75–76. McDunnough, J. H., 1949: p. 552; p. 710 fig. 2A; pl. 26 figs. 12–13.

*Eupithecia matheri* Rindge, 1985

**Original description:** *Amer. Mus. Novitates* 2809:8, figs. 7, 25, 26, 34.

**Type locality:** Mississippi, Warren Co., Vicksburg, 23.ii.1983.

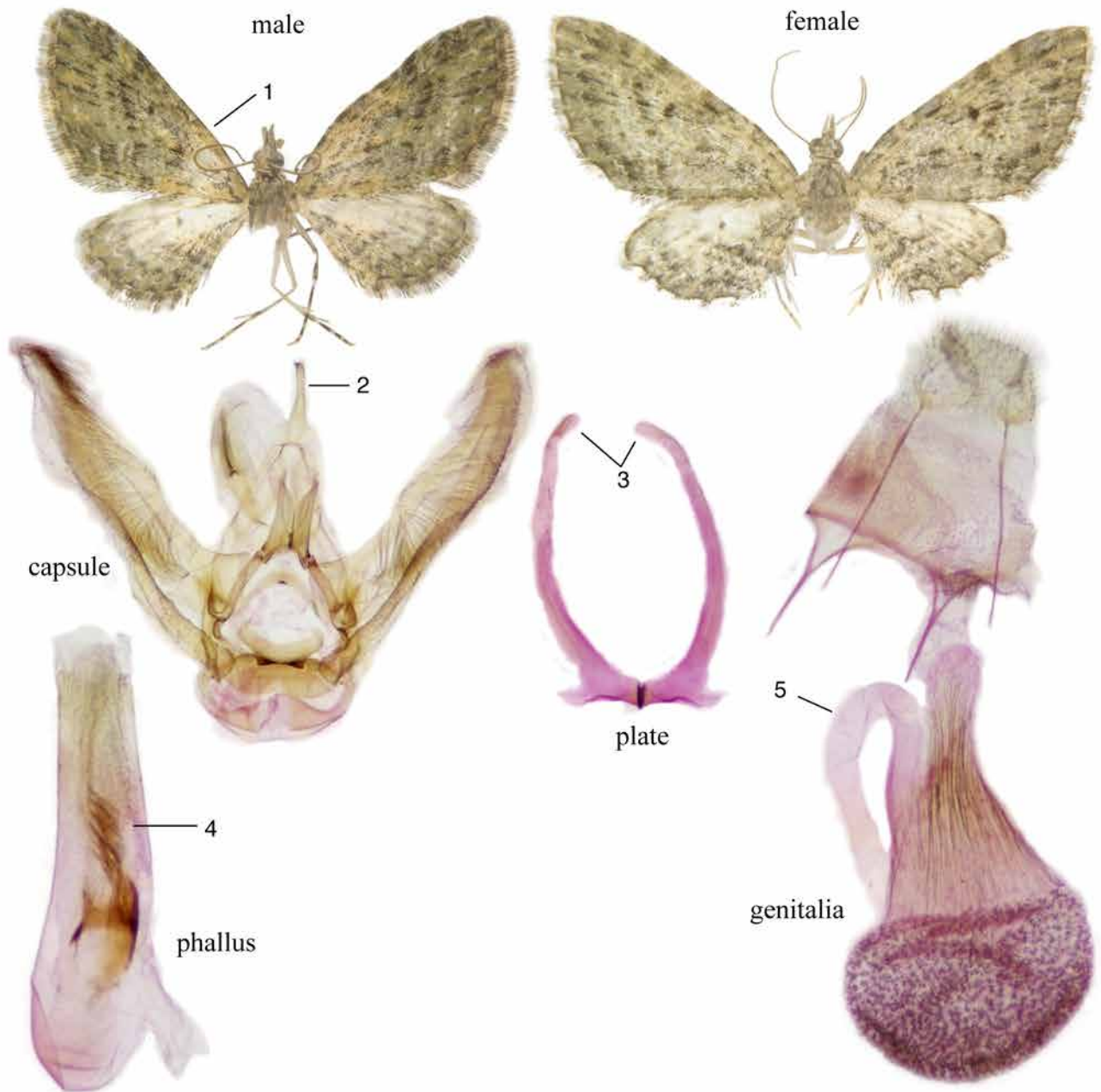
**Type deposited:** Holotype male in AMNH.

**Biology:** Unknown. Adults January–March.

**Distribution:** Widely distributed in disjunct colonies from Ontario southward, to North Carolina, Mississippi, Louisiana, to Jeff Davis Co., Texas, Kansas and Missouri.

**Diagnostic characters:** 1. bifid uncus; 2. 3–4 elongate striate rods; 3. U-shaped plate with arms tapering from base to tip. 4. very thin and delicate ductus seminalis (barely visible against the background of the corpus bursae). In habitus, *E. matheri* is very similar to *E. swetti*, but the two species have very different genitalia.



*Eupithecia subvirens* Dietze, 1875

**Original description:** *Stettin. ent. Ztg.* 36(4–6):251, pl. 2, fig. 3.

**Type locality:** California.

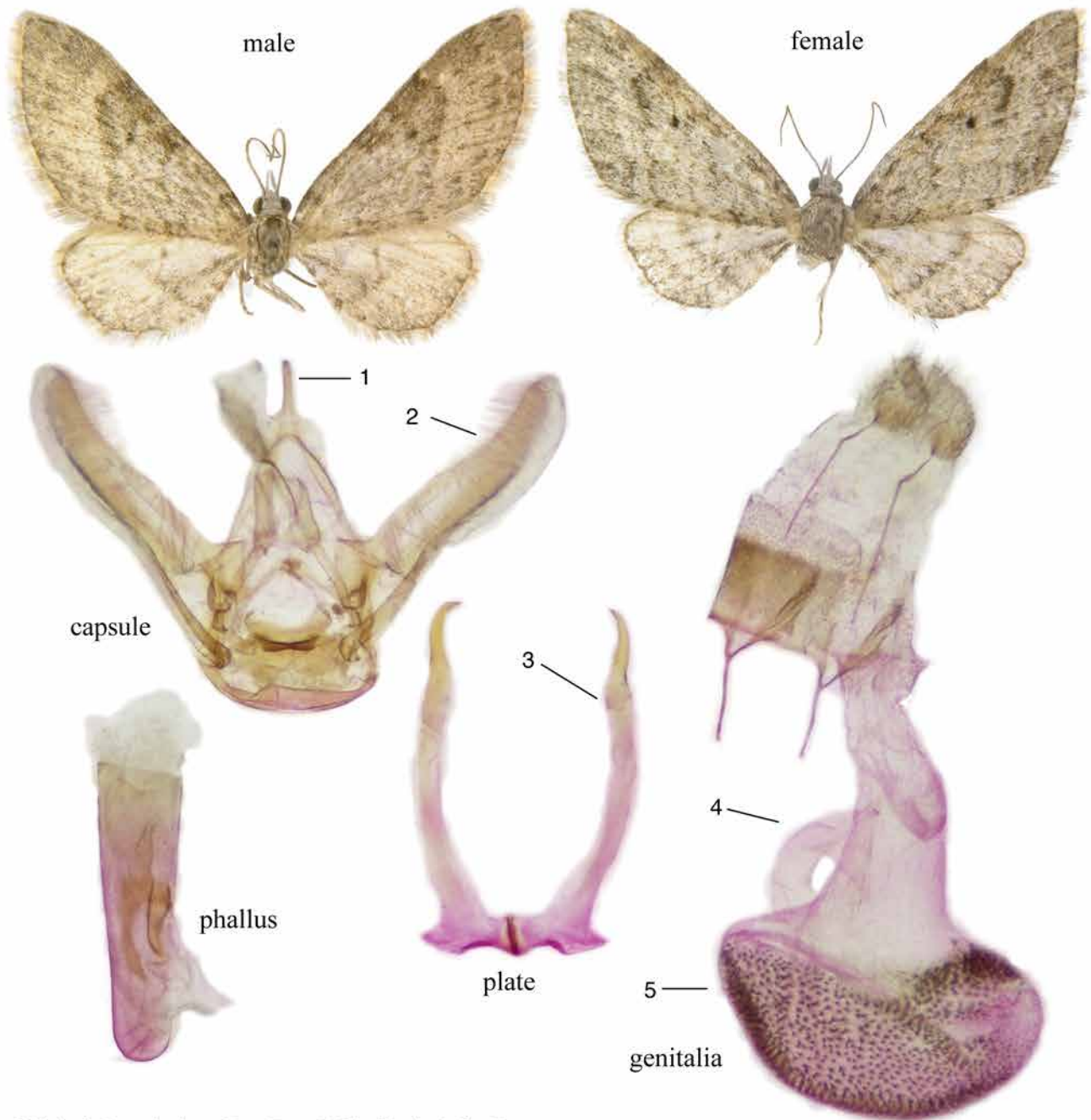
**Type deposited:** 1 male and 2 female syntypes destroyed.

**Biology:** Unknown. Adults April, September–November.

**Distribution:** Coastal California from Marin Co. south to San Diego Co., including Santa Catalina and Santa Rosa Islands.

**Diagnostic characters:** 1. ochreous or olivaceous-ochreous shading; 2. uncus a simple hook, not bifid; 3. tips blunt and rounded; 4. row of small spines; 5. ductus seminalis appears as an inverted "U." *E. subvirens* is very similar to *E. maestosa* and the male genitalia are nearly identical.

**Reference:** McDunnough, J. H., 1949: p. 553; p.710 fig. 2C; pl. 26, fig. 19.

*Eupithecia castellata* McDunnough, 1944

**Original description:** *Can. Ent.* 76(3):47, pl. 4, fig. 5.

**Type locality:** California, [Shasta Co.], Castella.

**Type deposited:** Female holotype in CNC.

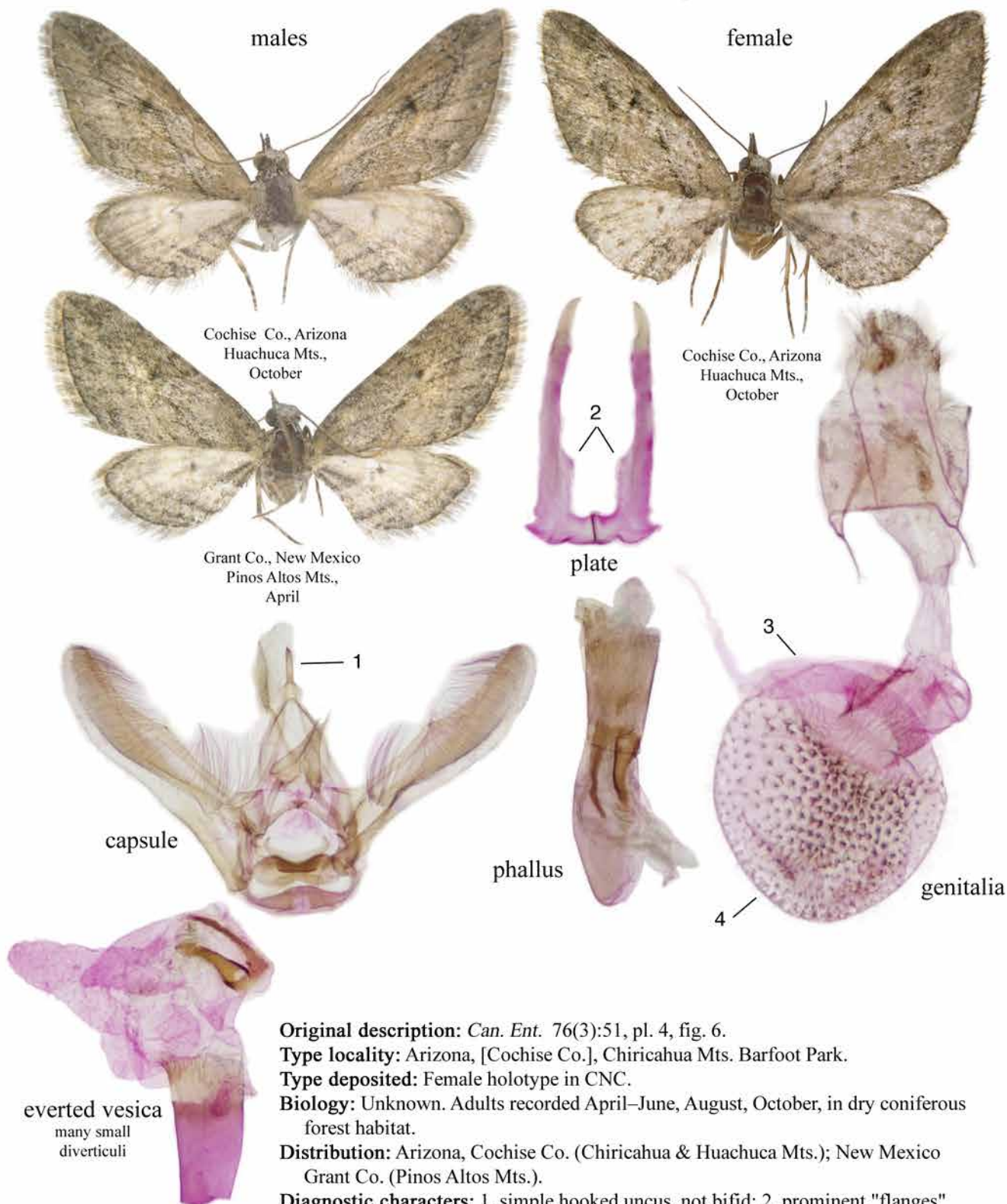
**Biology:** Unknown. Adults in June.

**Distribution:** California, Sierra mountains and adjacent mountains in Nevada.

**Diagnostic characters:** 1. uncus a simple hook, not bifid; 2. narrow valves; 3. slight enlargement leading to inwardly curved sharp tips; 4. wide down-turned ductus seminalis; 5. oval corpus bursae.

**Reference:** McDunnough, J. H., 1949: p. 554; p. 710 fig. 2D (female only); pl. 26 fig. 16.





**Original description:** *Can. Ent.* 76(3):51, pl. 4, fig. 6.

**Type locality:** Arizona, [Cochise Co.], Chiricahua Mts. Barfoot Park.

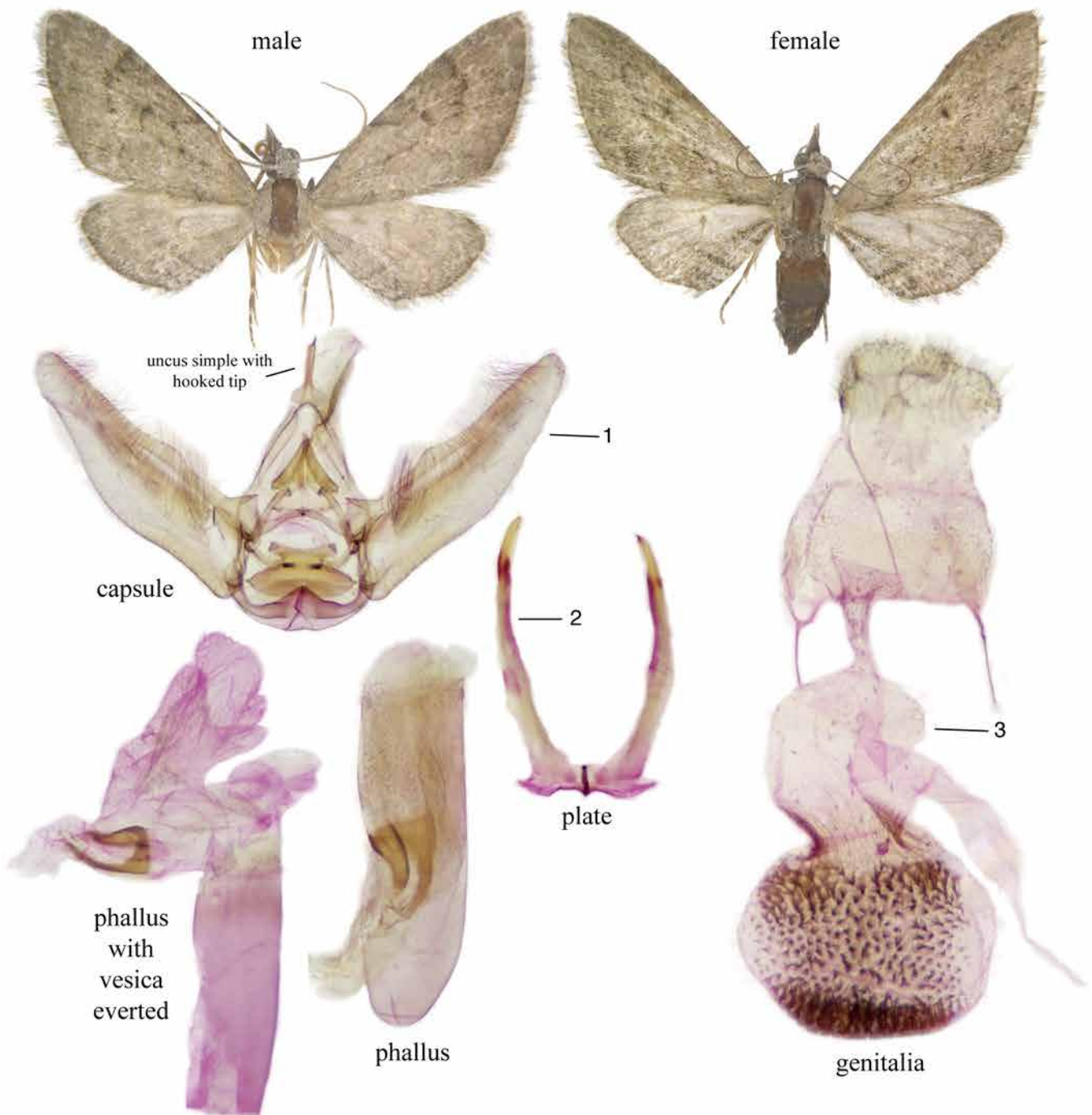
**Type deposited:** Female holotype in CNC.

**Biology:** Unknown. Adults recorded April–June, August, October, in dry coniferous forest habitat.

**Distribution:** Arizona, Cochise Co. (Chiricahua & Huachuca Mts.); New Mexico Grant Co. (Pinos Altos Mts.).

**Diagnostic characters:** 1. simple hooked uncus, not bifid; 2. prominent "flanges" basally; 3. wide ductus seminalis arises just above top of corpus bursae; 4. spherical corpus bursae.

**Reference:** McDunnough, J. H., 1949: p. 554; p. 710 fig. 2E (female only); pl. 26, fig. 17.

*Eupithecia insolabilis* (Hulst, 1900)

**Original description:** *J. N. Y. Entomol. Soc.* 8(4):215.

**Type locality:** Arizona.

**Type deposited:** ? Female holotype originally in Rutgers University; syntypes in AMNH.

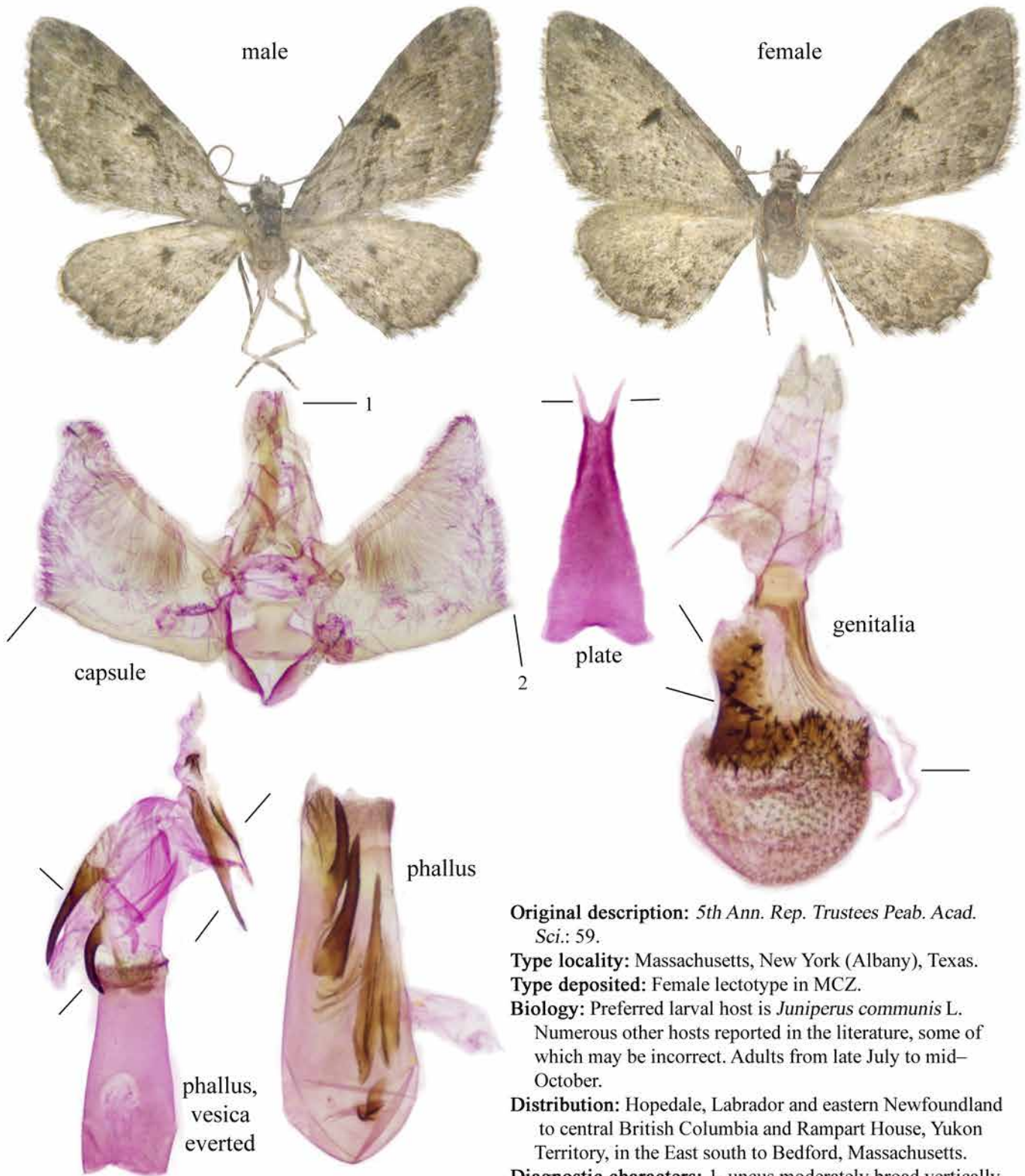
**Biology:** Unknown. Adults June, August.

**Distribution:** Arizona, Cochise Co.; Colorado, Great Sand Dunes Nat. Mon.; New Mexico, Grant and Lincoln cos.; Utah, Beaver, Garfield, Tooele and Utah cos.

**Diagnostic characters:** 1. valve tapers to apex; 2. narrow leading to incurving tapered tip; 3. very broad ductus bursae.

**Reference:** McDunnough, J. H., 1949: p. 555; p. 710 fig. 2f (female only); pl. 26 fig. 18.



*Eupithecia interruptofasciata* Packard, 1873

**Original description:** 5th Ann. Rep. Trustees Peab. Acad. Sci.: 59.

**Type locality:** Massachusetts, New York (Albany), Texas.

**Type deposited:** Female lectotype in MCZ.

**Biology:** Preferred larval host is *Juniperus communis* L.

Numerous other hosts reported in the literature, some of which may be incorrect. Adults from late July to mid-October.

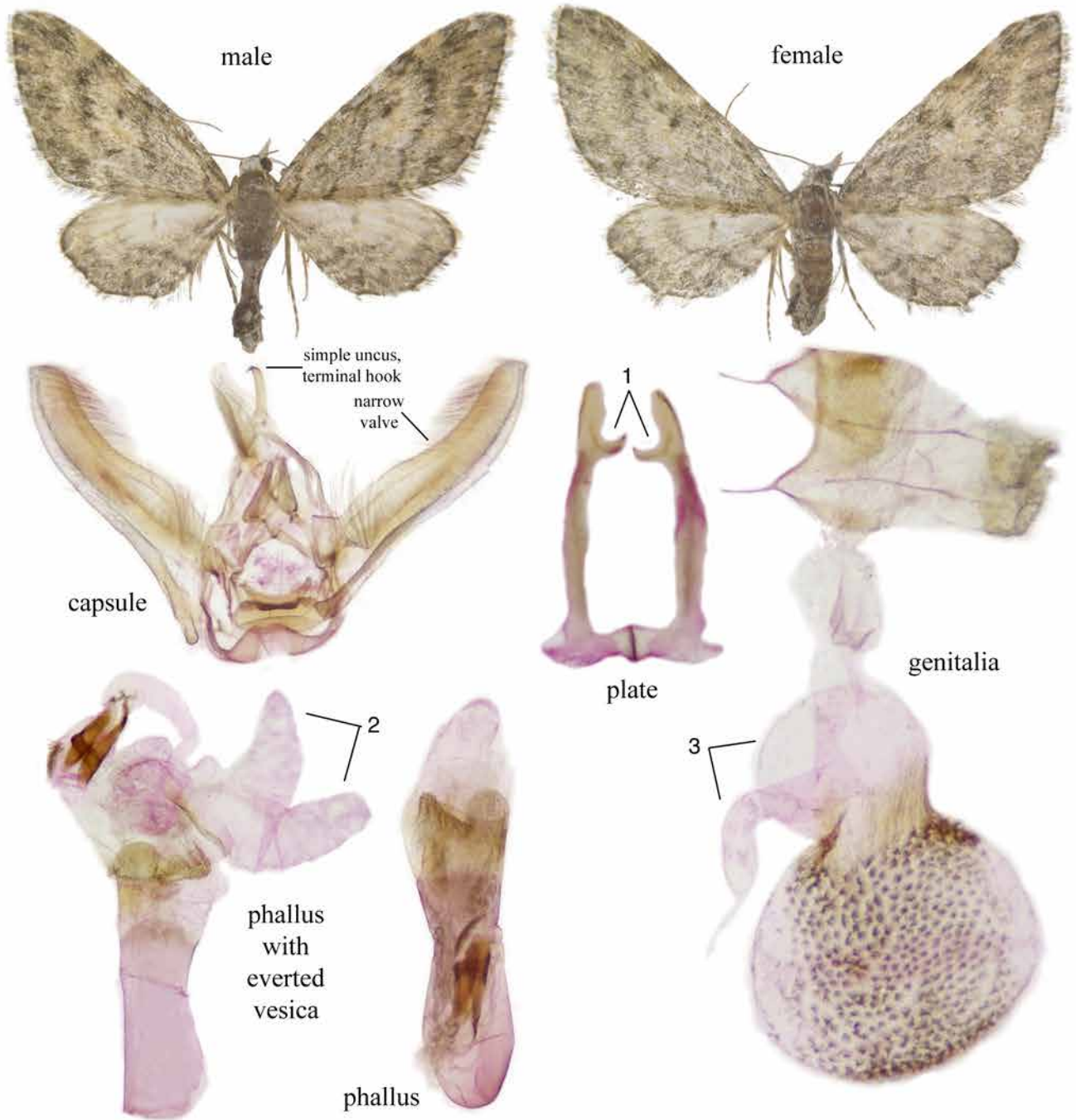
**Distribution:** Hopedale, Labrador and eastern Newfoundland to central British Columbia and Rampart House, Yukon Territory, in the East south to Bedford, Massachusetts.

**Diagnostic characters:** 1. uncus moderately broad vertically tapering to a bifid tip; 2. pointed projection; other features as indicated. This species is easily confused with *E. niphado-philata* (Dyar).

**References:**

Bolte, K. B., 1990: p. 67; p. 231; figs. 143–144.

McDunnough, J. H., 1949: p. 640. McDunnough treated this species as *E. sobrinata interruptofasciata*.

*Eupithecia catalinata* McDunnough, 1944

Specimens illustrated  
are from Mt. Graham

**Original description:** *Can. Ent.* 76(3):50, pl. 4, fig. 2.

**Type locality:** Arizona, Graham Mts.

**Type deposited:** Male holotype in CNC.

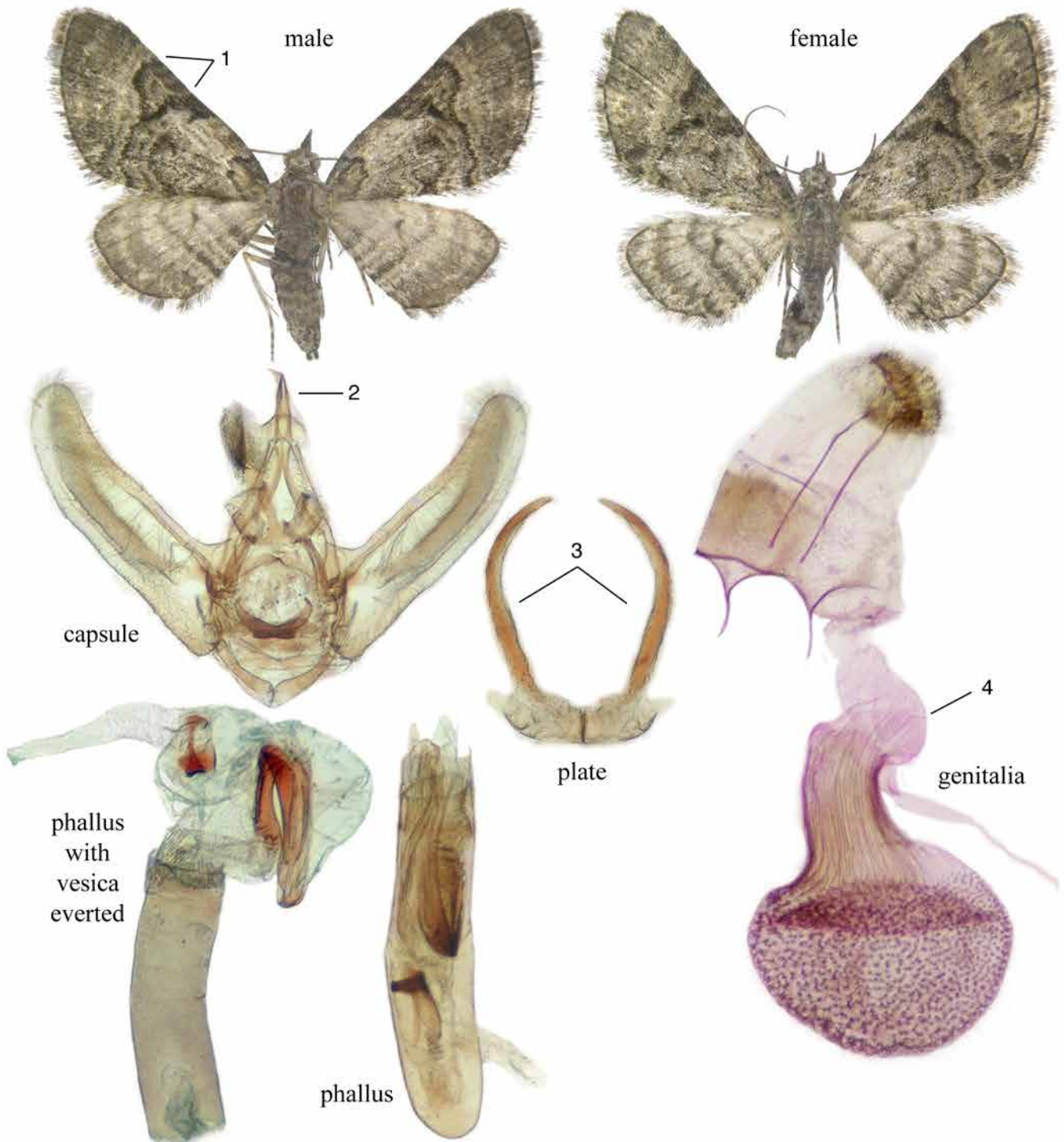
**Biology:** Unknown. Adults June–August.

**Distribution:** Arizona, Cochise Co. (Mt. Graham); New Mexico, Catron, Grant, Sandoval cos.; Utah, San Juan Co.; Wyoming (Albany Co.).

**Diagnostic characters:** 1. apical portions of plate resemble a can opener; 2. two prominent diverticuli; 3. inflated ductus bursae and "fat" ductus seminalis.

**Reference:** McDunnough, J. H., 1949: p. 555; p. 710 fig. 2G; pl. 26 fig. 19.



*Eupithecia edna* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):266.

**Type locality:** Colorado.

**Type deposited:** Male holotype in CNC.

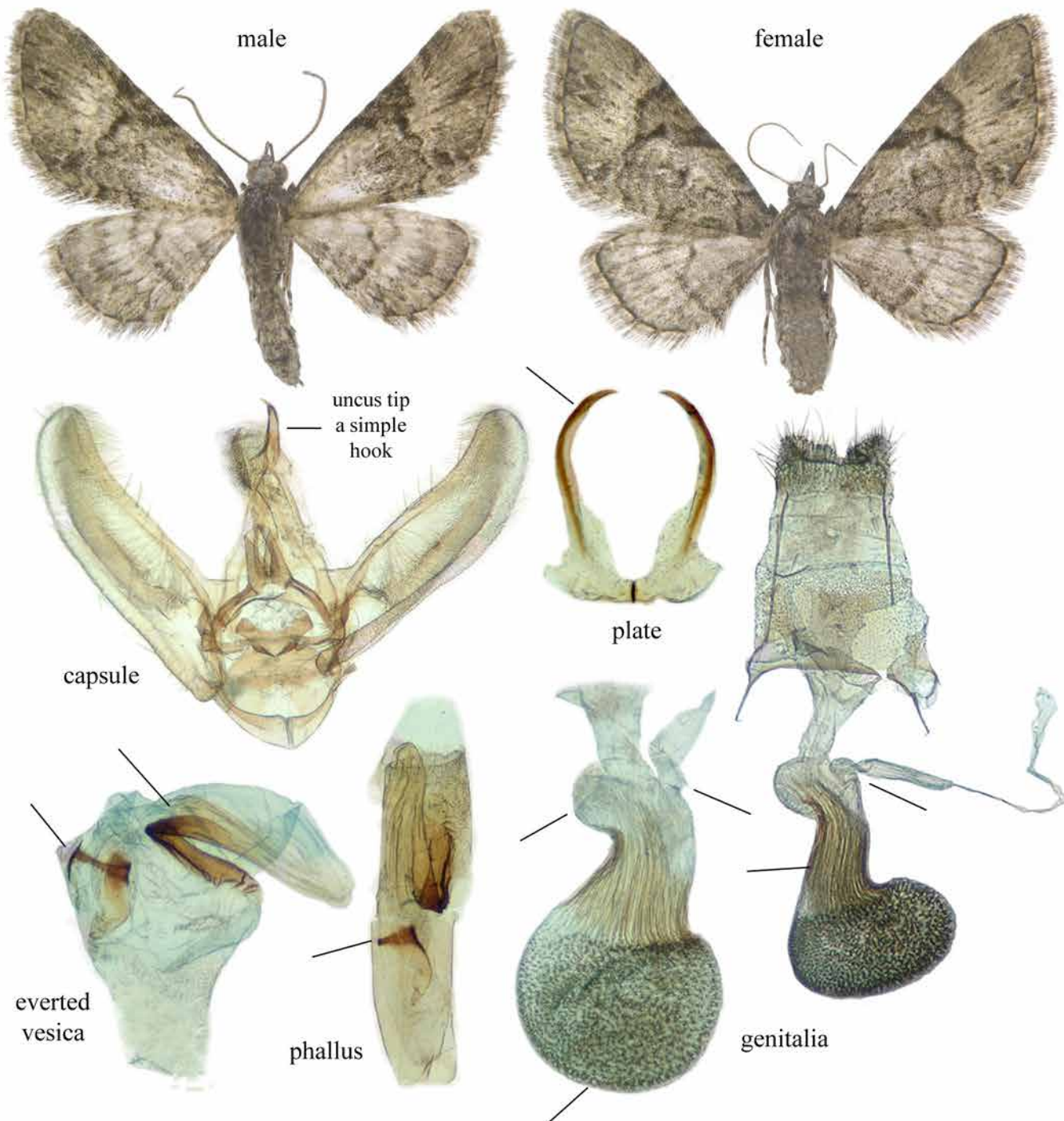
**Biology:** Unknown. Adults April–September, depending upon locality.

**Distribution:** Western Colorado, eastern Utah, western New Mexico and eastern Arizona. Also California, Tulare Co; Texas, Culberson Co. with adults April–September.

**Diagnostic characters:** 1. modified black "V" marking; 2. simple uncus with terminal hook; 3. plate caliper-like;

4. ductus bursae with twisted neck; ductus seminalis arises at twist. Fresh adults have a very dark charcoal gray aspect.

**Reference:** McDunnough, J. H.: p. 556; p. 710 fig. 2H; pl. 26 figs. 20, 21.

*Eupithecia owenata* McDunnough, 1944

**Original description:** *Can. Ent.* 76(3):52, pl. 4, figs. 4, 9.

**Type locality:** Arizona.

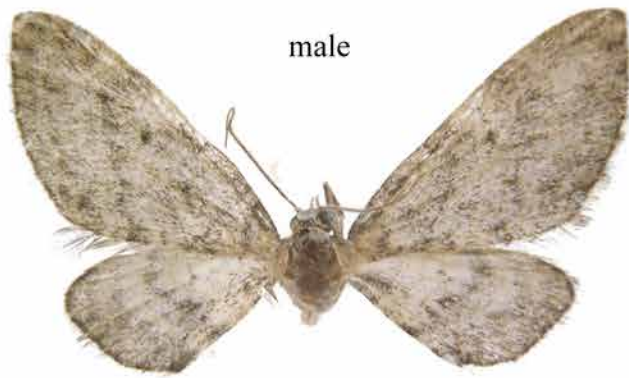
**Type deposited:** Female holotype in CNC.

**Biology:** Unknown. Adults April–October; apparently several generations.

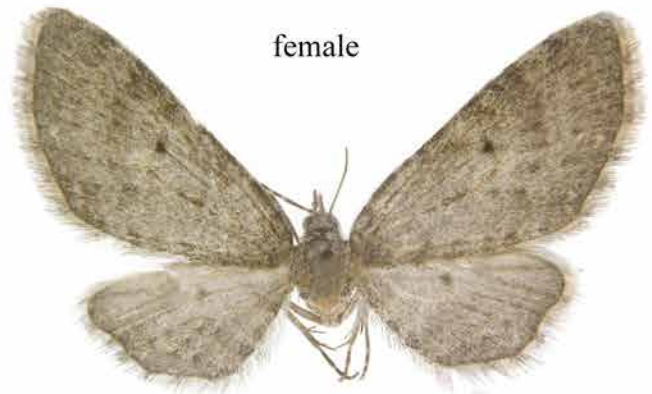
**Distribution:** Apparently restricted to SE Arizona (Cochise Co.).

**Diagnostic characters:** As indicated by pointers. This species is very similar to *E. edna* with essentially identical genitalia, but the adults are larger. Speciation is based on slight differences in the male antennae as noted in the main text.



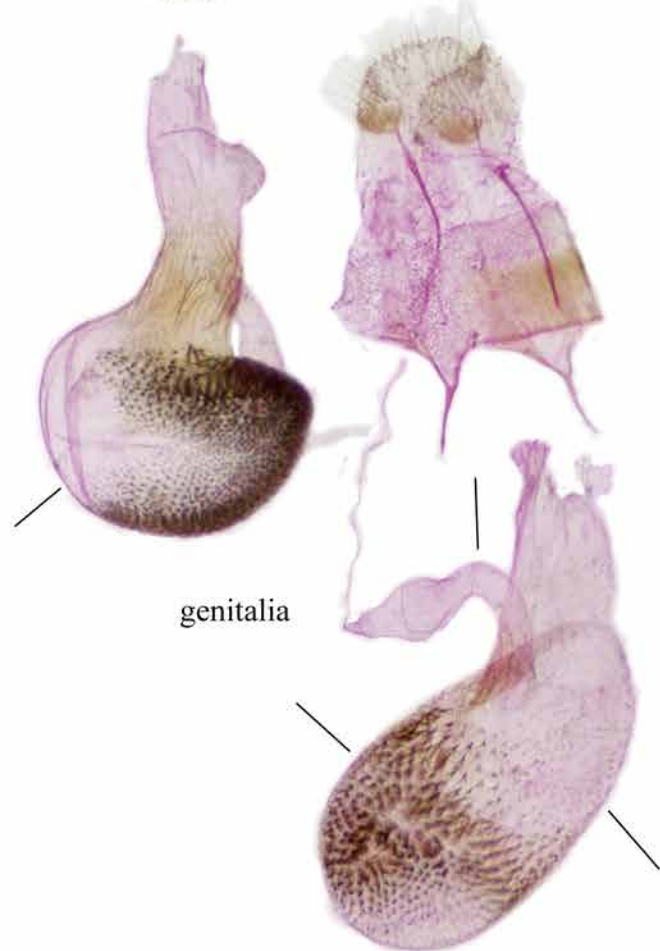
*Eupithecia longipalpata* Packard, 1876

male



female

male genitalia damaged  
and not available



genitalia

**Original description:** *Rep. U.S. Geol. Geogr. Surv. Territ. (Monogr. Geometrid Moths U.S.)* 10:56, pl. 9, fig. 6.

**Type locality:** Mendocino, California.

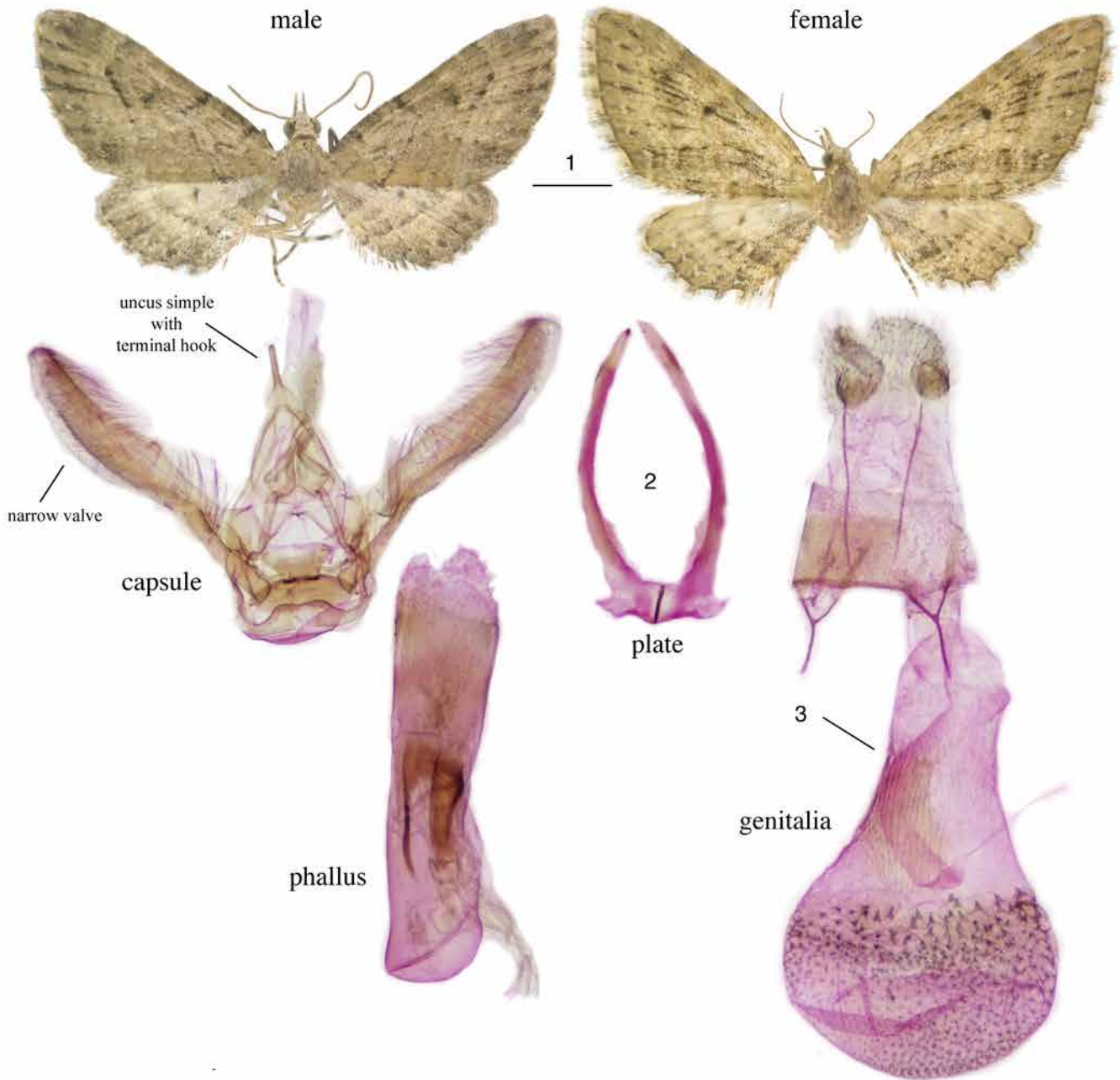
**Type deposited:** Male holotype in MCZ.

**Biology:** Larvae usually on *Juniperus scopulorum* Sarg. and *Thuja plicata* Donn, also other conifers. Adults May–August.

**Distribution:** British Columbia to Alberta border and south to Sonoma and Marin cos., California; Colorado (Larimer and Mesa cos.).

**Diagnostic characters:** Slender uncus with apical hook; other features as indicated.

**References:** McDunnough, J. H., 1949: p. 557; p. 711 fig. 3A; pl. 26 fig. 23. Bolte, K. B., 1990: p. 23, p.198; figs. 73–74.

*Eupithecia sabulosata* McDunnough, 1944

**Original description:** *Can. Ent.* 76(3):55, pl. 4, fig. 11.

**Type locality:** California, [Alameda Co.], Oakland (July).

**Type deposited:** Female holotype in CNC.

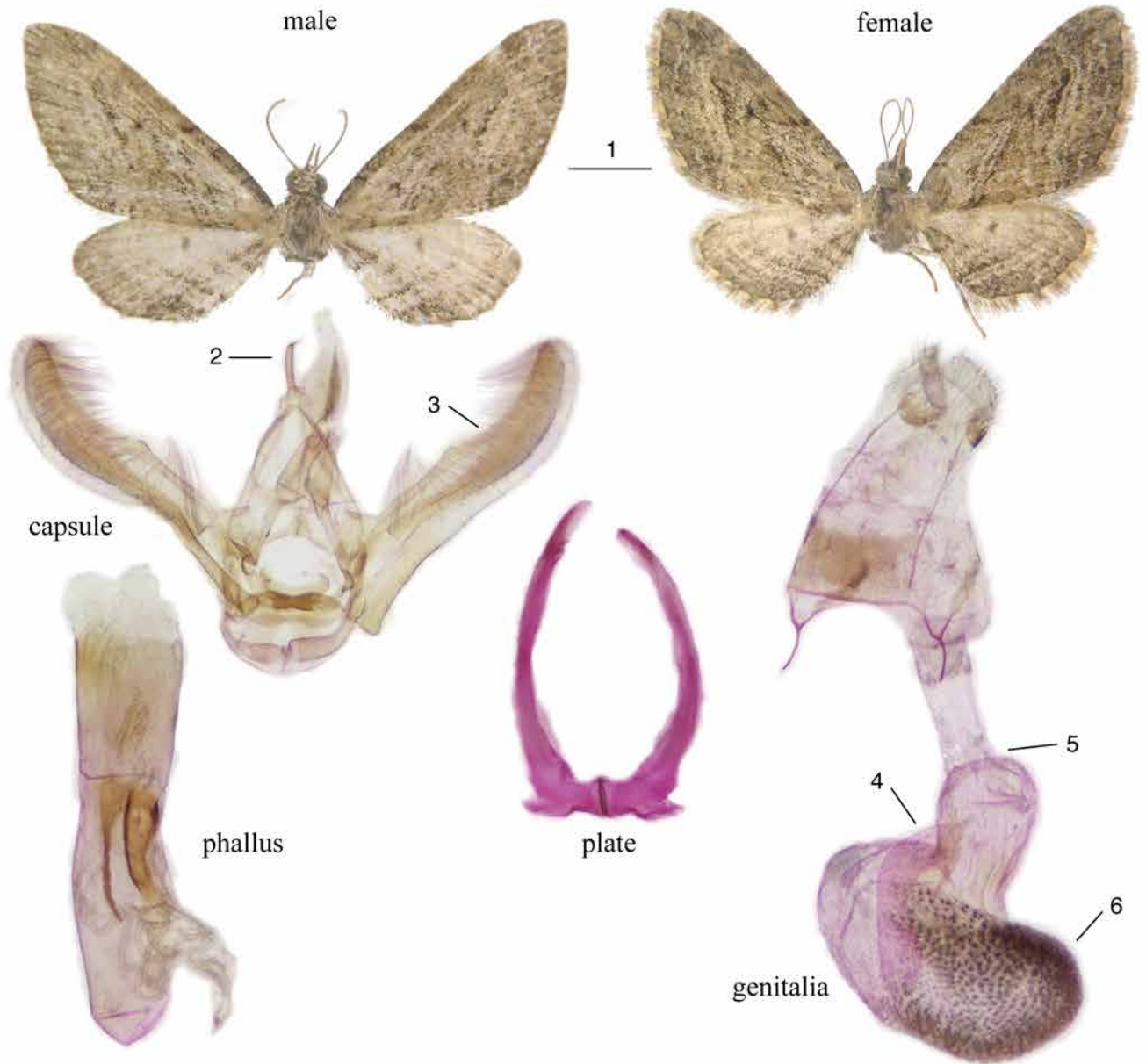
**Biology:** Larval host *Scrophularia*. Adults (specimens examined) April, June, October, December.

**Distribution:** Principally coastal California from Marin to San Diego cos., but also Sierra Co., and Arizona, Cochise Co. (Huachuca Mts.); Oregon (no locality).

**Diagnostic characters:** 1. body and forewings ochreous or pale yellowish; 2. plate narrow with narrow incurving side rails; 3. ductus seminallis with twisted neck expanding into corpus bursae.

**Reference:** McDunnough, J. H., 1949: p. 558; p. 771 fig. 3B; pl. 26 fig. 24.



*Eupithecia macrocarpata* McDunnough, 1944

**Original description:** *Can. Ent.* 76(3):56.

**Type locality:** California, [San Mateo Co.], Half Moon Bay.

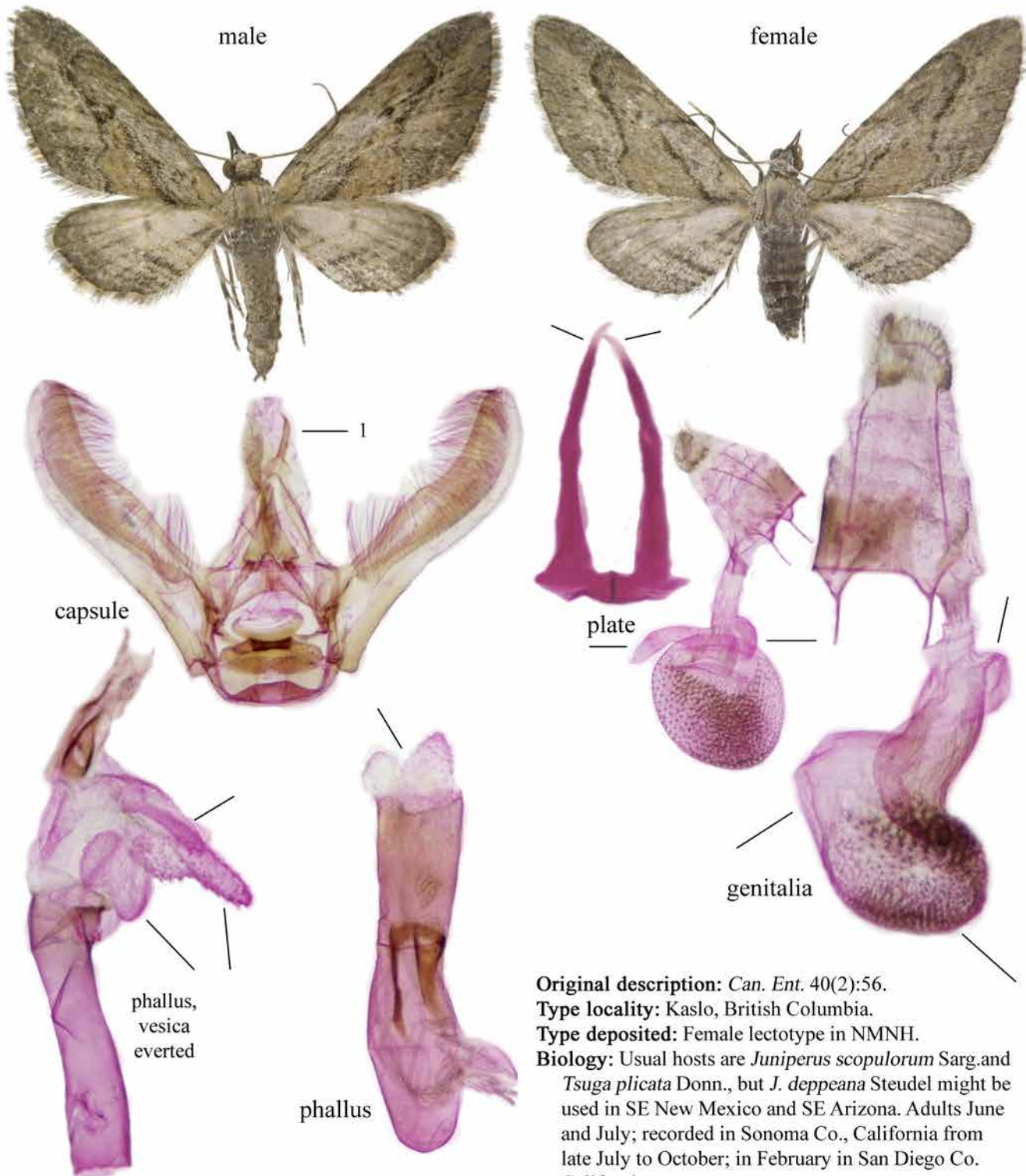
**Type deposited:** Male holotype in CNC.

**Biology:** Adults reared from larvae found on *Cupressus macrocarpa* Hartw. Also reported a host is *C. guadalupensis* var. *forbesii* (Jeps.). Adults (specimens examined) May, June, December.

**Distribution:** California with records from Alameda, San Mateo and Santa Barbara cos.

**Diagnostic characters:** 1. adults similar to *E. sabulosata*, but darker with brownish olivaceous color and heavier maculation; 2. uncus simple with terminal hook; 3. narrow valves; 4. broad ductus seminalis; 5. "kink" in neck of ductus bursae; 6. corpus bursae flattened vertically. The genitalia in both sexes are very similar to those of *E. sabulosata*.

**Reference:** McDunnough, J. H., 1949: p. 559; pl. 26 fig. 25. Genitalia not illustrated.

*Eupithecia placidata* Taylor, 1908

**Original description:** *Can. Ent.* 40(2):56.

**Type locality:** Kaslo, British Columbia.

**Type deposited:** Female lectotype in NMNH.

**Biology:** Usual hosts are *Juniperus scopulorum* Sarg. and *Tsuga plicata* Donn., but *J. deppeana* Steudel might be used in SE New Mexico and SE Arizona. Adults June and July; recorded in Sonoma Co., California from late July to October; in February in San Diego Co. California.

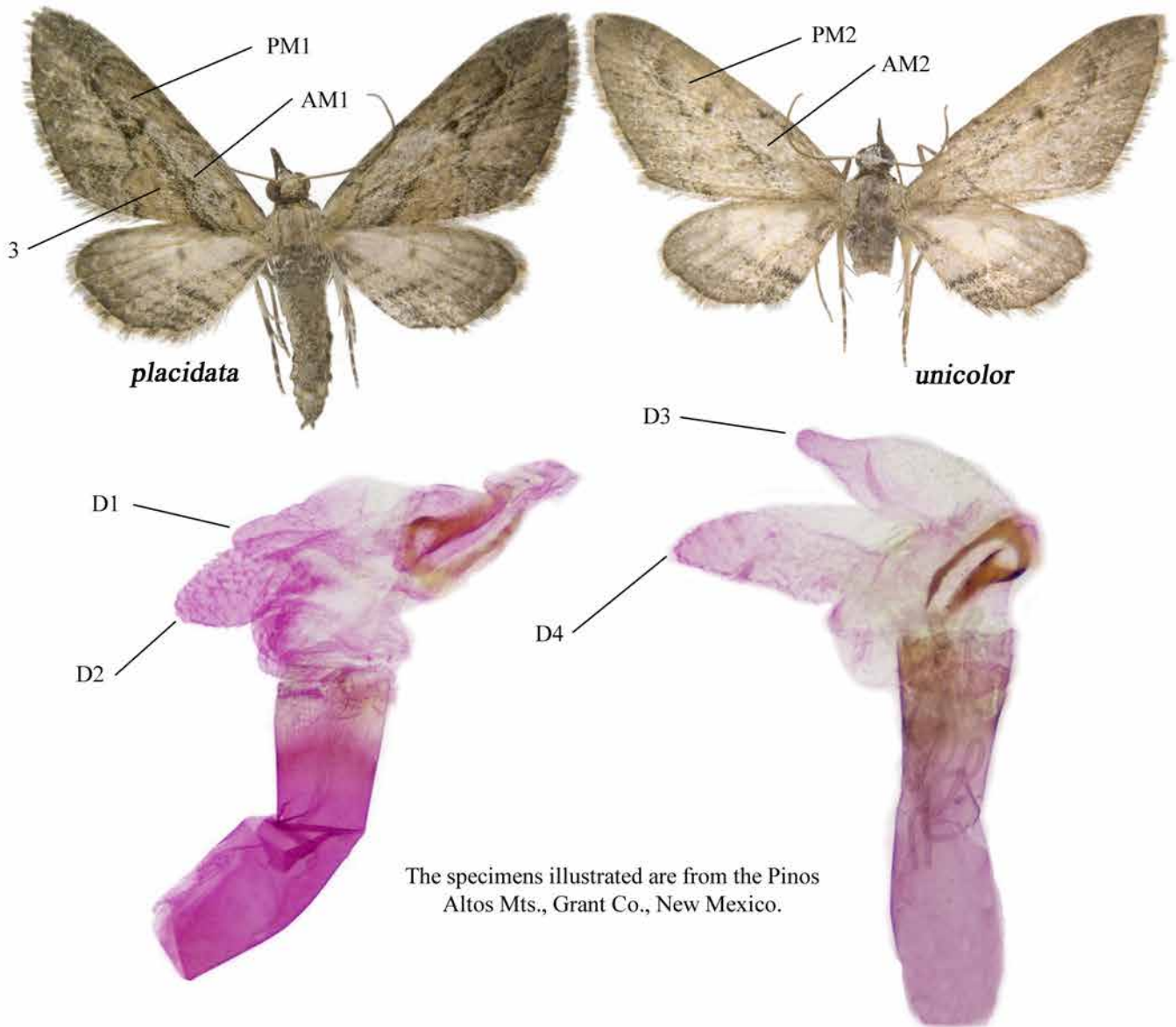
**Distribution:** From Alberta–British Columbia border westward and south to southern California; Arizona (Coconino, Cochise cos.); Colorado (Larimer, Las Animas cos.); New Mexico (Catron, Grant, Socorro cos.); Utah (San Juan Co.). Wyoming (Washakie Co.).

**Diagnostic characters:** Central area of forewing with orange blush; 1. slender uncus with hooked tip; other features as noted.

**References:** Bolte, K. B., 1990: p. 23; p. 197; figs. 71–72. McDunnough, J. H., 1949: p. 559; p. 711 fig. 3C; pl. 26 figs. 26–27.



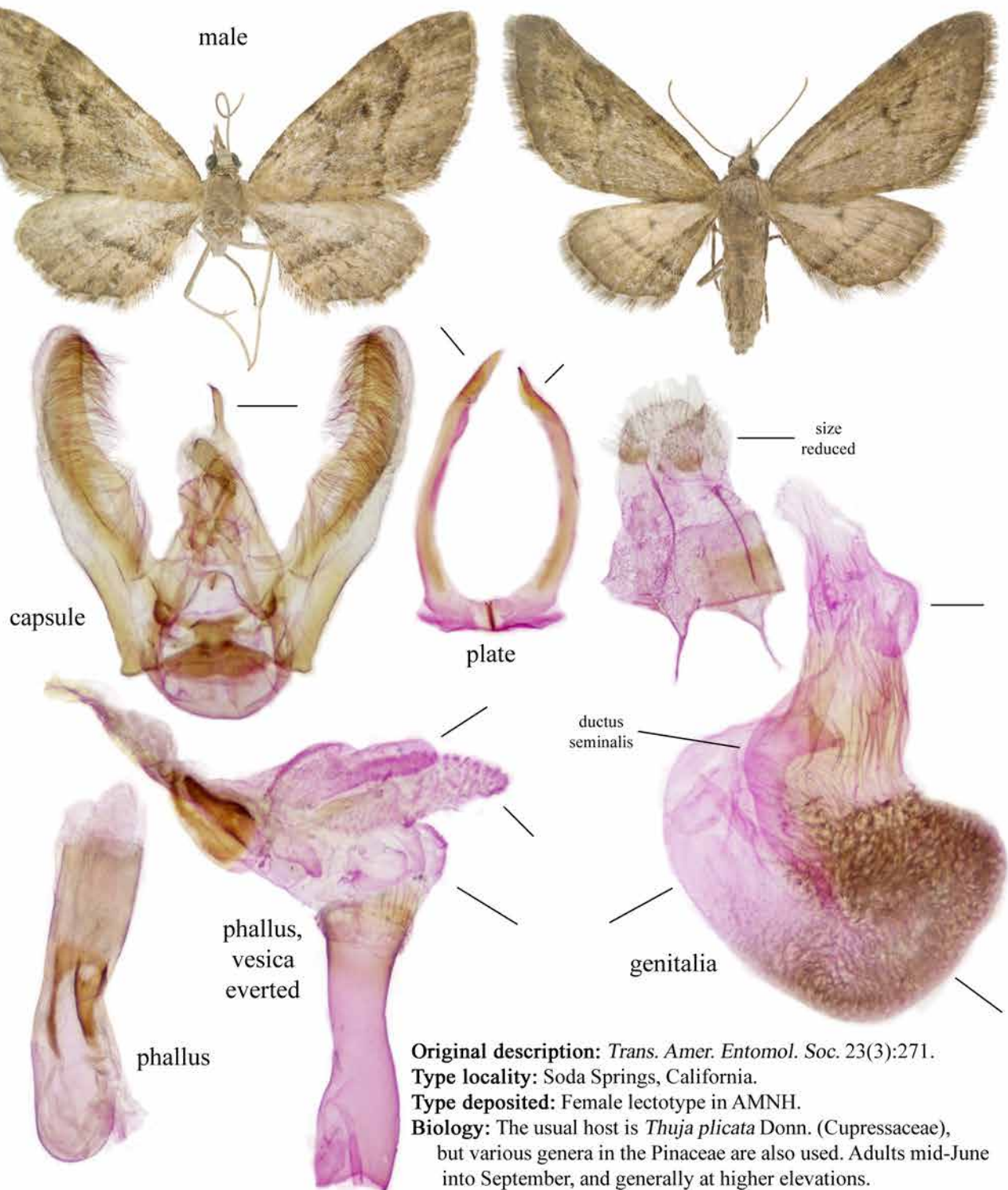
## Separation of *Epithecia placidata* and *E. unicolor* — Rocky Mtn. Region Populations



The specimens illustrated are from the Pinos  
Altos Mts., Grant Co., New Mexico.

*E. placidata* is darker in color than *unicolor* and fresh specimens have a median orangish patch (3); *E. unicolor* tends to be paler with a more subdued aspect. In *placidata* the postmedian line (PM1) slants slightly more basad and the antemedian line (AM1) is more clearly defined than the corresponding lines (PM2, AM2) in *unicolor*. In *unicolor*, the AM and PM lines are more nearly parallel compared to *placidata*. The vesica diverticuli (D1, D2) are narrower than the corresponding diverticuli (D3, D4) in *unicolor*. In *placidata*, the surface of D2 is more heavily shagreened than D4 in *unicolor*.

In California and northward along the West Coast, adults of *unicolor* have a definite ochreous aspect that does not occur in *placidata*.

*Eupithecia unicolor* (Hulst, 1896)

**Distribution:** Western British Columbia to San Diego Co., California and White Pine Co., Nevada. Bolte (1990) reported Cimmaron Canyon, New Mexico, but based on material that I have examined, specimens from the Rocky Mountain Region are referable to *E. placidata*. Additional study may prove that *unicolor* and *placidata* are conspecific. The differences between their genitalia are slight.

**Diagnostic characters:** Uncus is slender with terminal hook. Other characters indicated. *E. unicolor* has a definite yellowish appearance, with *placidata* more gray. The two dorsal forewing lines in *unicolor* are nearly vertical and parallel; in *placidata* they are inclined and diverge basally.

**References:** Bolte, K. B., 1990: p. 22; p. 196; figs. 69–70. McDunnough, J. H., 1949: p. 560; p. 711 fig. 3D; plate 26 fig. 28.

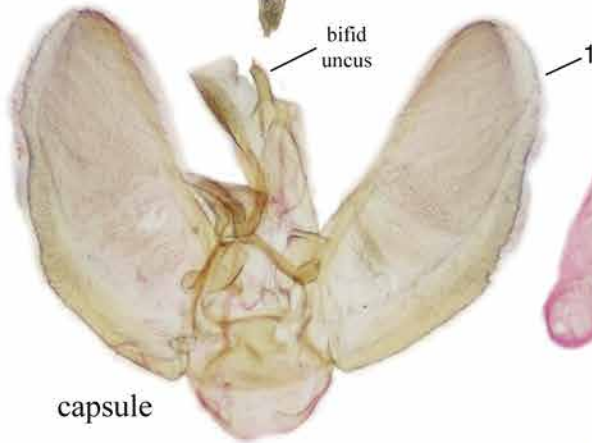
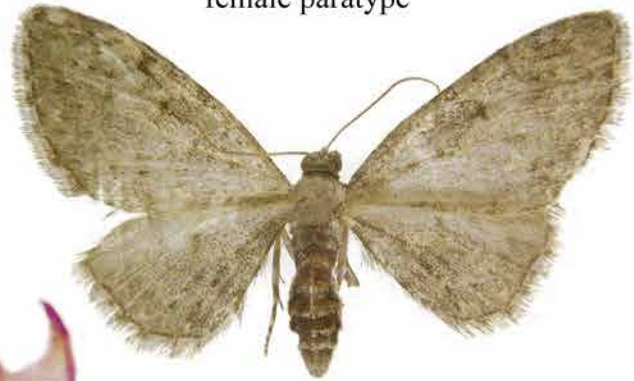


*Eupithecia vicksburgi* Rindge, 1985

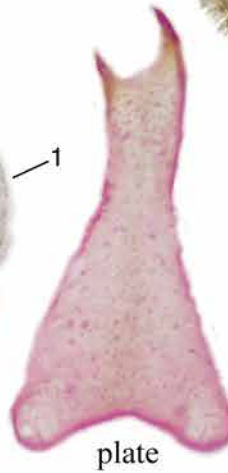
male paratype



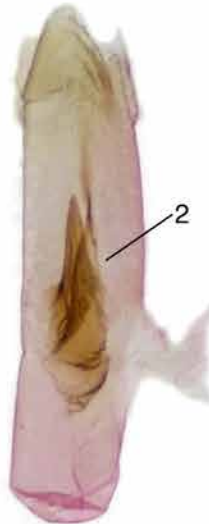
female paratype



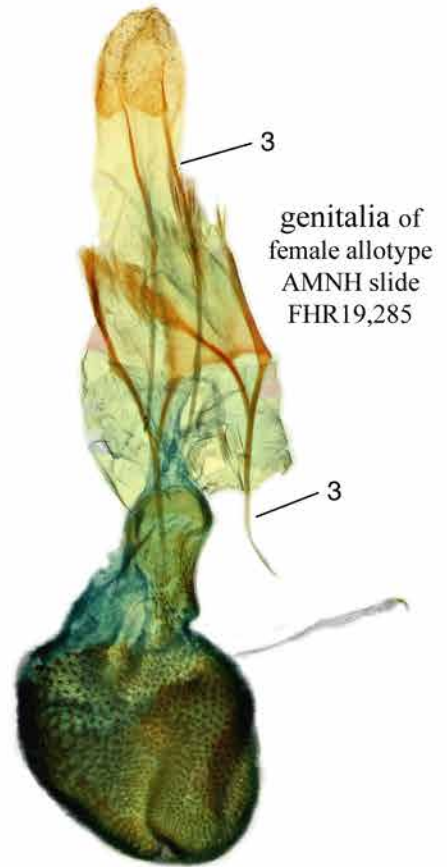
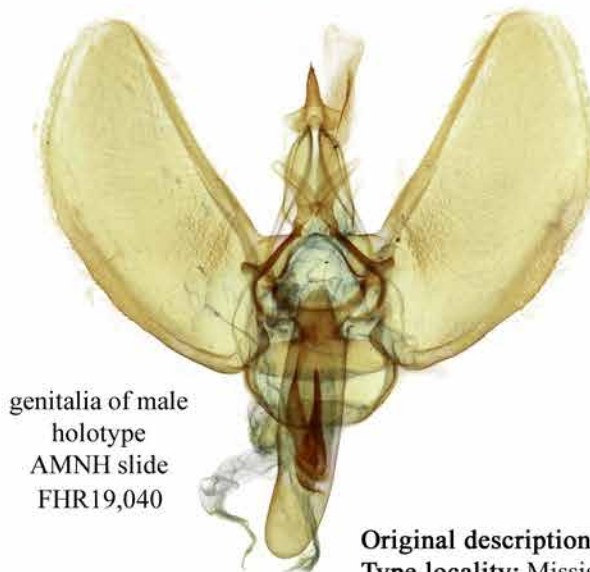
capsule



plate



phallus

genitalia of  
female allotype  
AMNH slide  
FHR19,285genitalia of male  
holotype  
AMNH slide  
FHR19,040

**Original description:** *Amer. Mus. Novitates* 2809:15, figs. 11, 19, 20, 37.

**Type locality:** Mississippi, Warren Co., Vicksburg, 28 March, 1981.

**Type deposited:** Male holotype in AMNH.

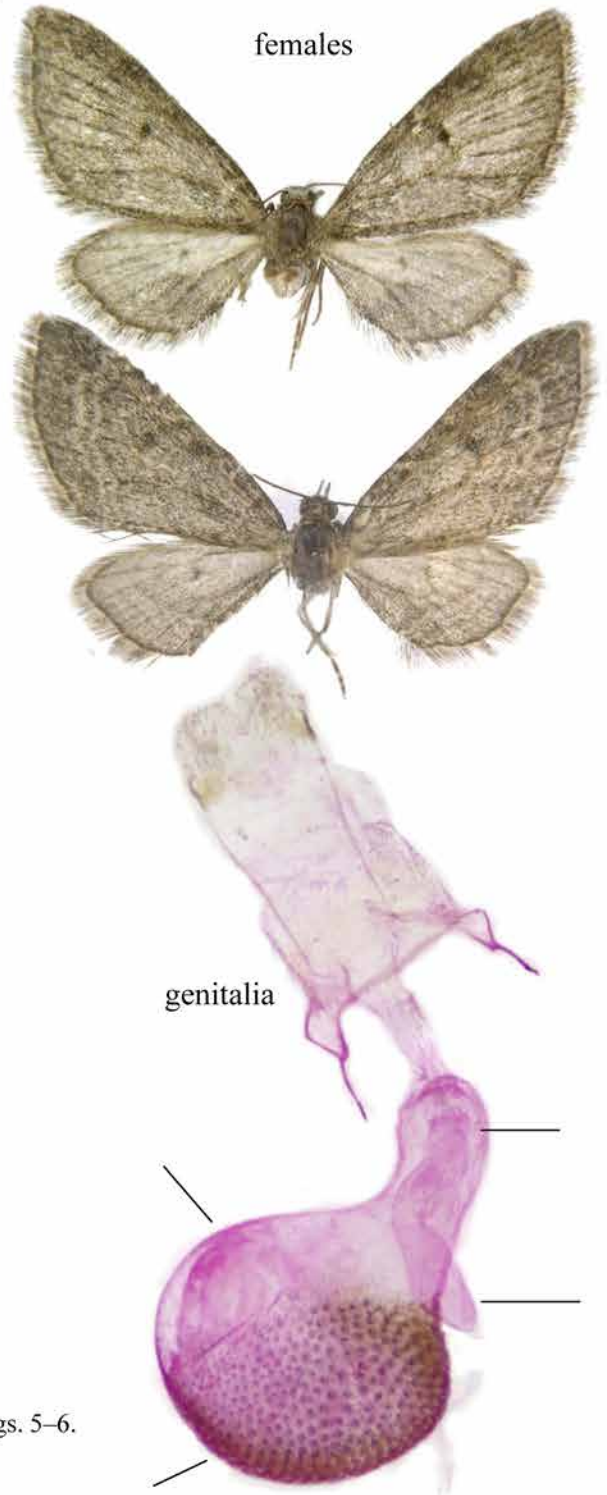
**Biology:** Unknown. Adults March–April; September–October.

**Distribution:** Mississippi.

**Diagnostic characters:** 1. valve broad with convex margin; 2. two sclerotized rods; 3. greatly elongated apophyses. Forewings broad with generally indistinct maculation.

male  
not available

females



**Original description:** *Can. Ent.* 83(4):80, pl. 2 figs. 1–5; pl. 4 figs. 5–6.

**Type locality:** British Columbia, Kamloops district, Otter Lake.

**Type deposited:** Female holotype in CNC.

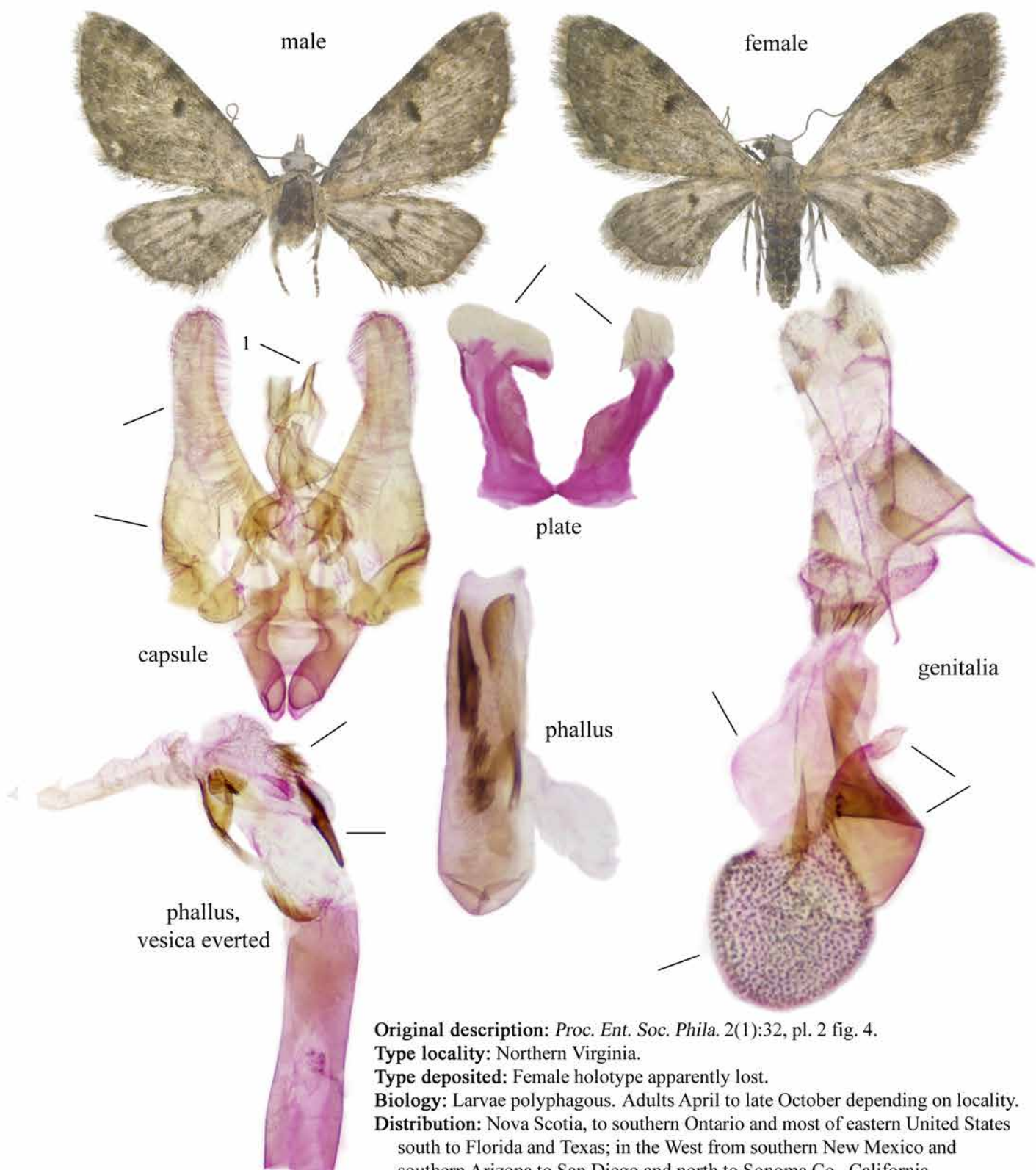
**Biology:** Primary host is *Pseudotsuga menziesii* (Mirb.), but also *Pinus ponderosa* Laws. and *Picea englemanni* Parry. Adults late May to late July, depending on latitude and elevation.

**Distribution:** Mainly western Alberta to western British Columbia, including Vancouver Is.

**Diagnostic characters:** Even for *Eupithecia*, a rather drab little moth with several phenotypes. Genitalia features as indicated. The two female specimens illustrated are from British Columbia.

**Reference:** Bolte, K. B., 1990: p. 19; p. 194; figs. 65–66.



*Eupithecia miserulata* Grote, 1863

**Original description:** *Proc. Ent. Soc. Phila.* 2(1):32, pl. 2 fig. 4.

**Type locality:** Northern Virginia.

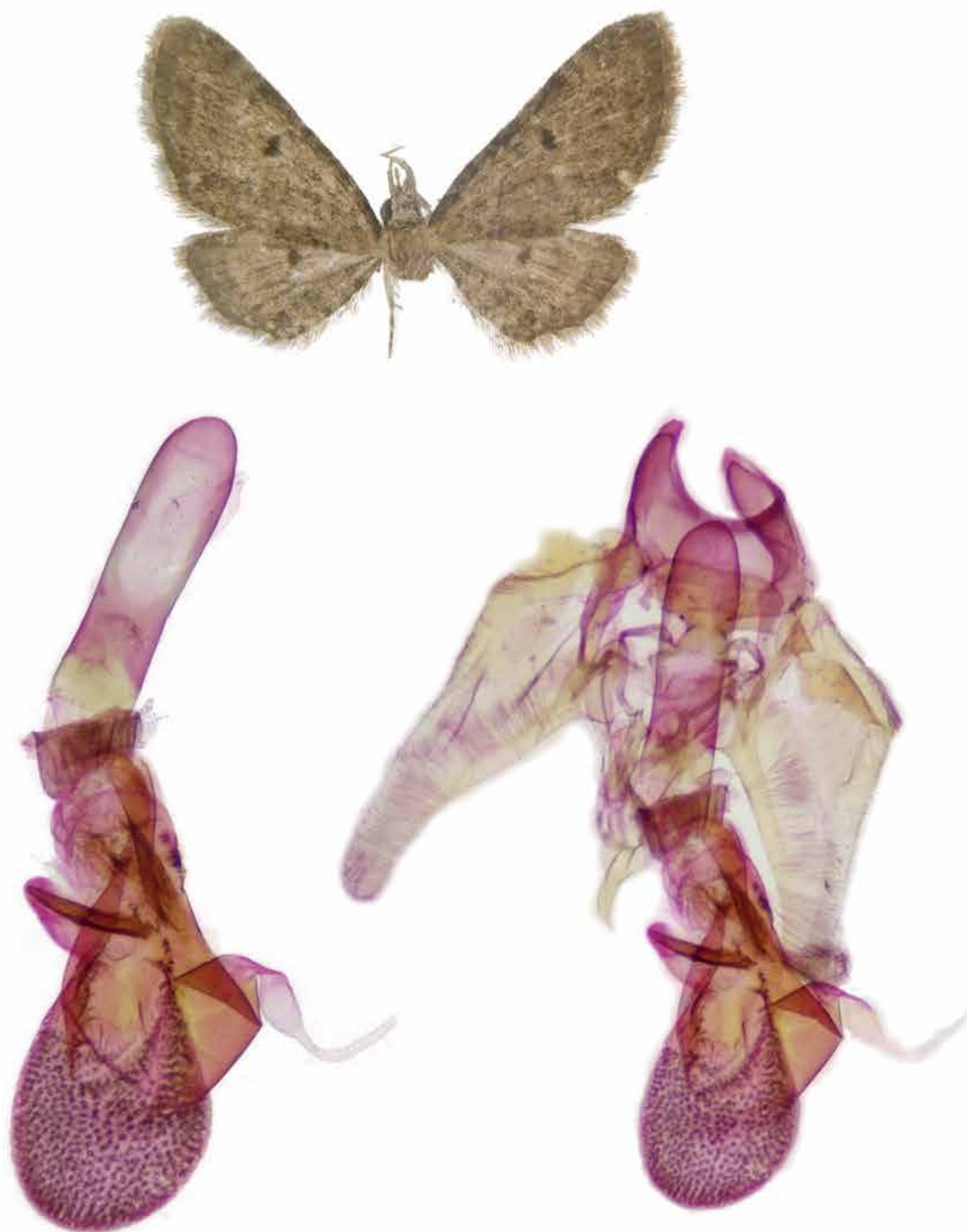
**Type deposited:** Female holotype apparently lost.

**Biology:** Larvae polyphagous. Adults April to late October depending on locality.

**Distribution:** Nova Scotia, to southern Ontario and most of eastern United States south to Florida and Texas; in the West from southern New Mexico and southern Arizona to San Diego and north to Sonoma Co., California.

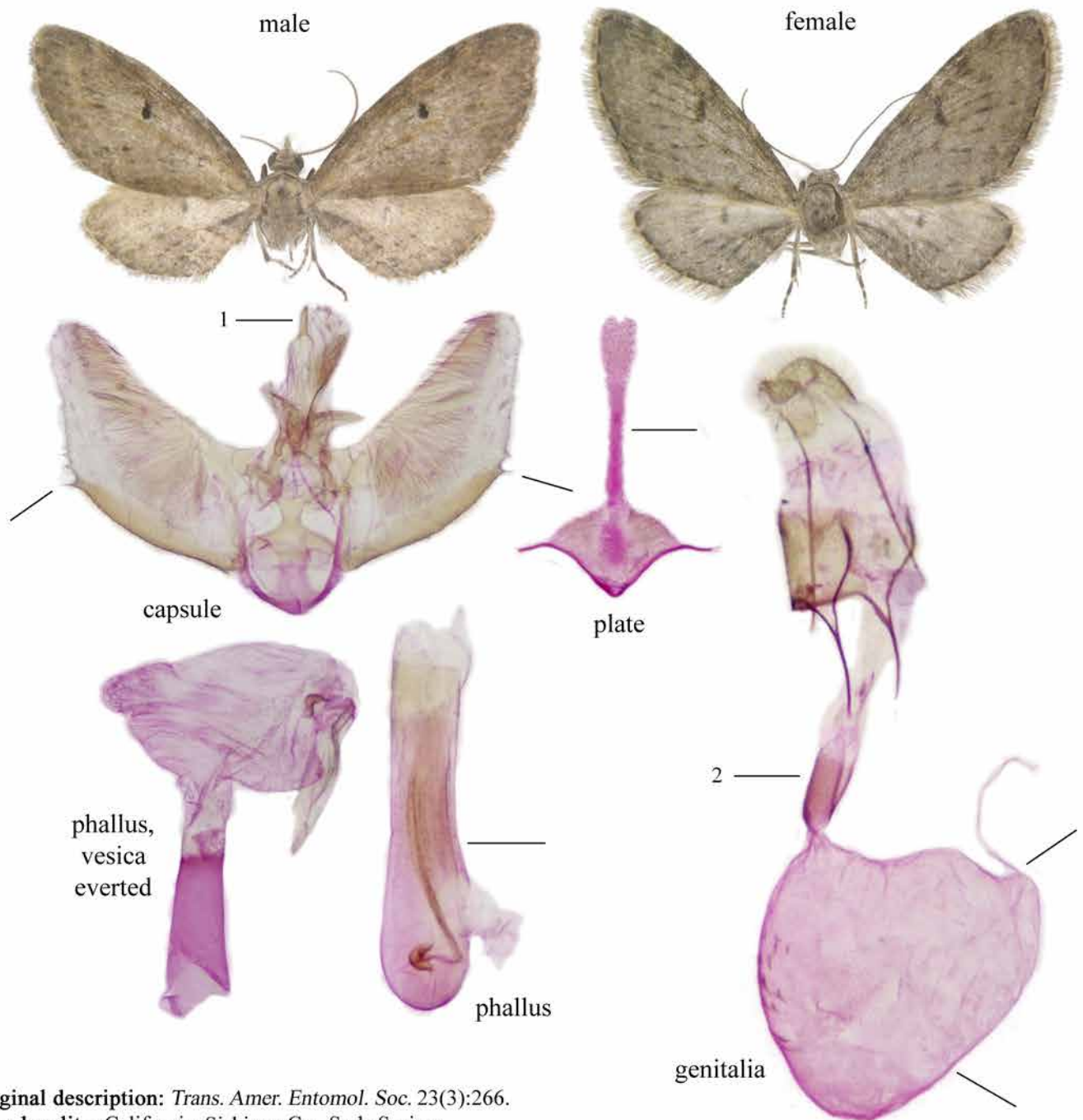
**Diagnostic characters:** 1. simple uncus with hooked tip; pointers note additional characters.

**References:** Bolte, K. B., 1990: p. 27; p. 201; figs. 79–80. McDunnough, J. H., 1949: pp. 561–563; p. 712 fig. 4A; pl. 26 figs. 29–32.

*Eupithecia miserulata* Grtote, 1863 continued

When dissected this female specimen was found to have the genitalia of a male still coupled. The moth was collected in Menifee Co., Kentucky. In the associated series, no male with missing genitalia was found.



*Eupithecia misturata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):266.

**Type locality:** California, Siskiyou Co., Soda Springs.

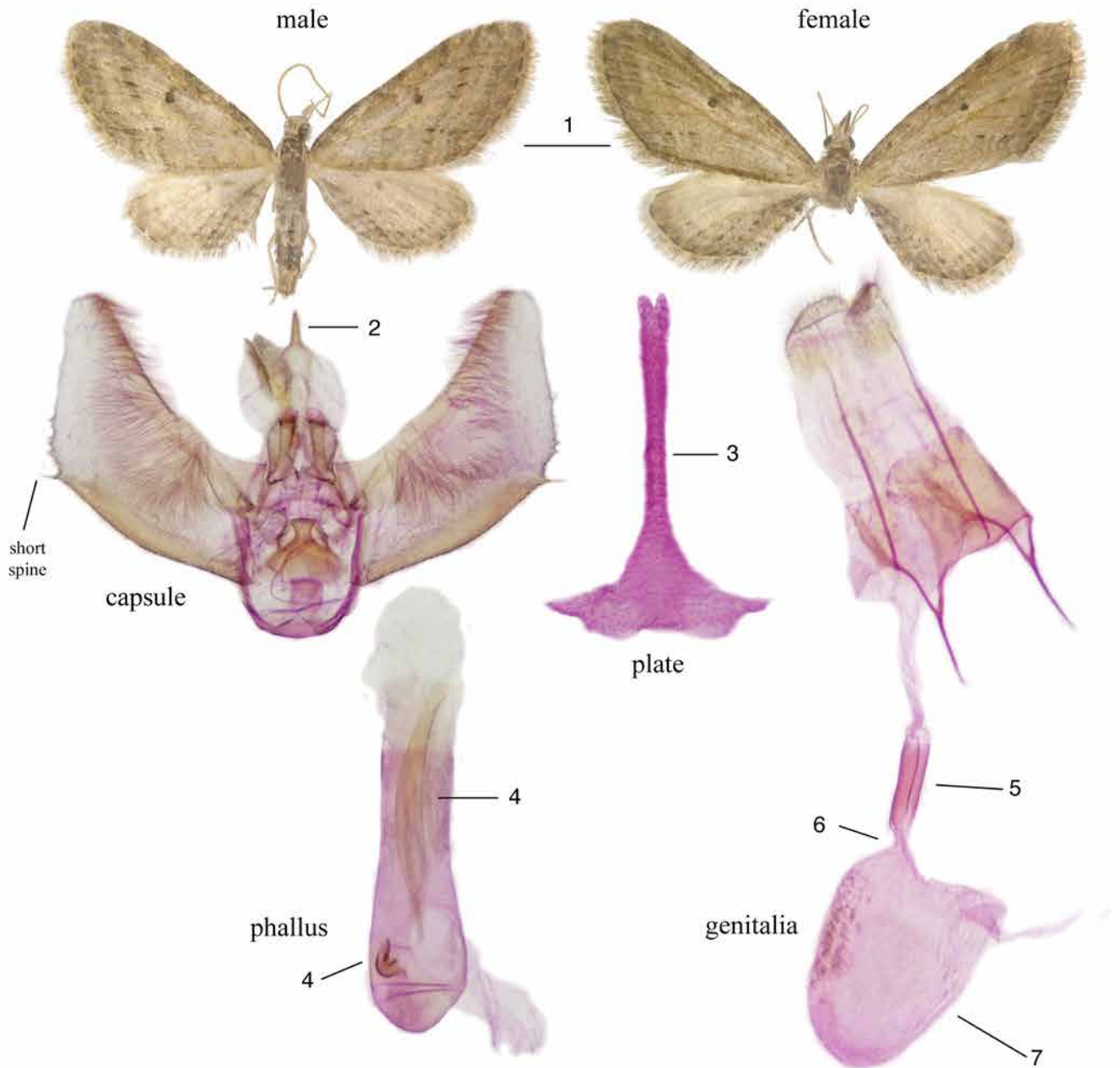
**Type deposited:** Female lectotype in AMNH.

**Biology:** Multiple larval hosts in the families Betulaceae, Caryophyllaceae, Ericaceae, Fagaceae, Pinaceae, Rhamnaceae, Rosaceae, and perhaps others. Adults early May to early September.

**Distribution:** Across Canada from Labrador to western British Columbia, northern Alberta and Hunker Creek, Yukon Territory; in western North America, south to San Diego Co. and Santa Catalina Is., California, southern Arizona, southwestern New Mexico, Colorado, Utah and Wyoming; in eastern North America from Labrador to the Black Mountains in North Carolina.

**Diagnostic characters:** Adults small and gray or grayish-brown with indistinct markings; 1. uncus tip bifid with points widely separated; 2. colliculum long and narrow; other features as indicated.

**References:** Bolte, K. B., 1990: p. 42; p. 214; figs. 105–106. McDunnough, J. H., 1949: p. 563; p. 712 fig. 4B; pl. 26 figs. 33–36; pl. 27 fig. 1.

*Eupithecia bivittata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):271.

**Type locality:** California, [Mendocino Co.], Mendocino.

**Type deposited:** Female holotype in AMNH.

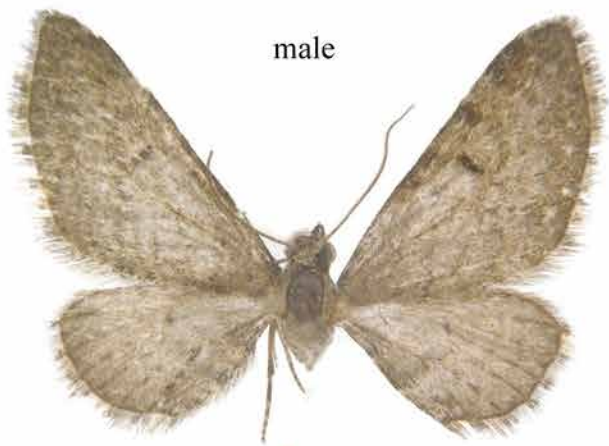
**Biology:** Larval host is *Ceanothus* sp. [Rhamnaceae]. February–August; apparently several broods.

**Distribution:** Coastal California from Humboldt Co. to Monterey Co.

**Diagnostic characters:** 1. The dorsal forewings are light brown and poorly maculated; 2. uncus broad and bifid; 3. narrow rod, expanding and bifurcate at tip; 4. armature of vesica a single long twisted piece of chitin and a more heavily chitinized fragment; 5. very narrow and elongated colliculum; 6. ductus bursae short and constricted; 6. corpus bursae heart shaped.

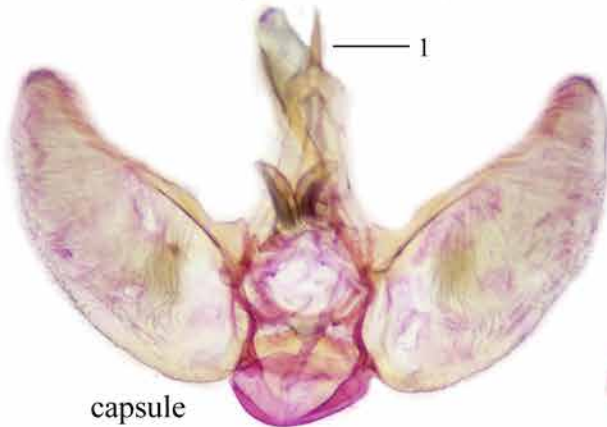
**Comment:** In all respects, *E. bivittata* and *E. misturata* are virtually identical with the exception of wing color and maculation. The former is light tan and poorly maculated, whereas the latter is gray and well maculated. The geographic ranges of these two species overlap.

**Reference:** McDunnough, J. H., 1949: p. 567; pl. 27 fig. 5. Genitalia not illustrated.

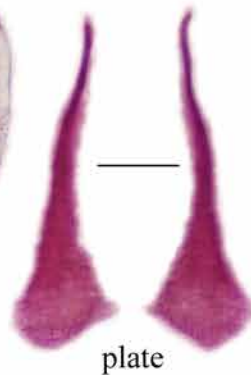
*Eupithecia pygmaeata obumbrata* Taylor, 1906

male

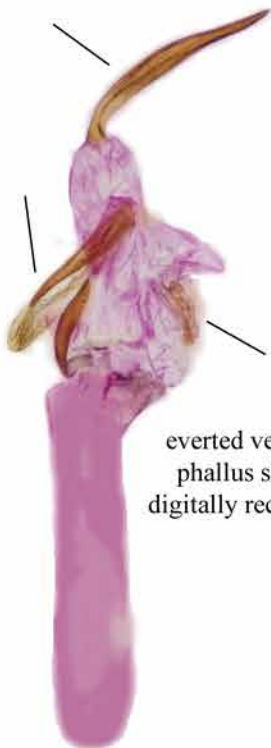
female  
not  
available



capsule



plate



everted vesica,  
phallus shaft  
digitally recreated

**Original description:** *Can. Ent.* 38(12):393.

**Type locality:** British Columbia, Goldstream near Victoria, Vancouver Is.

**Type deposited:** Female lectotype in NMNH.

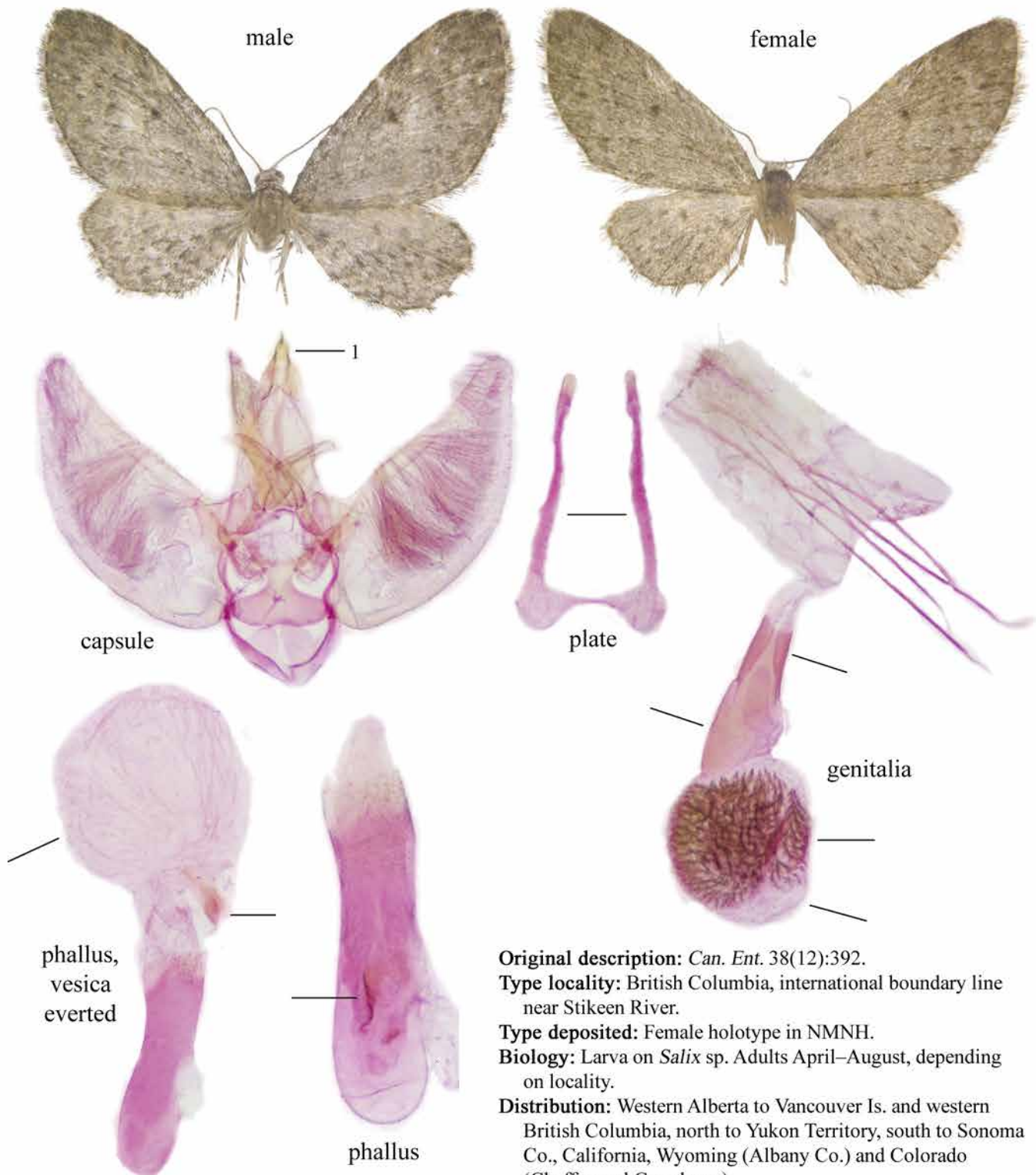
**Biology:** Unknown. Adults typically May–late July; early September in Grant Co., NM at 8000' in Pinos Altos Mts.

**Distribution:** Eastern Newfoundland to Vancouver Island; north to Alaska; Churchill, Manitoba; Nain, Labrador; south in the Rocky Mts. to SW New Mexico and Cochise Co., Arizona.

**Diagnostic characters:** 1. long slender uncus with apical hook; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 37; p. 210 (note vesica not fully everted); figs. 97–98. McDunnough, J. H., 1949: p. 567; p. 712 fig. 4C; pl. 27 fig. 6.



*Eupithecia bryanti* Taylor, 1906

**Original description:** *Can. Ent.* 38(12):392.

**Type locality:** British Columbia, international boundary line near Stikeen River.

**Type deposited:** Female holotype in NMNH.

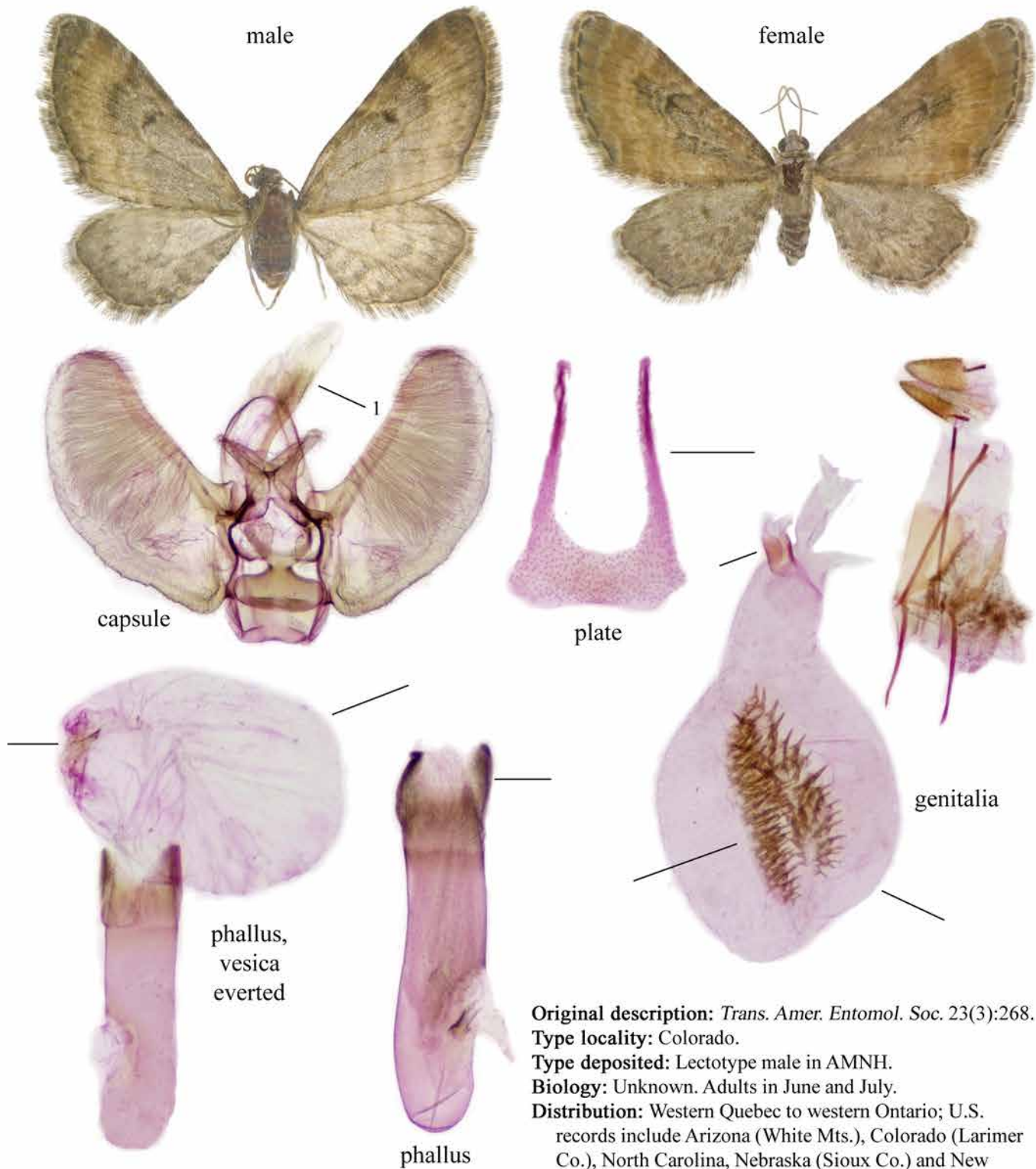
**Biology:** Larva on *Salix* sp. Adults April–August, depending on locality.

**Distribution:** Western Alberta to Vancouver Is. and western British Columbia, north to Yukon Territory, south to Sonoma Co., California, Wyoming (Albany Co.) and Colorado (Chaffee and Grand cos.).

**Diagnostic characters:** 1. broad and short hood-like uncus terminating in a single hook; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 33; p. 207; figs. 91–92. McDunnough, J. H., 1949: p. 569; p. 712 fig. 4D; pl. 27 fig. 7.



*Eupithecia coloradensis* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):268.

**Type locality:** Colorado.

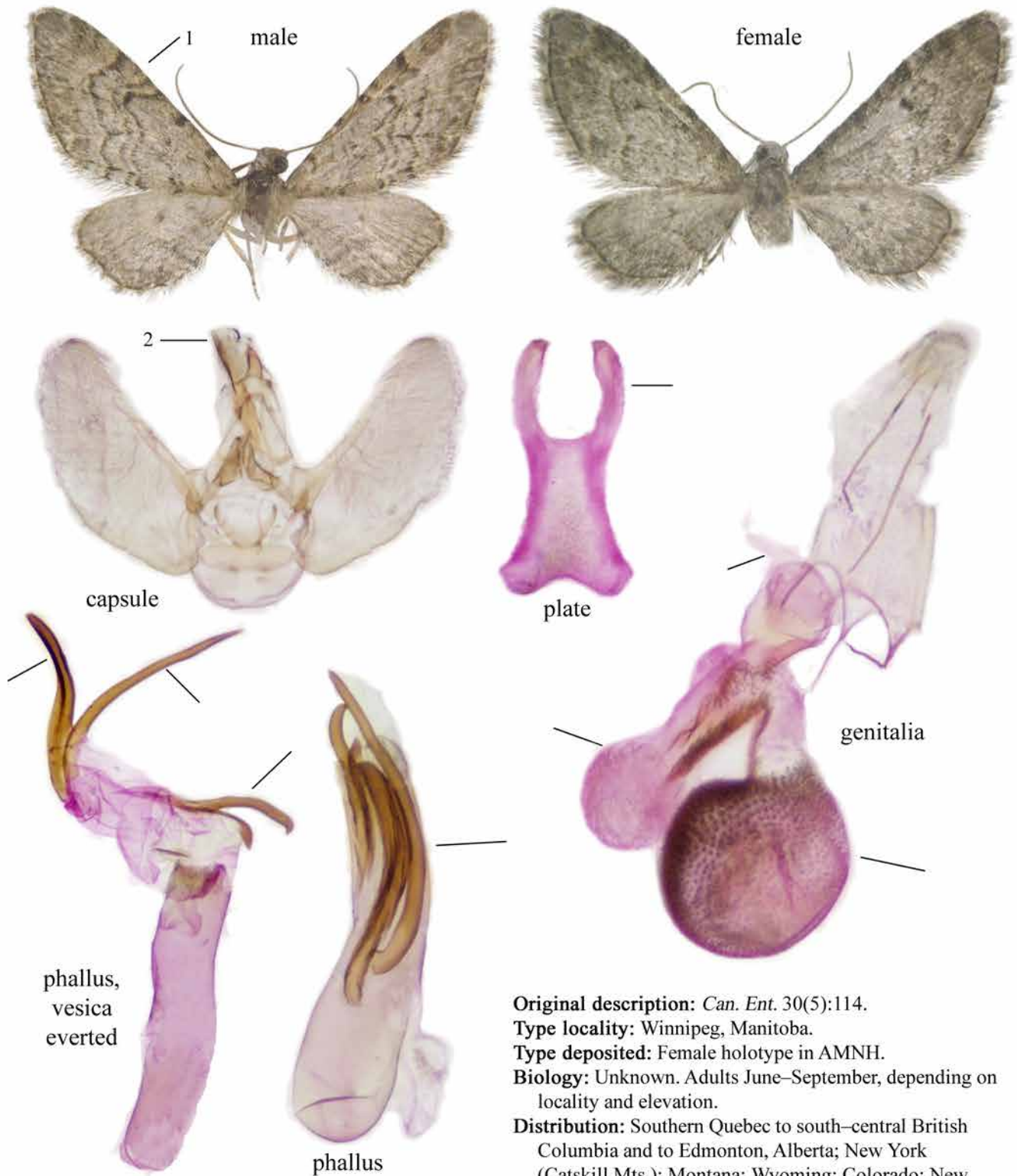
**Type deposited:** Lectotype male in AMNH.

**Biology:** Unknown. Adults in June and July.

**Distribution:** Western Quebec to western Ontario; U.S. records include Arizona (White Mts.), Colorado (Larimer Co.), North Carolina, Nebraska (Sioux Co.) and New Mexico (Grant Co.).

**Diagnostic characters:** 1. uncus thin and very slender with terminal hook; other features as indicated by pointers. Adults have a distinctive coppery flush. Based on material examined, specimens from SW New Mexico (male illustrated above) tend to be considerably larger than individuals from Colorado, Nebraska and Ontario.

**References:** McDunnough, J. H., 1949: p. 570; p. 712 fig. 4E; pl. 27 figs. 8–10. Bolte, K. B., 1990: p. 32; p. 206; figs. 89–90.

*Eupithecia borealis* (Hulst, 1898)

**Original description:** *Can. Ent.* 30(5):114.

**Type locality:** Winnipeg, Manitoba.

**Type deposited:** Female holotype in AMNH.

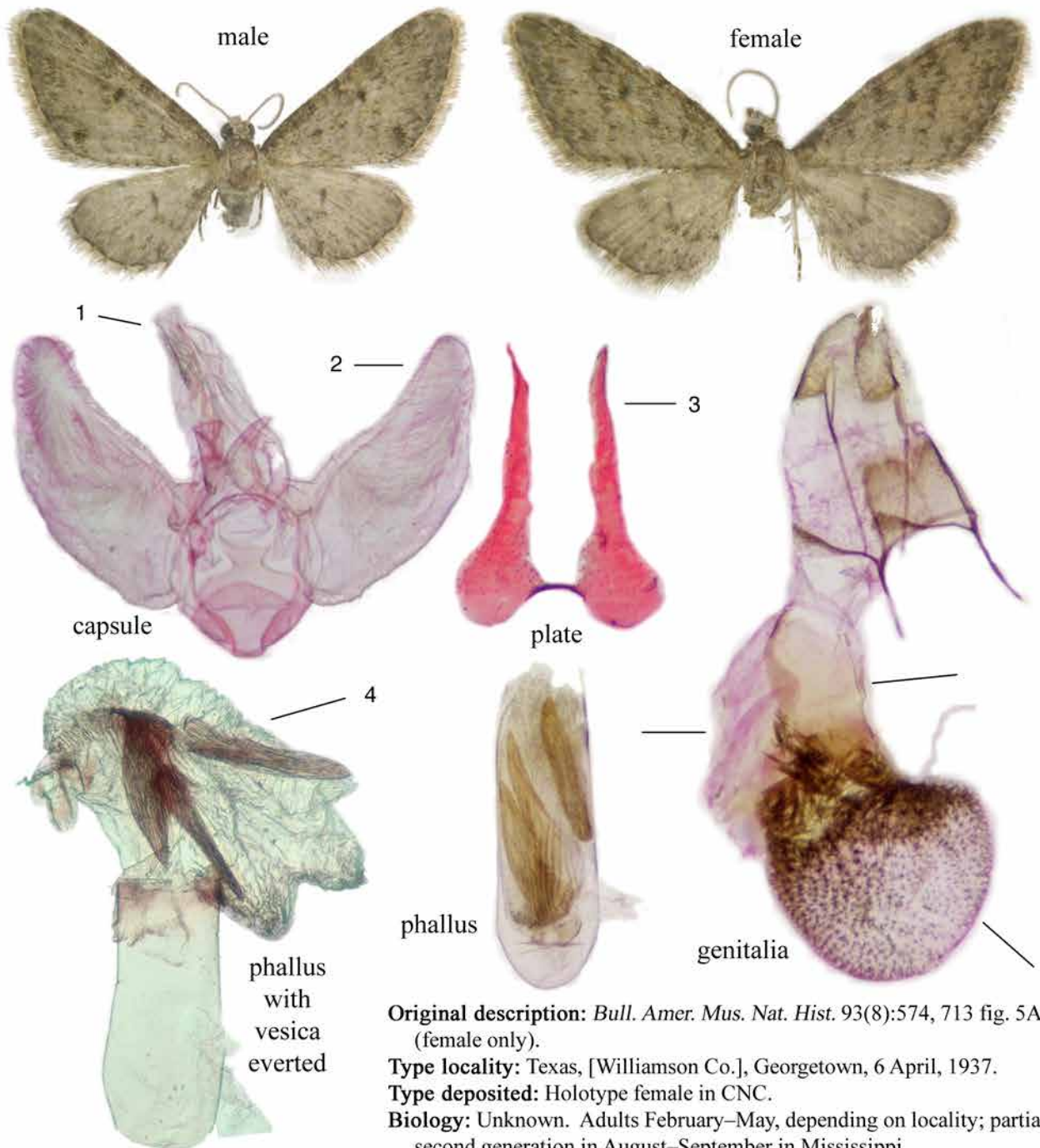
**Biology:** Unknown. Adults June–September, depending on locality and elevation.

**Distribution:** Southern Quebec to south-central British Columbia and to Edmonton, Alberta; New York (Catskill Mts.); Montana; Wyoming; Colorado; New Mexico; Utah; southern Arizona.

**Diagnostic characters:** 1. 3 parallel wavy lines; 2. broad chunky uncus terminating in a single triangular point; additional features as indicated.

**References:** Bolte, K. B., 1990: p. 51; p. 221; figs. 119–120. McDunnough, J. H., 1949: p. 573; p. 712 fig. 4H; p. 27 fig. 14.



*Eupithecia jejuna* McDunnough, 1949

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):574, 713 fig. 5A (female only).

**Type locality:** Texas, [Williamson Co.], Georgetown, 6 April, 1937.

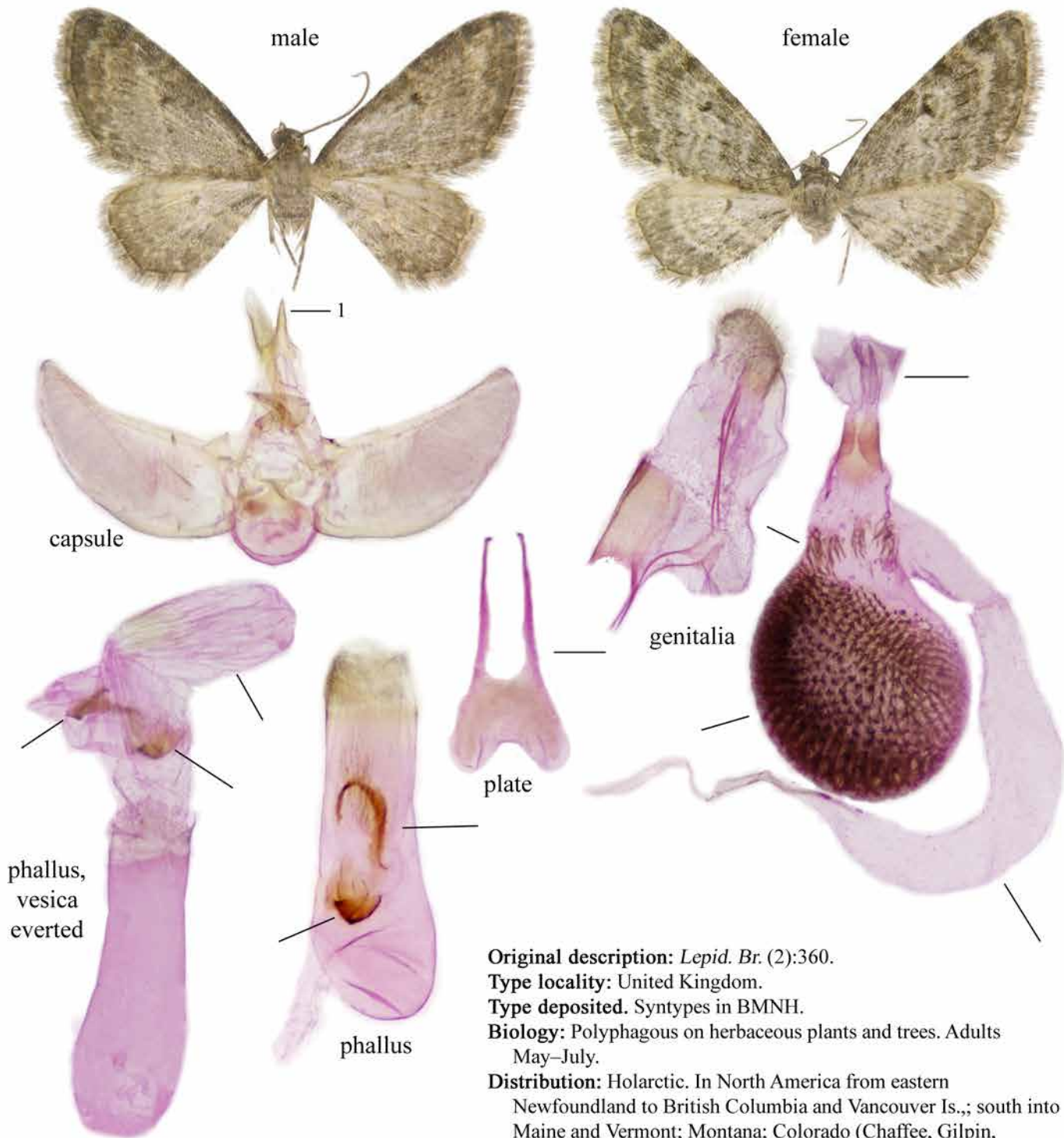
**Type deposited:** Holotype female in CNC.

**Biology:** Unknown. Adults February–May, depending on locality; partial second generation in August–September in Mississippi.

**Distribution:** Widespread from Texas and Oklahoma eastward to coastal North Carolina and south to Florida, Mississippi and Louisiana.

**Diagnostic characters:** 1. uncus flattened laterally with 2 points; 2. valve narrows toward apex; 3. plate consists of two parallel tapered rails with circular bases connected by a narrow bridge; 4. three robust spines.

**Reference:** Rindge, F. H., 1985. *Amer. Mus. Novitates*, 2809:1–18.

*Eupithecia subfuscata* (Haworth, 1809)

**Original description:** *Lepid. Br.* (2):360.

**Type locality:** United Kingdom.

**Type deposited.** Syntypes in BMNH.

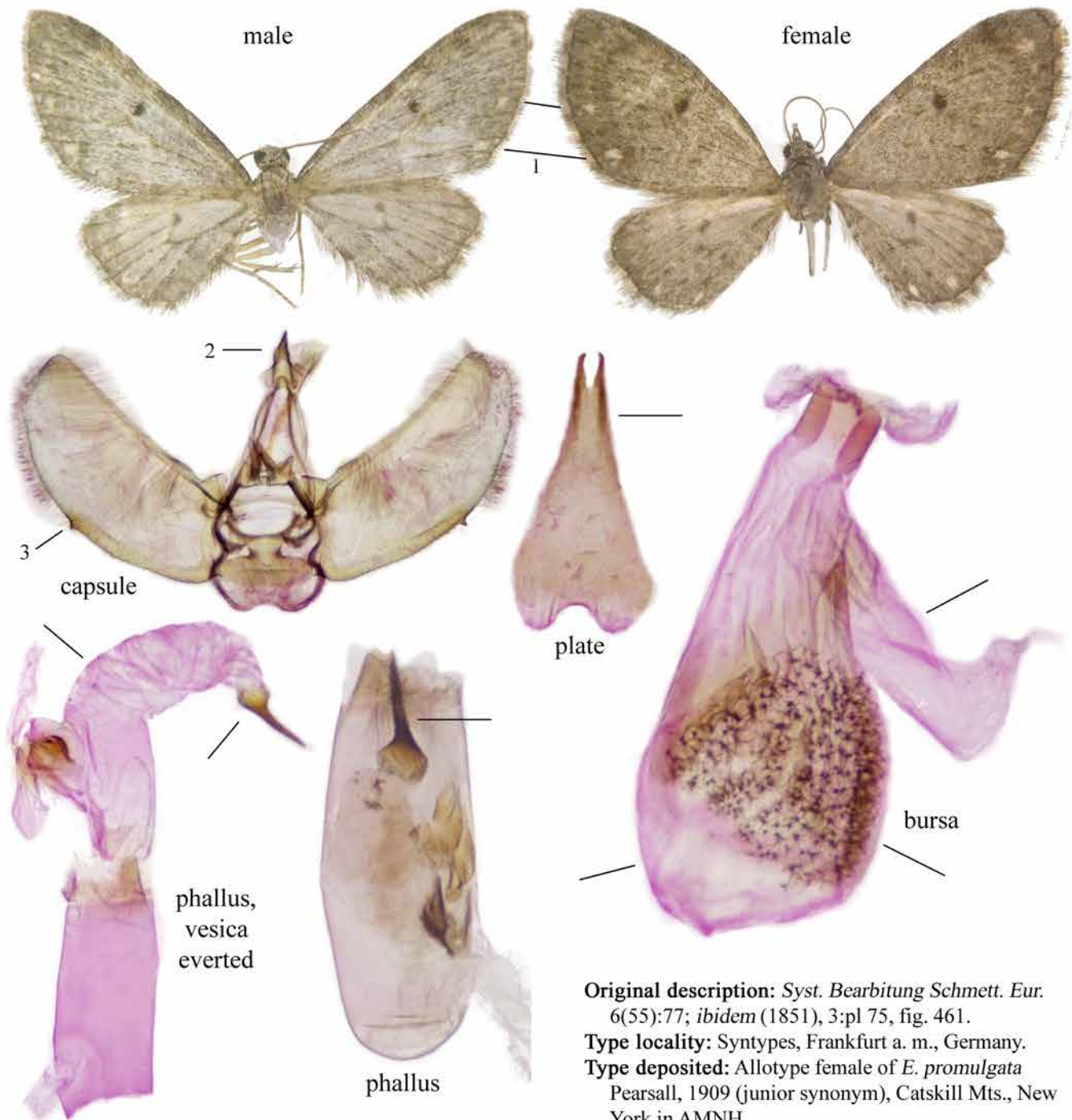
**Biology:** Polyphagous on herbaceous plants and trees. Adults May–July.

**Distribution:** Holarctic. In North America from eastern Newfoundland to British Columbia and Vancouver Is.; south into Maine and Vermont; Montana; Colorado (Chaffee, Gilpin, Jackson, Jefferson, Larimer, Routt cos.); Wyoming (Albany, Teton, Washakie cos.); New Mexico (Catron, Otero cos.); Oregon and Washington.

**Diagnostic characters:** 1. uncus tip bifid; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 34; p. 208; figs. 93–94. McDunnough, J. H., 1949: p. 575 (as *castigata* Hübner); p. 713 fig. 5B; pl. 27 fig. 27.



*Eupithecia tripunctaria* Herrich-Schäffer, 1852

**Original description:** *Syst. Bearbeitung Schmett. Eur.* 6(55):77; *ibidem* (1851), 3:pl 75, fig. 461.

**Type locality:** Syntypes, Frankfurt a. m., Germany.

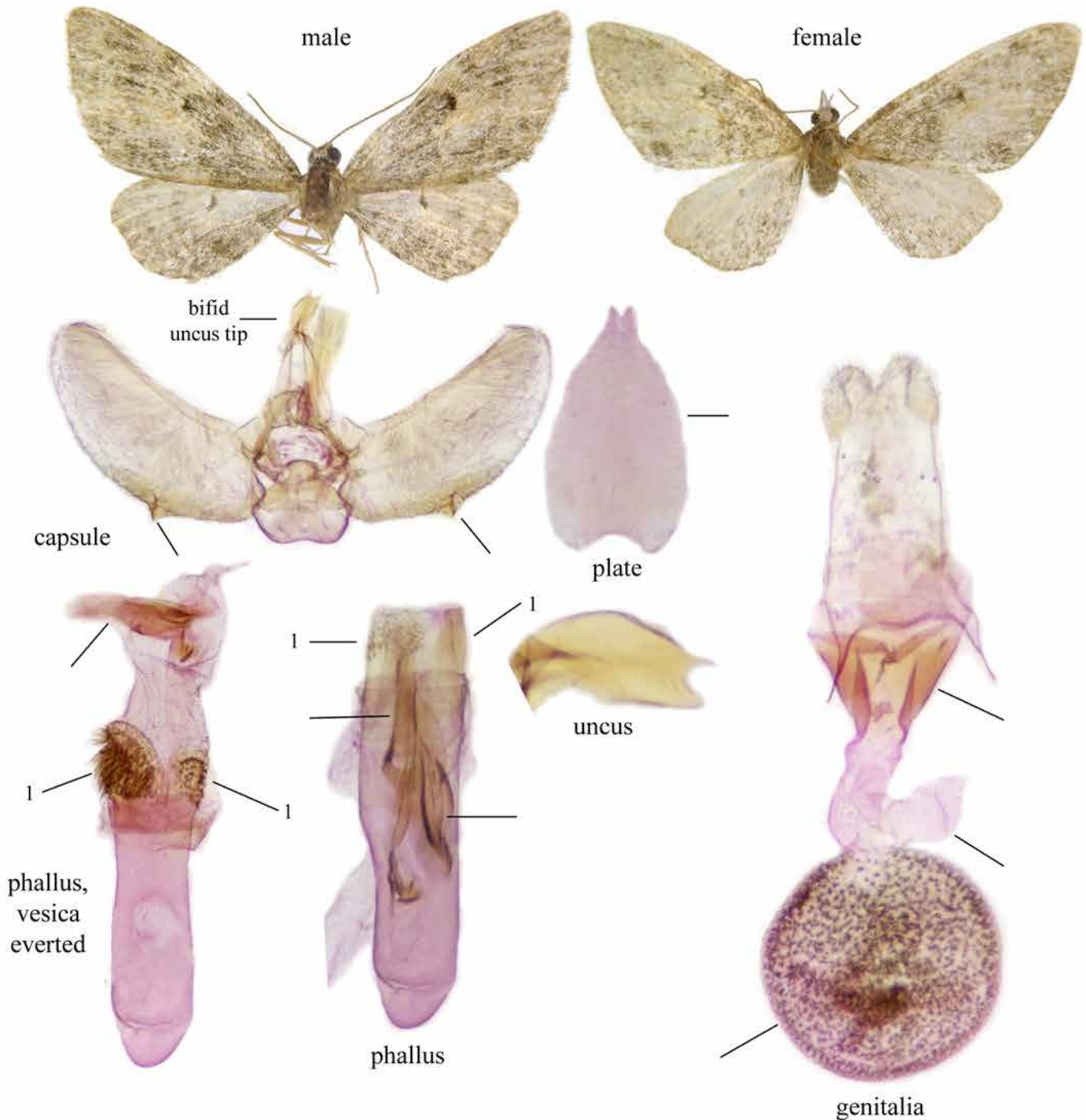
**Type deposited:** Allotype female of *E. promulgata* Pearsall, 1909 (junior synonym), Catskill Mts., New York in AMNH.

**Biology:** Larval hosts include Caprifoliaceae, *Viburnum* sp.) and various members of the Apiaceae. Adults, depending on locality, June–September. Bivoltine in parts of Europe.

**Distribution:** Holarctic. In North America across Canada from Labrador, Newfoundland and Nova Scotia to Vancouver Island; United States records include New York, Wyoming (Albany Co.), and California (Marin, Sierra, San Bernadino cos.). The species is probably more widespread than records suggest.

**Diagnostic characters:** 1. pale spots; 2. uncus laterally very broad basally tapering to a bifid tip with small upper hook; 3. pointed projection, obsolete in some specimens; other features as indicated.

**References:** Bolte, K. B., 1990: p. 69; p. 233; figs. 147–148. McDunnough, J. H., 1949: (as *albipunctata* Haworth) p. 576; p. 713 fig. 5C; pl. 27 figs. 17–18.

*Eupithecia harrisonata* Mackay, 1951

**Original description:** *Can. Ent.* 83(4):83, pl. 1, figs. 10–13; pl. 4, figs. 7–8.

**Type locality:** Harrison Lake, New Westminster District, British Columbia.

**Type deposited:** Male holotype in CNC.

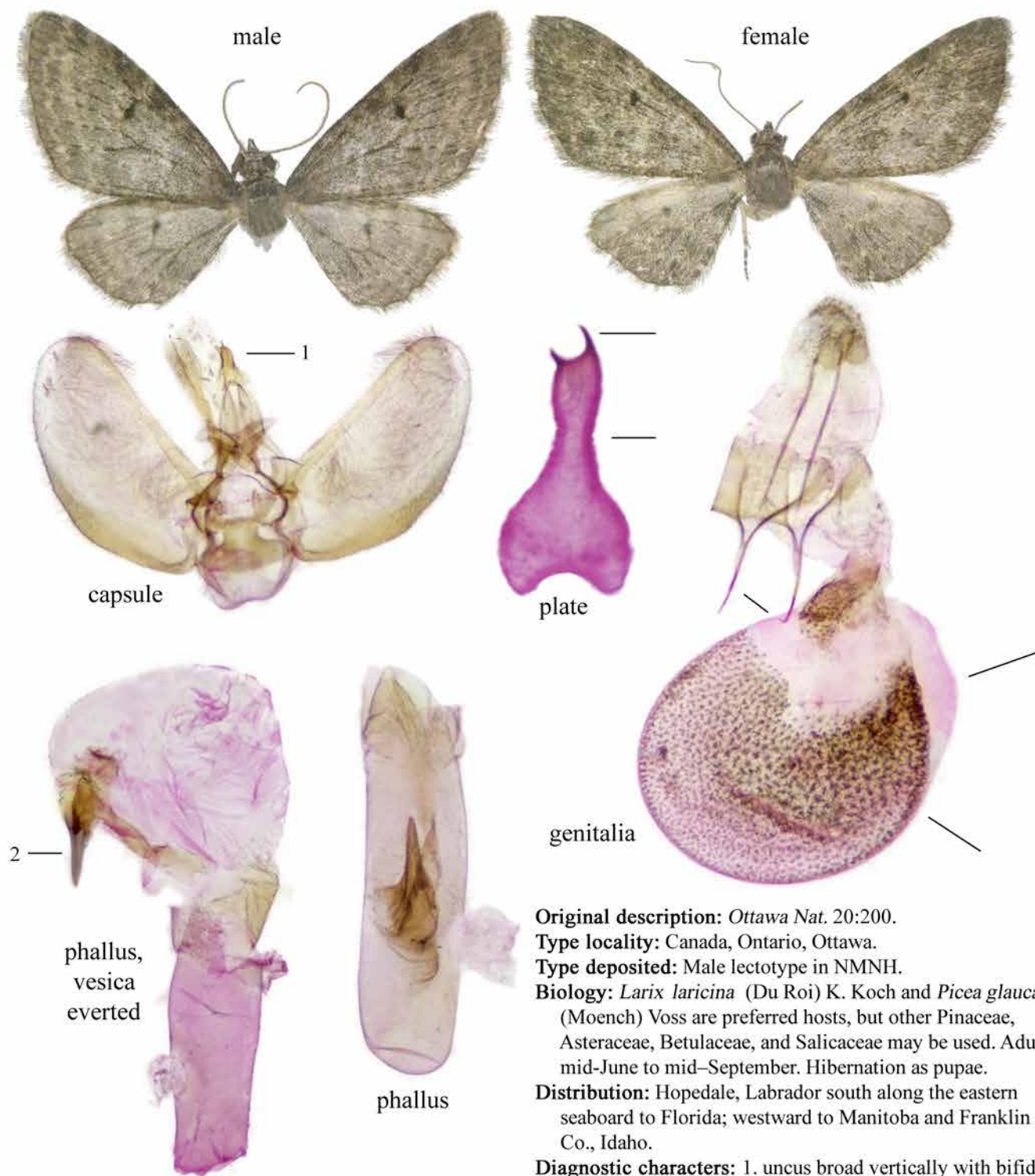
**Biology:** Larvae usually on *Thuja* sp.; various members of the Pinaceae also reported. Adults June–July. Pupae hibernate.

**Distribution:** SW British Columbia and Vancouver Is., north to Skagway, Alaska and south to Kitsap Co., Washington.

**Diagnostic characters:** 1. spinose patches; other features as indicated by pointers.

**Reference:** Bolte, K. B., 1990: p. 59; p. 226; figs. 131–132.



*Eupithecia fletcherata* Taylor, 1907

**Original description:** *Ottawa Nat.* 20:200.

**Type locality:** Canada, Ontario, Ottawa.

**Type deposited:** Male lectotype in NMNH.

**Biology:** *Larix laricina* (Du Roi) K. Koch and *Picea glauca* (Moench) Voss are preferred hosts, but other Pinaceae, Asteraceae, Betulaceae, and Salicaceae may be used. Adults mid-June to mid-September. Hibernation as pupae.

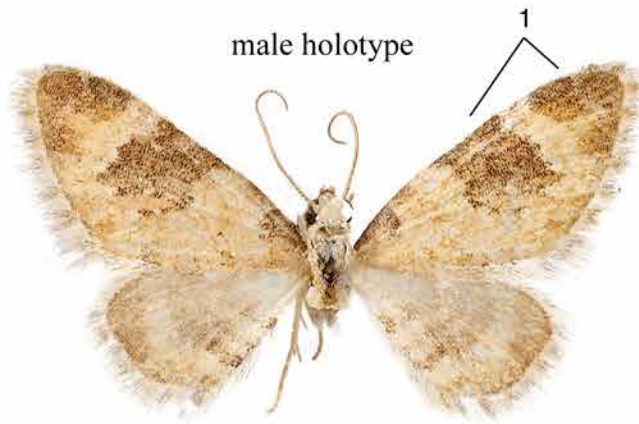
**Distribution:** Hopedale, Labrador south along the eastern seaboard to Florida; westward to Manitoba and Franklin Co., Idaho.

**Diagnostic characters:** 1. uncus broad vertically with bifid tip; 2. vesica with single large beak-like spine; other features as indicated.

**References:**

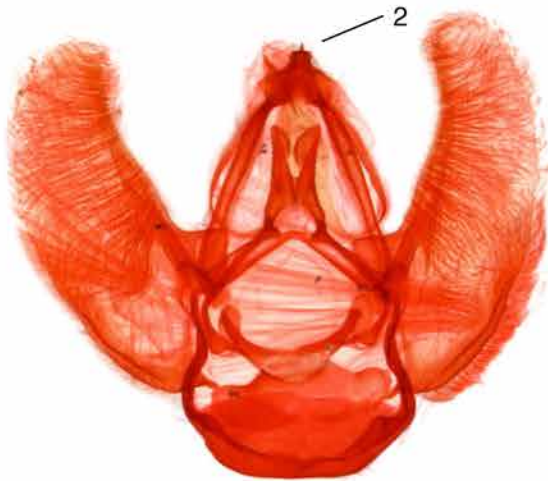
Bolte, K. B., 1990: p. 60; p. 228; figs. 135–136.

McDunnough, J. H., 1949: p. 579; p. 713 fig. 5E; pl. 27 figs. 22–24.

*Eupithecia fredericki* Blanchard & Knudson, 1985

male holotype

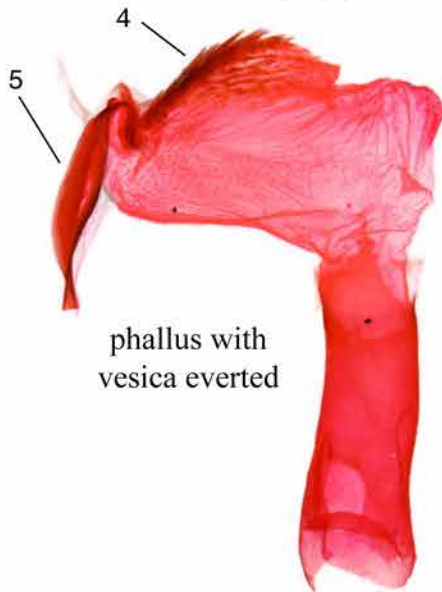
female unknown



capsule



plate

phallus with  
vesica everted

**Original description:** *Proc. Entomol. Soc. Wash.* 87(3):670, figs. 61–64.

**Type locality:** Texas, Culberson Co., Sierra Diablo Wildlife area, 27 June, 1981.

**Type deposited:** Male holotype in AMNH.

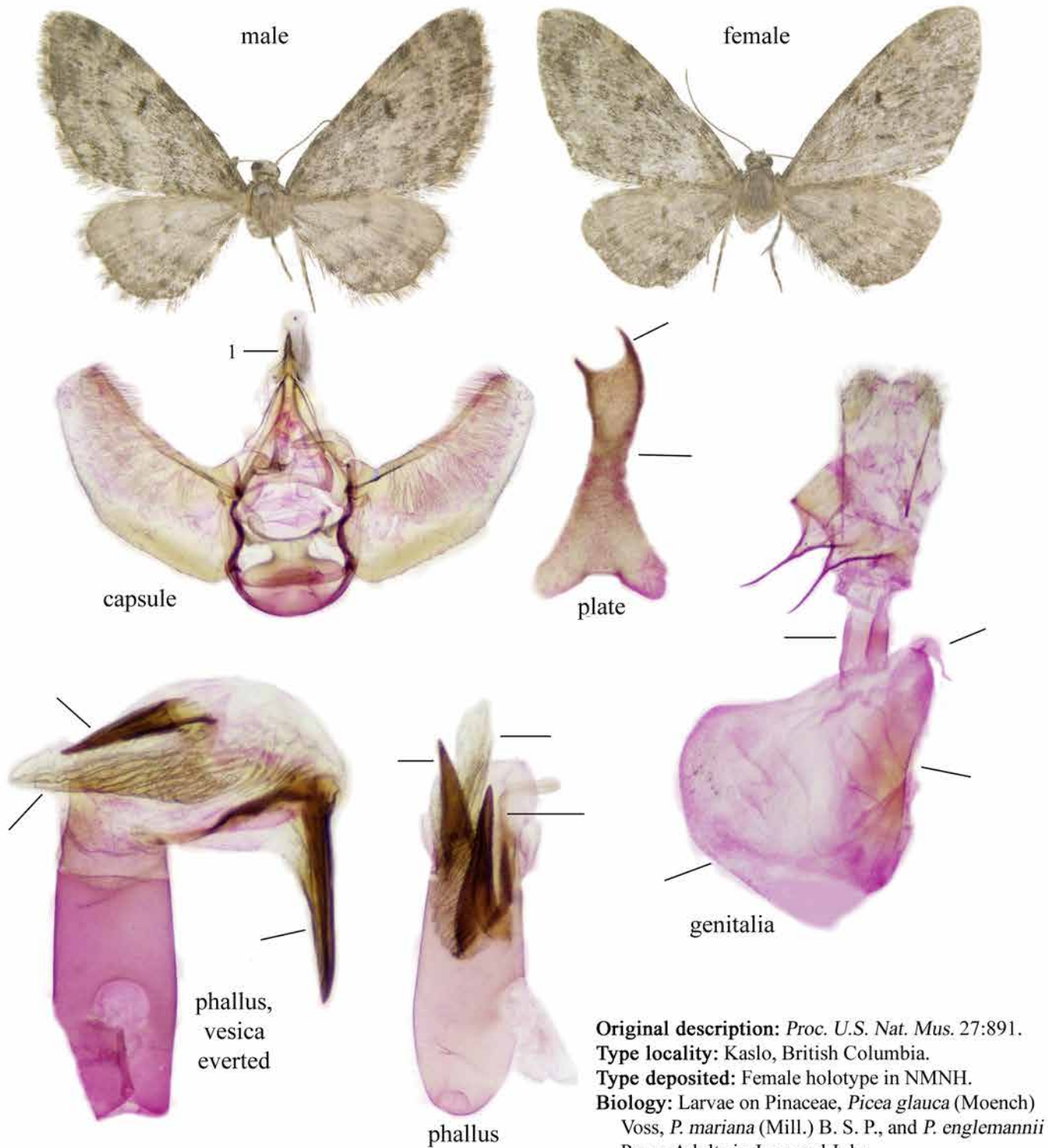
**Biology:** Unknown. Adults in June.

**Distribution:** Colorado (El Paso Co.); Texas (Culberson Co.).

**Diagnostic characters:** 1. two broad dark patches; 2. bifid uncus; 3. plate with two separated asymmetric pieces; 4. crest of small spines; 5. long flattened sclerotized process and small curved process.

AMNH photographs courtesy of  
Suzanne Rab Green.



*Eupithecia casloata* (Dyar, 1904)

**Original description:** *Proc. U.S. Nat. Mus.* 27:891.

**Type locality:** Kaslo, British Columbia.

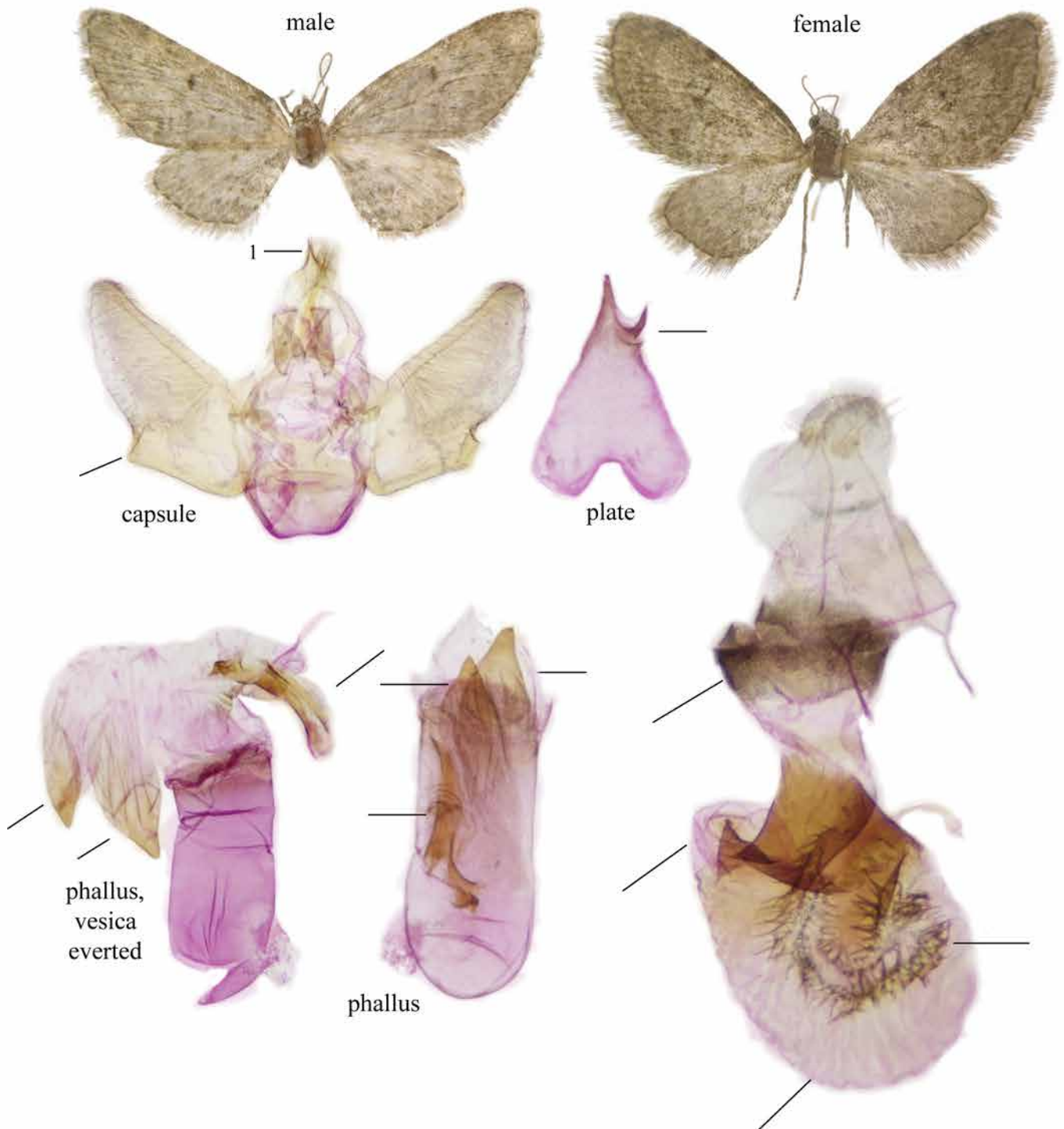
**Type deposited:** Female holotype in NMNH.

**Biology:** Larvae on Pinaceae, *Picea glauca* (Moench) Voss, *P. mariana* (Mill.) B. S. P., and *P. englemannii* Parry. Adults in June and July.

**Distribution:** From Hopedale, Labrador and eastern Newfoundland across Canada to western British Columbia as far north as Atlin; Colorado (El Paso, Larimer cos.), West Virginia (Randolph Co.), Wyoming (Albany, Fremont, Teton cos.).

**Diagnostic characters:** 1. uncus broad laterally with bifid tip; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 62; p. 229; figs. 137–138. McDunnough, J. H., 1949: as *bradorata* McDunnough, p. 582; p. 713 fig. 5G; pl. 27 fig. 26; as *kasloata* Dyar, p. 581; p. 713 fig. 5F; pl. 27 fig. 25.

*Eupithecia sheppardata* McDunnough, 1938

**Original description:** *Can. Ent.* 70(8):171, figs. a–c.

**Type locality:** Montreal, Quebec, June.

**Type deposited:** Male holotype in CNC.

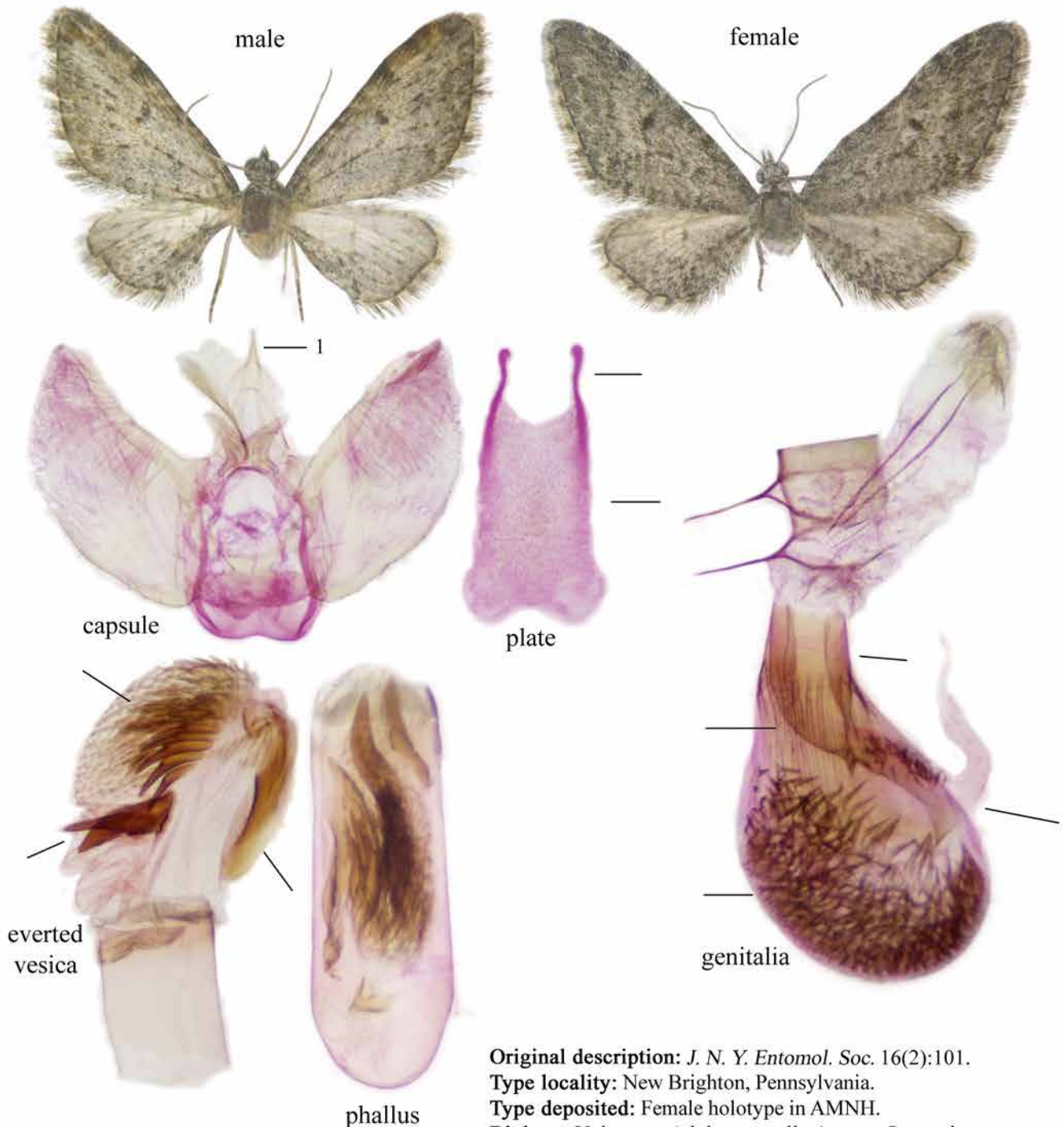
**Biology:** Larvae on *Alnus* sp. Adults late May to late June.

**Distribution:** Western Quebec to central Ontario; central Alberta; south to New York state.

**Diagnostic characters:** 1. uncus tip bifid; other features as pointers indicate.

**References:** McDunnough, J. H., 1949: p. 582; p. 713 fig. 5H; pl. 27 fig. 27. Bolte, K. B., 1990: p. 70; p. 234; figs. 149–150.



*Eupithecia affinata* Pearsall, 1908

**Original description:** *J. N. Y. Entomol. Soc.* 16(2):101.

**Type locality:** New Brighton, Pennsylvania.

**Type deposited:** Female holotype in AMNH.

**Biology:** Unknown. Adults normally August–September; also recorded in April in Grant Co., New Mexico.

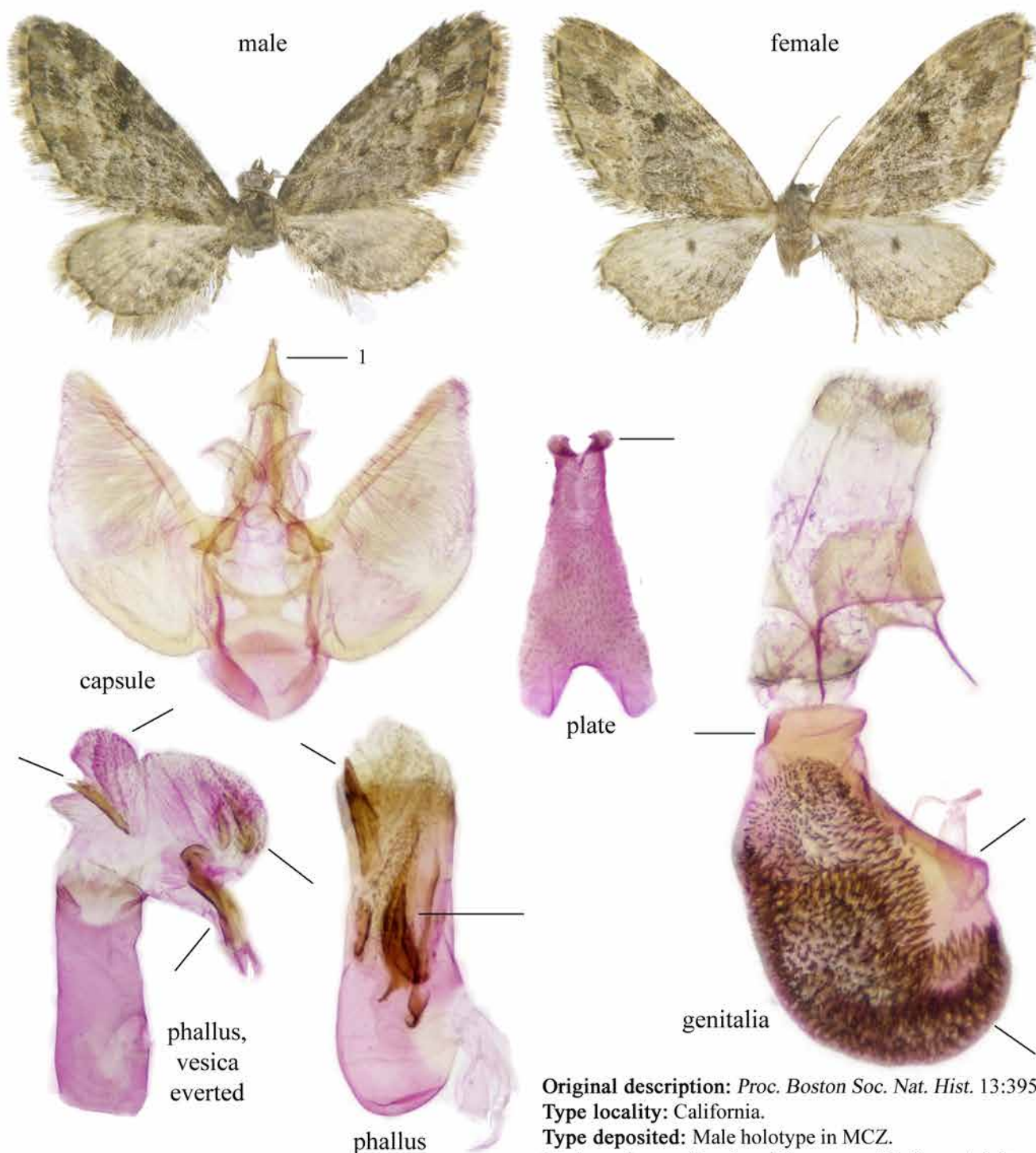
**Distribution:** In the East, southwestern Quebec and southeastern

Ontario at least to North Carolina and Indiana; western records include Colorado, southern Arizona (Cochise Co.), southeastern Utah, southwestern New Mexico (Grant Co.), and Sonora, Mexico.

**Diagnostic characters:** 1. uncus tip weakly bifid; other features as indicated.

**References:** Bolte, K. B, 1990: p. 50; p. 220; figs.117–118.

McDunough, J. H., 1949: p. 583; p. 713 fig. 5A; pl. 27 figs. 28–29.

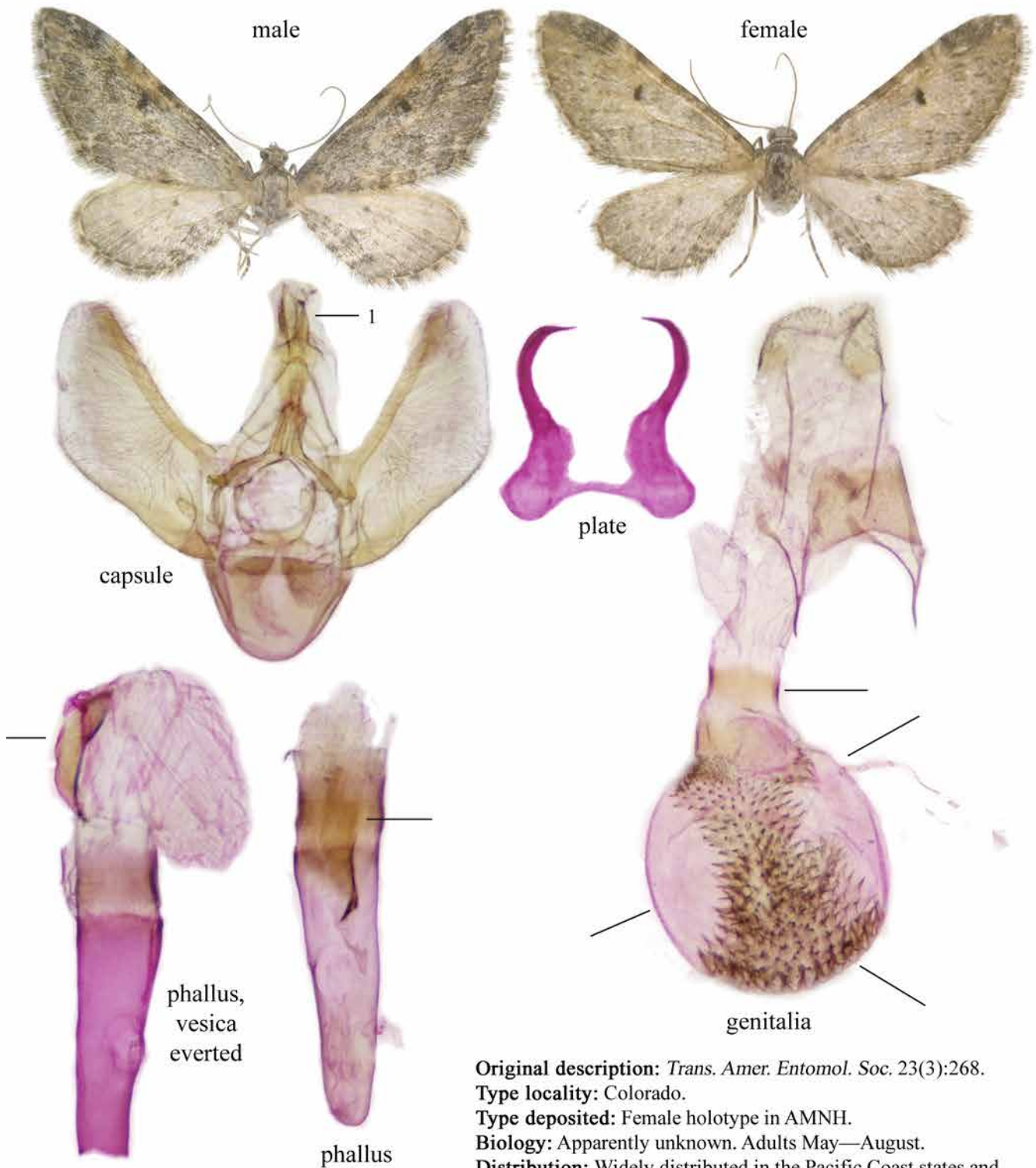
*Eupithecia rotundopuncta* Packard, 1871

**Distribution:** Pacific coast states from Prince Rupert, British Columbia south to San Diego, California.

**Diagnostic characters:** 1. uncus moderately broad laterally with bifid apex. Other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 41; p. 213; figs. 103–104. McDunnough, J. H., 1949: p. 584; p. 713 fig. 5J; pl. 27 fig. 30.



*Eupithecia sierrae* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):268.

**Type locality:** Colorado.

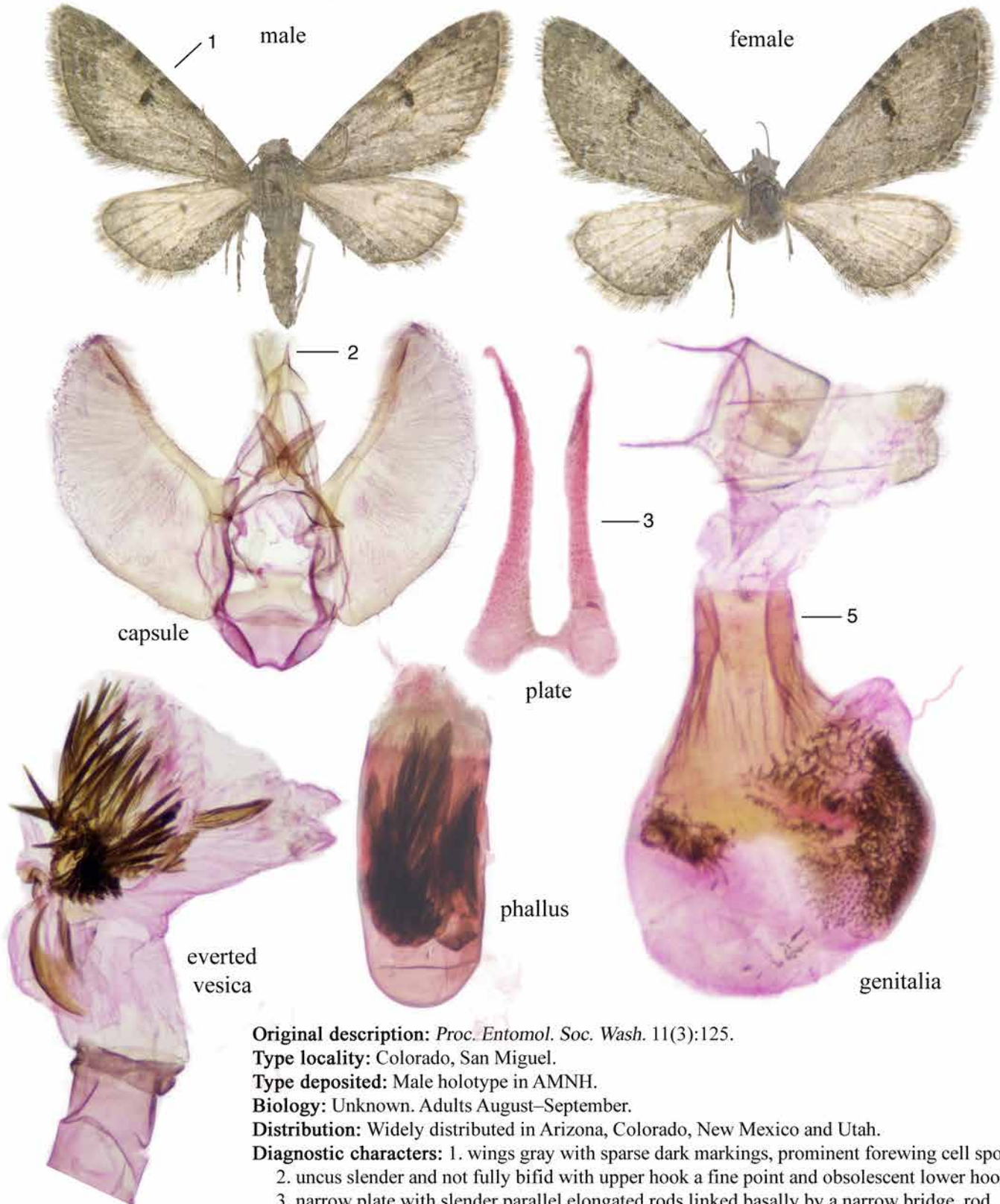
**Type deposited:** Female holotype in AMNH.

**Biology:** Apparently unknown. Adults May—August.

**Distribution:** Widely distributed in the Pacific Coast states and the Rocky Mountain region including Arizona, Colorado, New Mexico and Wyoming.

**Diagnostic characters:** 1. broad uncus with single apical hook; plate shape is unique in the known North American *Eupithecia* species; other features as indicated.

**Reference:** McDunnough, J. H., 1949; p. 585; p. 714 fig. 6A; pl. 27 figs. 31–34.

*Eupithecia quakerata* Pearsall, 1909

**Original description:** *Proc. Entomol. Soc. Wash.* 11(3):125.

**Type locality:** Colorado, San Miguel.

**Type deposited:** Male holotype in AMNH.

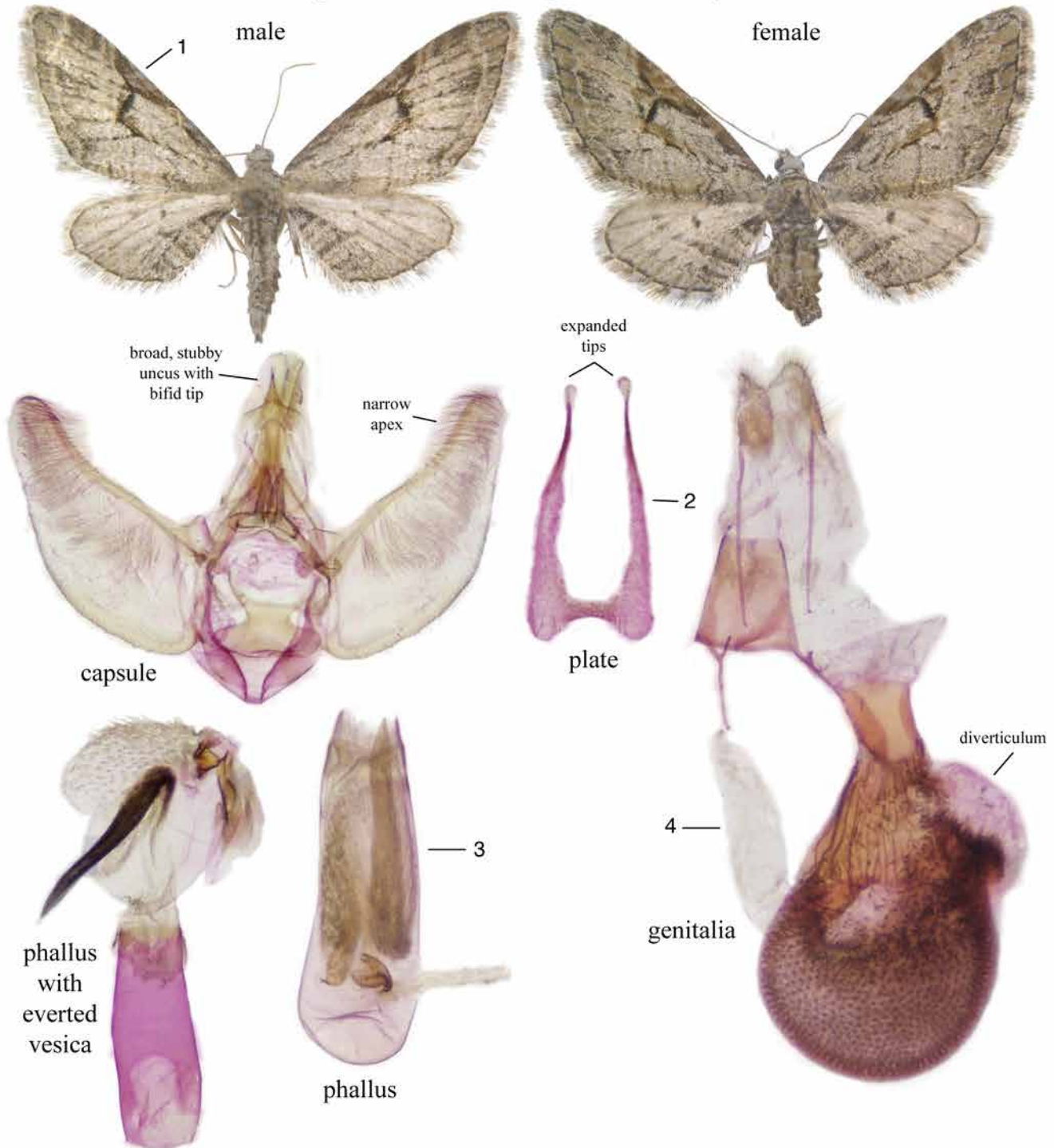
**Biology:** Unknown. Adults August–September.

**Distribution:** Widely distributed in Arizona, Colorado, New Mexico and Utah.

**Diagnostic characters:** 1. wings gray with sparse dark markings, prominent forewing cell spot; 2. uncus slender and not fully bifid with upper hook a fine point and obsolescent lower hook; 3. narrow plate with slender parallel elongated rods linked basally by a narrow bridge, rod tips curved and enlarged at ends; 4. many long thin cornuti and 3 chitinous rods; 5. broad open colliculum fanning out into corpus bursae; fundus of corpus bursae without spines.

**Reference:** McDunnough, J. H., 1949: p. 597; p. 714 fig. 6C; pl. 27 fig. 36; pl. 28 fig. 1.



*Eupithecia bolterii* (Hulst, 1900)

**Original description:** *Can. Ent.* 32(4):102.

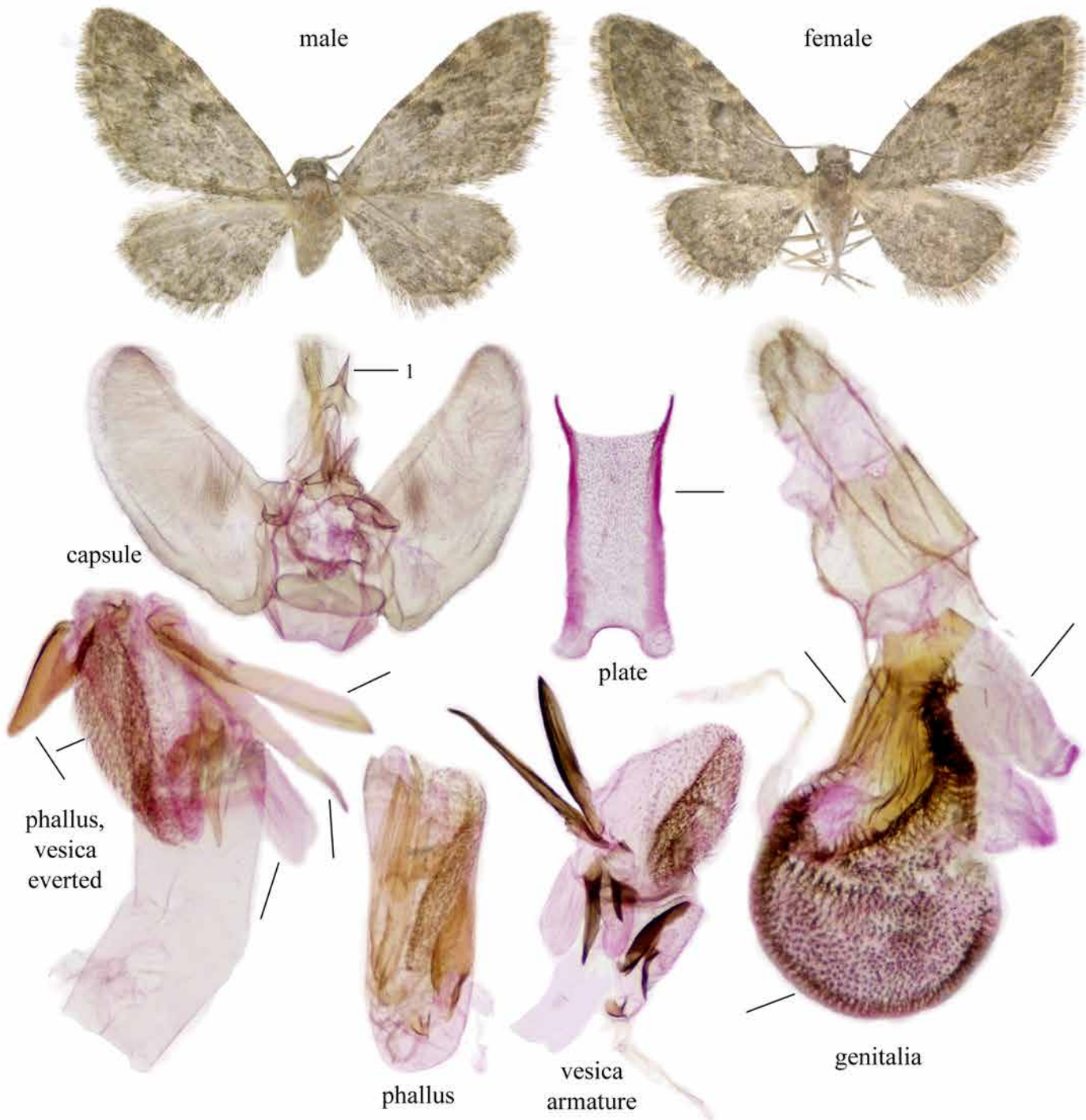
**Type locality:** Texas.

**Type deposited:** Holotype female in AMNH.

**Biology:** Unknown. Adults April–May.

**Distribution:** Arizona, Cochise and Yavapai cos.; Colorado, El Paso and Larimer cos.; New Mexico, Grant and Hidalgo cos.; Texas, Bexar, Brewster, Culberson, Jeff Davis, and Kerr cos.; Utah, Kane and Garfield cos.

**Diagnostic characters:** 1. dark costal patch connecting to cell spot; 2. plate similar to that of *E. quakerata* with slender parallel rods connected basally by a narrow bridge; 3. vesica armed with one large spine and two chitinous pieces of irregular shape; 4. broad ductus seminalis, prominent colliculum, fundus of corpus bursae densely spined.

*Eupithecia piccata* Pearsall, 1910

**Original description:** *Proc. Entomol. Soc. Wash.* 12(3):143.

**Type locality:** Las Vegas, Hot Springs, [San Miguel Co.], New Mexico.

**Type deposited:** Male lectotype in NMNH.

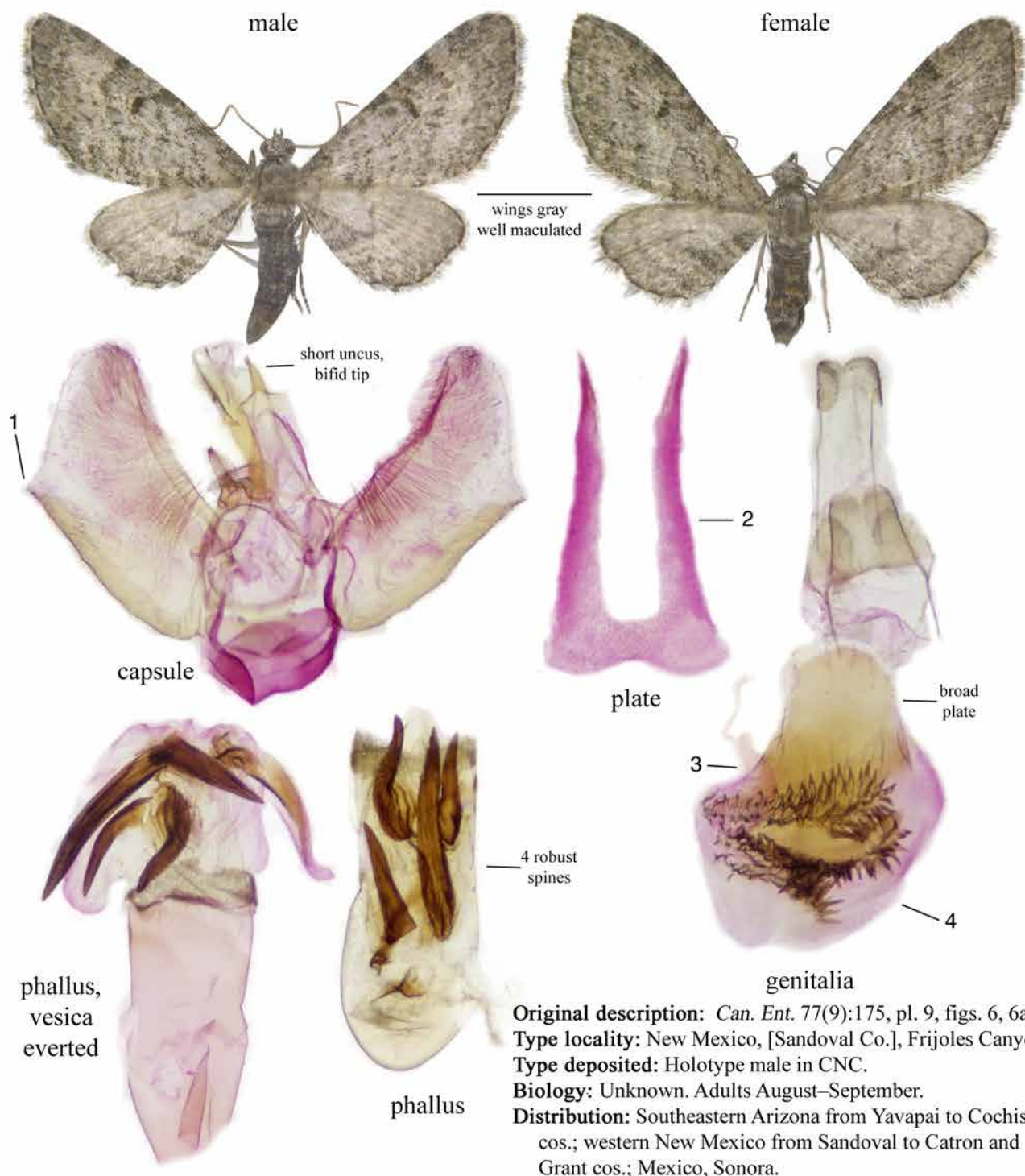
**Biology:** Unknown. Adults in August and September.

**Distribution:** Arizona (Cochise Co.); New Mexico (Catron, Grant, San Miguel cos., Jemez Mts.); Mexico (Sonora).

**Diagnosis:** 1. uncus slender with apical hook; other features as indicated by pointers.

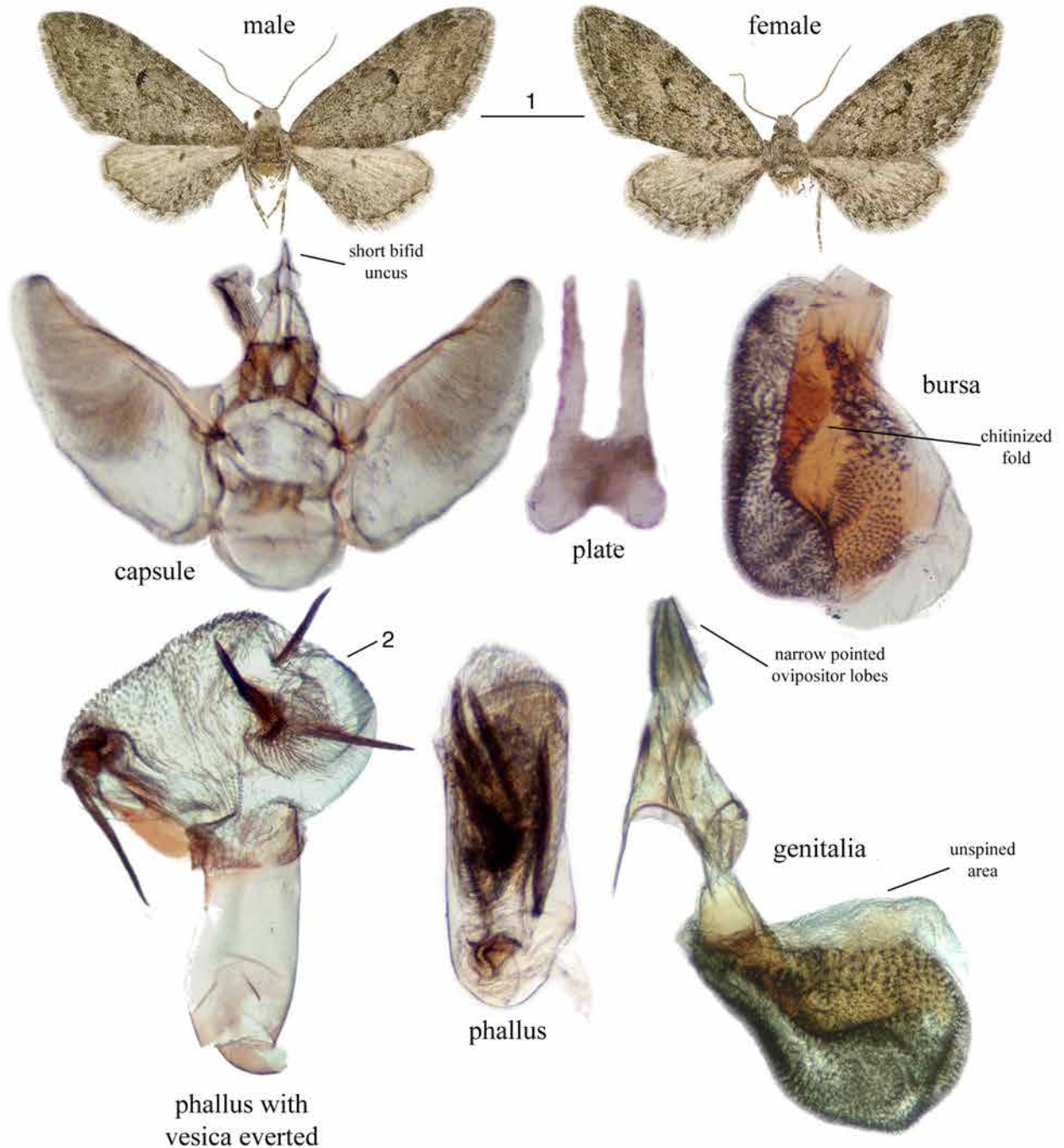
**Reference:** McDunnough, J. H., 1949: p. 590; p. 714 fig. 6F; pl. 28 fig. 4.



*Eupithecia neomexicana* McDunnough, 1945

**Diagnostic characters:** 1. pointed projection from costal margin of broad valve; 2. parallel tapered rods, right rod slightly longer, basally connected by broad bridge; 3. rapidly narrowing and twisted ductus seminalis; strong spinose band around middle of corpus bursae.

**Reference:** McDunnough, J. H., 1949: p. 591; p. 715 fig. 7A, pl. 28 fig. 8.

*Eupithecia alpinata* Cassino, 1927

**Original description:** *Lepidopterist* 4(8–9):65.

**Type locality:** Texas, [Brewster Co.], Alpine.

**Type deposited:** Male holotype in MCZ.

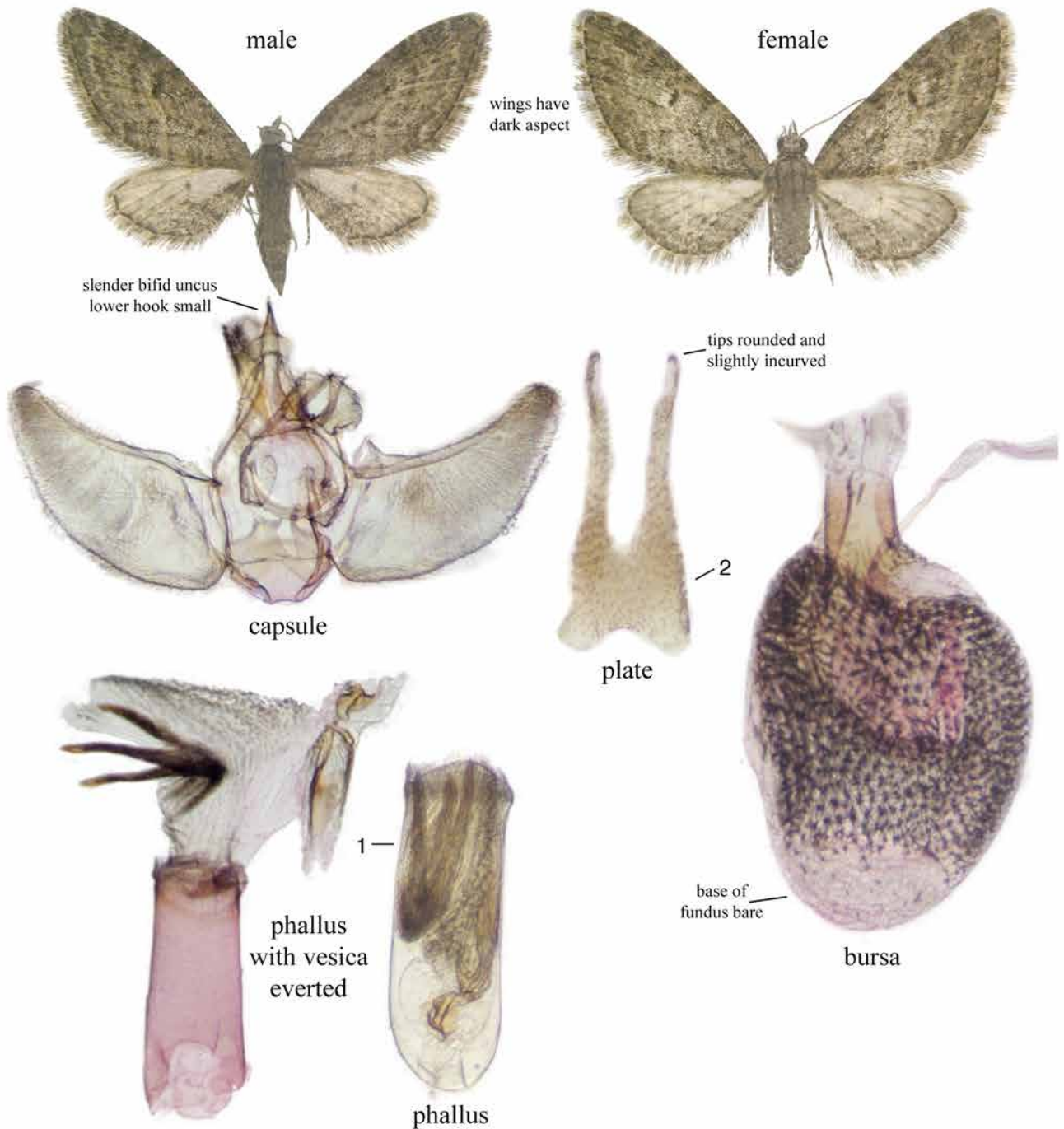
**Biology:** Unknown. Adults March–April with occasional individuals August–October in southwestern New Mexico and southeastern Arizona.

**Distribution:** Arizona, Cochise Co.; New Mexico, Grant and Hidalgo cos.; Texas, Brewster, Jeff Davis, Kerr and Kimble cos.

**Diagnostic characters:** 1. forewings elongated and rather narrow basally; 2. vesica with 4 prominent narrow spines and chitinized plate below apex.

**Reference:** McDunnough, J. H., 1949: p. 592; p. 715 fig. 7B; pl. 28 fig. 8.



*Eupithecia prostrata* McDunnough, 1938

**Original description:** *Can. Ent.* 70(11):238, pl. 20, figs. 3a–e.

**Type locality:** Texas, Jeff Davis Co., Davis Mts., 5000'.

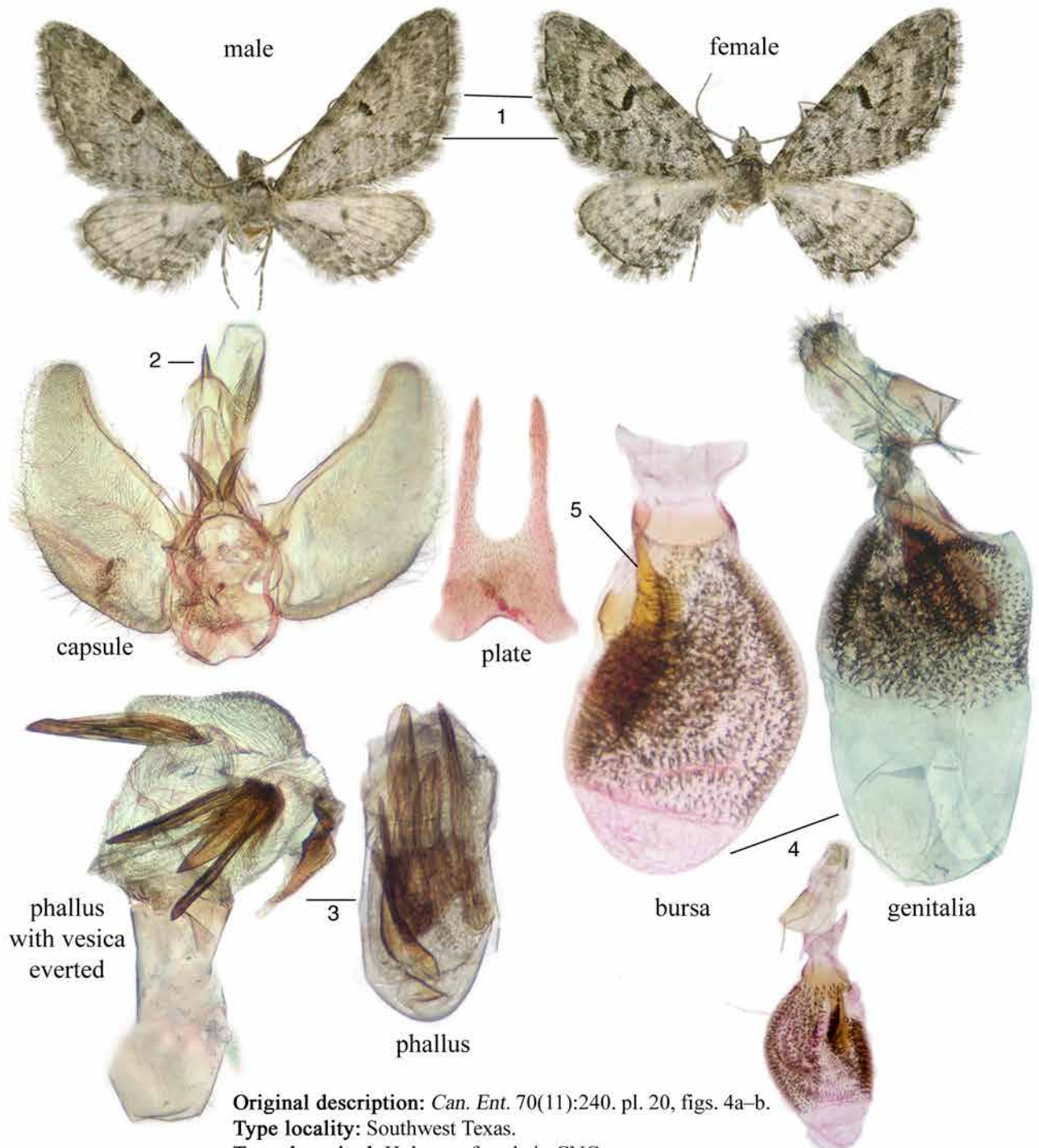
**Type deposited:** Female holotype in CNC.

**Biology:** Unknown. Adults March–April, and September in Southern Arizona.

**Distribution:** Arizona, Cochise and Santa Cruz cos.; New Mexico, Grant Co.; Texas, Jeff Davis Co.

**Diagnostic characters:** 1. vesica armed with 3 robust spines (*E. alpinata* has 4); 2. base of plate slightly larger vertically than in *E. alpinata* and the parallel rods are longer. Ovipositor lobes (not illustrated) are broad and oval and not narrow and pointed as in *alpinata*.

**Reference:** McDunnough, J. H., 1949: p. 593; p. 725 fig. 7C; pl. 28 fig. 9.

*Eupithecia persimulata* McDunnough, 1938

**Original description:** *Can. Ent.* 70(11):240. pl. 20, figs. 4a-b.

**Type locality:** Southwest Texas.

**Type deposited:** Holotype female in CNC.

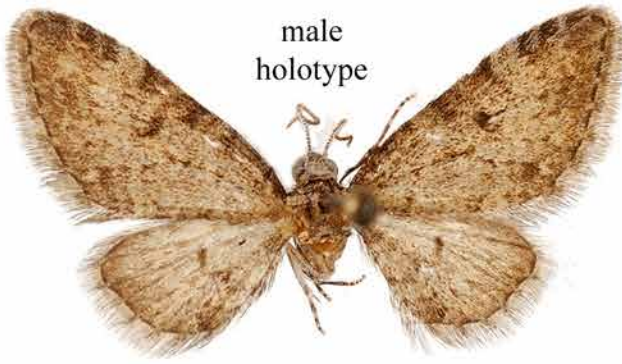
**Biology:** Unknown. Adults March-early October, depending on locality.

**Distribution:** Arizona, Cochise and Coconino cos.; Colorado, Larimer and Montezuma cos.; New Mexico, Bernalillo, Catron, Socorro and Grant cos.; Texas, Brewster, Culberson and Jeff Davis cos.

**Diagnostic characters:** 1. submarginal whitish markings and wings strongly maculated, more so than in *E. alpinata* and *prostrata*; 2. bifid uncus; 3. vesica armed with 4 robust broad spines, one shorter than the others, and an irregular plate; 4. fundus of corpus bursae devoid of spines; 5. ostium pouch and chitinous band extending below colliculum.

**Reference:** McDunnough, J. H., 1949: p. 594; p. 715 fig. D (female only); pl. 28 fig. 10.



***Eupithecia exudata* Pearsall, 1909**male  
holotype

AMNH photo.

**Original description:** *Proc. Entomol. Soc. Wash.* 11(30):120.**Type locality:** New Brighton, [Beaver Co.], Pennsylvania.**Type deposited:** Male holotype in AMNH.**Biology:** Unknown. Type collected 27 April.**Distribution:** Known from type locality.**Diagnostic characters:** Uncus tip bifid. The genitalia were damaged by Cassino in making the slide. There are similarities to *E. matheri* Rindge [McDunnough's *E. herefordaria*], but the moth is much smaller.**Reference:** McDunnough, J. H., 1949: p. 595; pl. 28 fig. 11.

*E. exudata* has been considered by some collectors to be the same as *E. matheri* Rindge, examples of which from Bucks Co., Pennsylvania are illustrated below. Based on color and maculation, it appears that *E. exudata* is distinct from *E. matheri* and is most likely associated with the *E. annulata* complex (see main text for discussion of *annulata*). For the present, *E. exudata* remains an enigma.



male



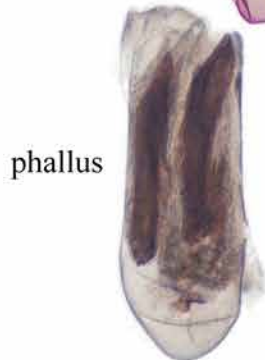
female



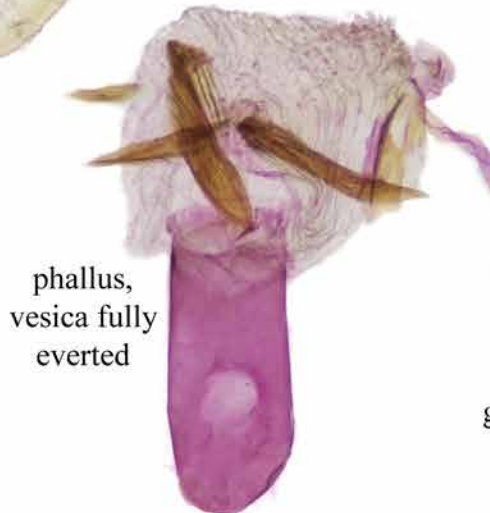
capsule



plate

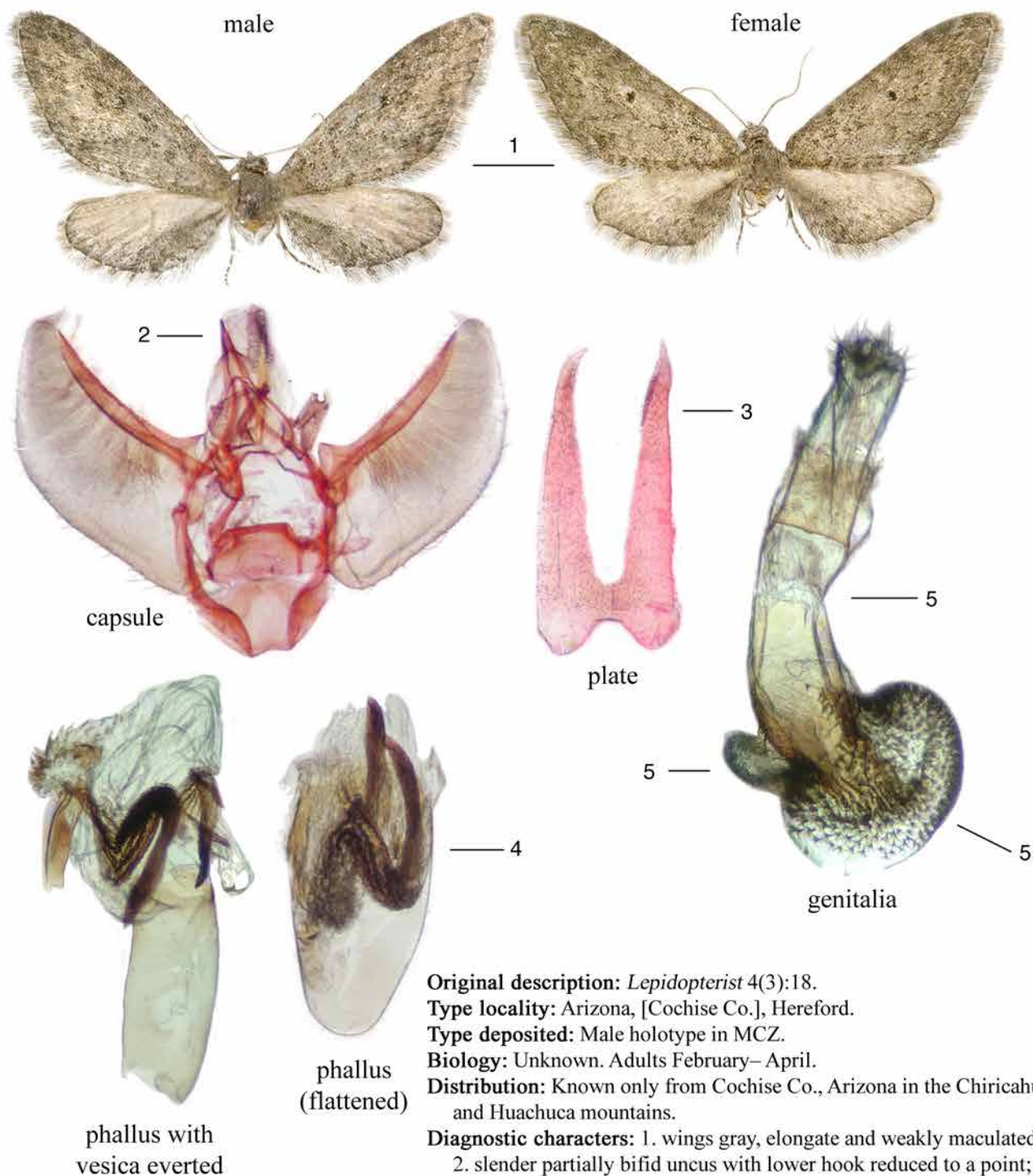


phallus

phallus,  
vesica fully  
everted

genitalia

***Eupithecia matheri* Rindge, 1985**

*Eupithecia herefordaria* Cassino & Swett, 1923

**Original description:** *Lepidopterist* 4(3):18.

**Type locality:** Arizona, [Cochise Co.], Hereford.

**Type deposited:** Male holotype in MCZ.

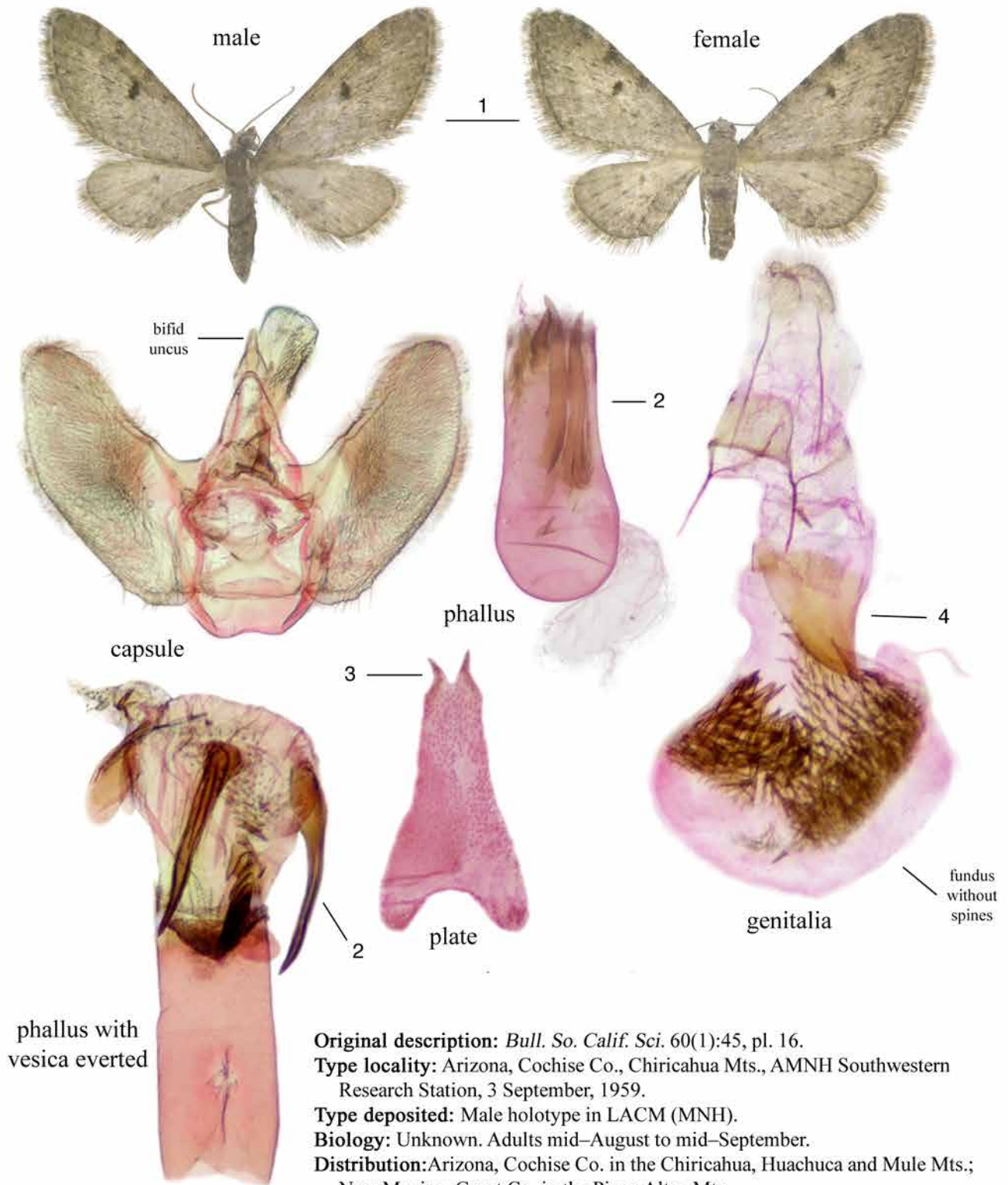
**Biology:** Unknown. Adults February–April.

**Distribution:** Known only from Cochise Co., Arizona in the Chiricahua and Huachuca mountains.

**Diagnostic characters:** 1. wings gray, elongate and weakly maculated; 2. slender partially bifid uncus with lower hook reduced to a point; 3. plate similar to that of *E. matheri*, but slightly narrower; 4. large contorted cornutus; 5. the key diagnostic characters are indicated.

**Reference:** Rindge, F. H., 1985. *Amer. Mus. Novitates* 2809:5–8, figs. 5, 6, 23, 24, 33.



*Eupithecia cazieri* Kirkwood, 1961

**Original description:** *Bull. So. Calif. Sci.* 60(1):45, pl. 16.

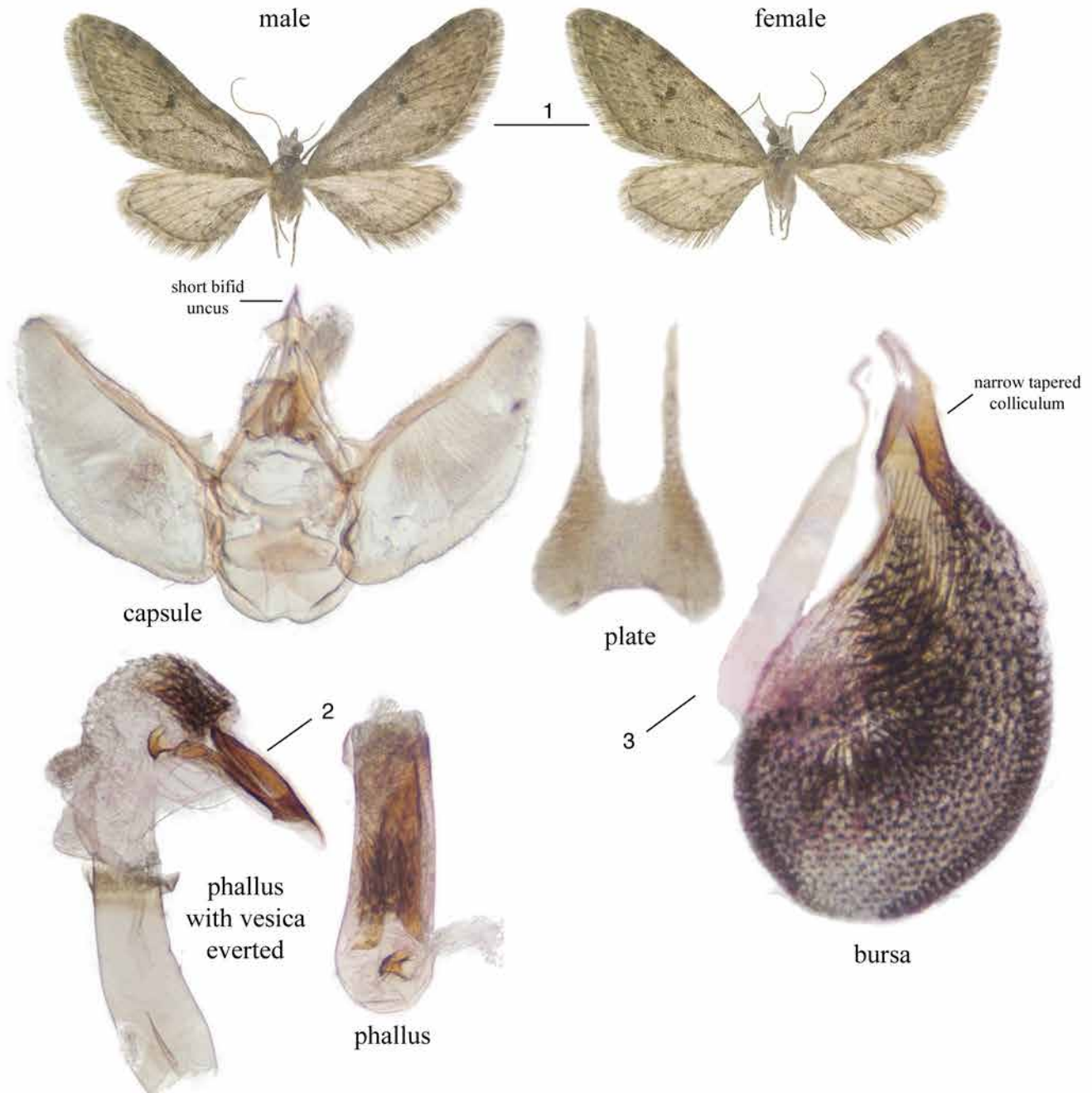
**Type locality:** Arizona, Cochise Co., Chiricahua Mts., AMNH Southwestern Research Station, 3 September, 1959.

**Type deposited:** Male holotype in LACM (MNH).

**Biology:** Unknown. Adults mid–August to mid–September.

**Distribution:** Arizona, Cochise Co. in the Chiricahua, Huachuca and Mule Mts.; New Mexico, Grant Co. in the Pinos Altos Mts.

**Diagnostic characters:** 1. small gray moths, poorly maculated, but with prominent forewing black cell spot; 2. vesica with 2 long curved spines; 3. plate tapers from base with two apical projections; twisted chitinized partial collar.

*Eupithecia macdunnoughi* Rindge, 1952

**Original description:** *Amer. Mus. Novitates*, 1569:3.

**Type locality:** California, Napa Co., Spring mountain, 14 March, 1947.

**Type deposited:** Holotype female in AMNH.

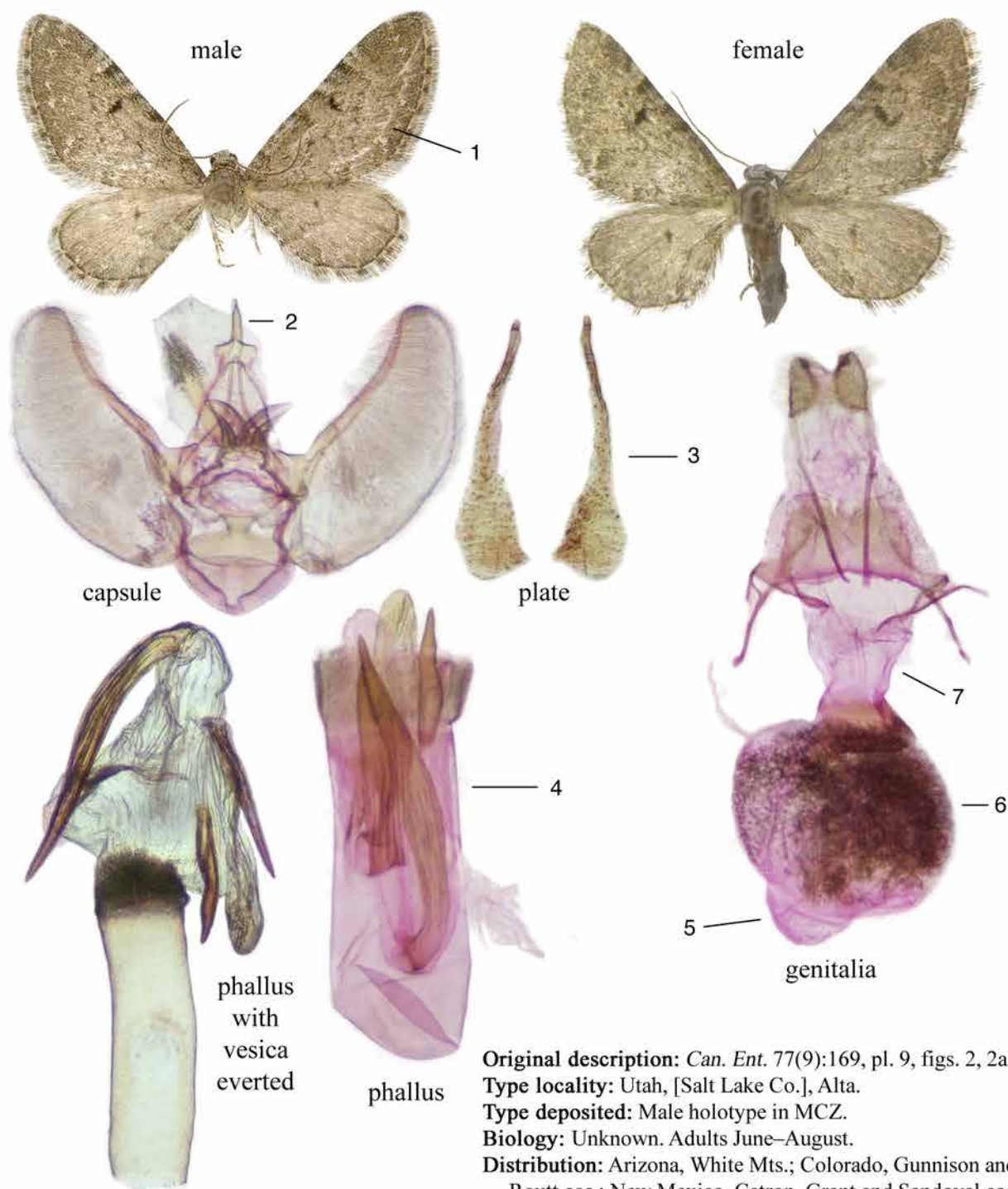
**Biology:** Unknown. Adults February–July, depending upon locality.

**Distribution:** Multiple counties in Arizona, California, Colorado, Nevada, Utah; Grant Co., New Mexico.

**Diagnostic characters:** 1. gray, elongate lightly maculated forewings; 2. large elongated U-shaped chitinized plate with terminal hook; 3. rigid, tapered ductus seminalis arises about mid-length of the corpus bursae.

**Note:** McDunnough, J. H., 1949, incorrectly treated this species as *E. suspiciosata* McDunnough (not Dietze): p. 596; p. 725 fig. 7F; pl. 28 fig. 13.



*Eupithecia nabokovi* McDunnough, 1946

**Original description:** *Can. Ent.* 77(9):169, pl. 9, figs. 2, 2a.

**Type locality:** Utah, [Salt Lake Co.], Alta.

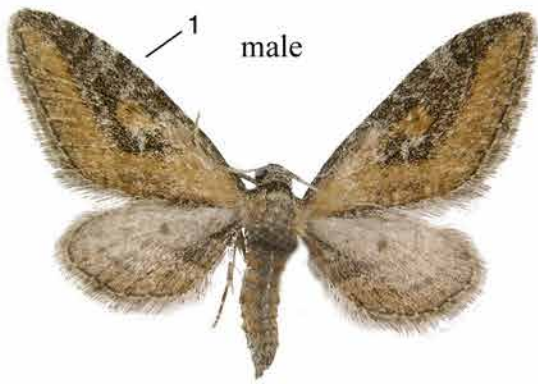
**Type deposited:** Male holotype in MCZ.

**Biology:** Unknown. Adults June–August.

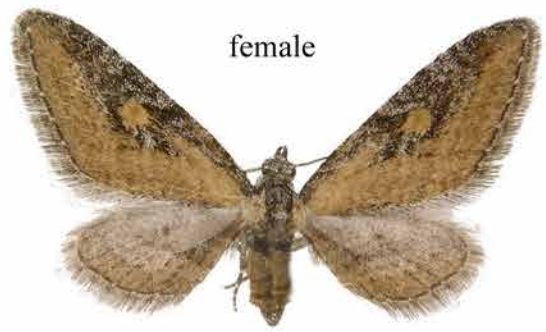
**Distribution:** Arizona, White Mts.; Colorado, Gunnison and Routt cos.; New Mexico, Catron, Grant and Sandoval cos.; Utah, Alta; Wyoming, Albany, Lincoln and Sublette cos.

**Diagnostic characters:** 1. narrow disjointed whitish submarginal band; 2. bifid uncus with longer, thicker and blunted lower hook; 3. plate with two rods and essentially obsolescent basal connecting bridge; 4. vesica with 3 robust cornuti of unequal length; 5. diverticulum below fundus of corpus bursae; 6. globular corpus bursae covered by patches of small spines; 7. short and wide ductus bursae and colliculum.

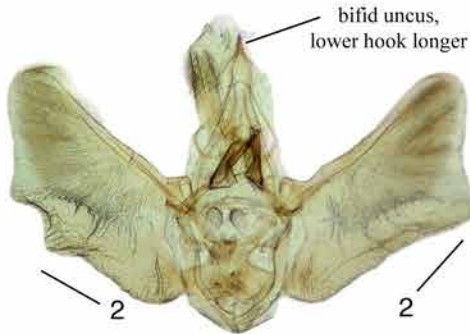
**Reference:** McDunnough, J. H., 1949: p. 598; p. 715 fig. 7G; pl. 28 fig. 14. Atypical female genitalia illustrated in fig. 7G.



male



female



bifid uncus,  
lower hook longer

2

2

capsule



plate

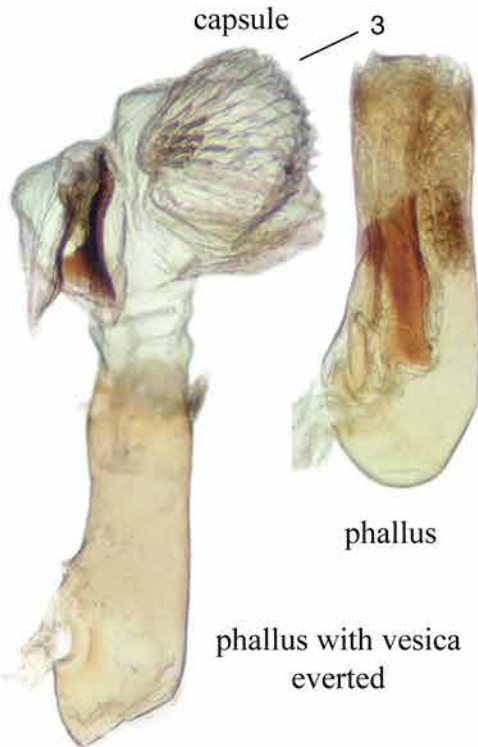


5

bursa



ovipositor  
lobes



phallus

phallus with vesica  
everted

Original description: *Lepidopterist* 3(10):168.  
Type locality: Arizona, [Cochise Co.], Hereford, 19 February.  
Type deposited: Male holotype in MCZ.

Biology: See Ferris (2004) for detailed discussion. *Arbutus arizonica* (A. Gray) Sarg. is the larval host. The larvae feed on the flowers. Adults April–early May (contemporary records).

Distribution: The typical ruddy form occurs in Cochise Co., Arizona (Chiricahua and Huachuca Mts.) with a grayer form in Coconino and Glacis Co., Arizona (see *E. miamata* page).

Diagnostic characters: 1. distinctive ferruginous color with black patch from costa extending below and enclosing black-pupiled orange discal spot; 2. left valve with two projections, right valve with one; 3. large globular shagreened diverticulum; 4. single large irregular cornutus; 5. ductus bursae enlarged and produced into semicircular smoothly-tapering tube from which ductus seminalis originates. Corpus bursae essentially spherical with evenly-spined patches that vary in extent across individuals.

#### References:

- Ferris, C. D., 2004. *Zootaxa*, 738:1–19.  
McDunnough, J. H., 1949:598.



***Eupithecia miamata* Cassino, 1925**

= junior synonym of *Eupithecia biedermanata* Cassino & Swett, 1922



Two males, Coconino Co., Arizona

**Original description:** *Lepidopterist* 4(6–7):47.

**Type locality:** Near Miami [Gila Co.], Arizona.

**Type deposited:** Male holotype, Museum of Comparative Zoology (MCZ).

**Distribution:** This gray phenotype of *E. biedermanata* has been recorded from Coconino and Gila cos., Arizona.

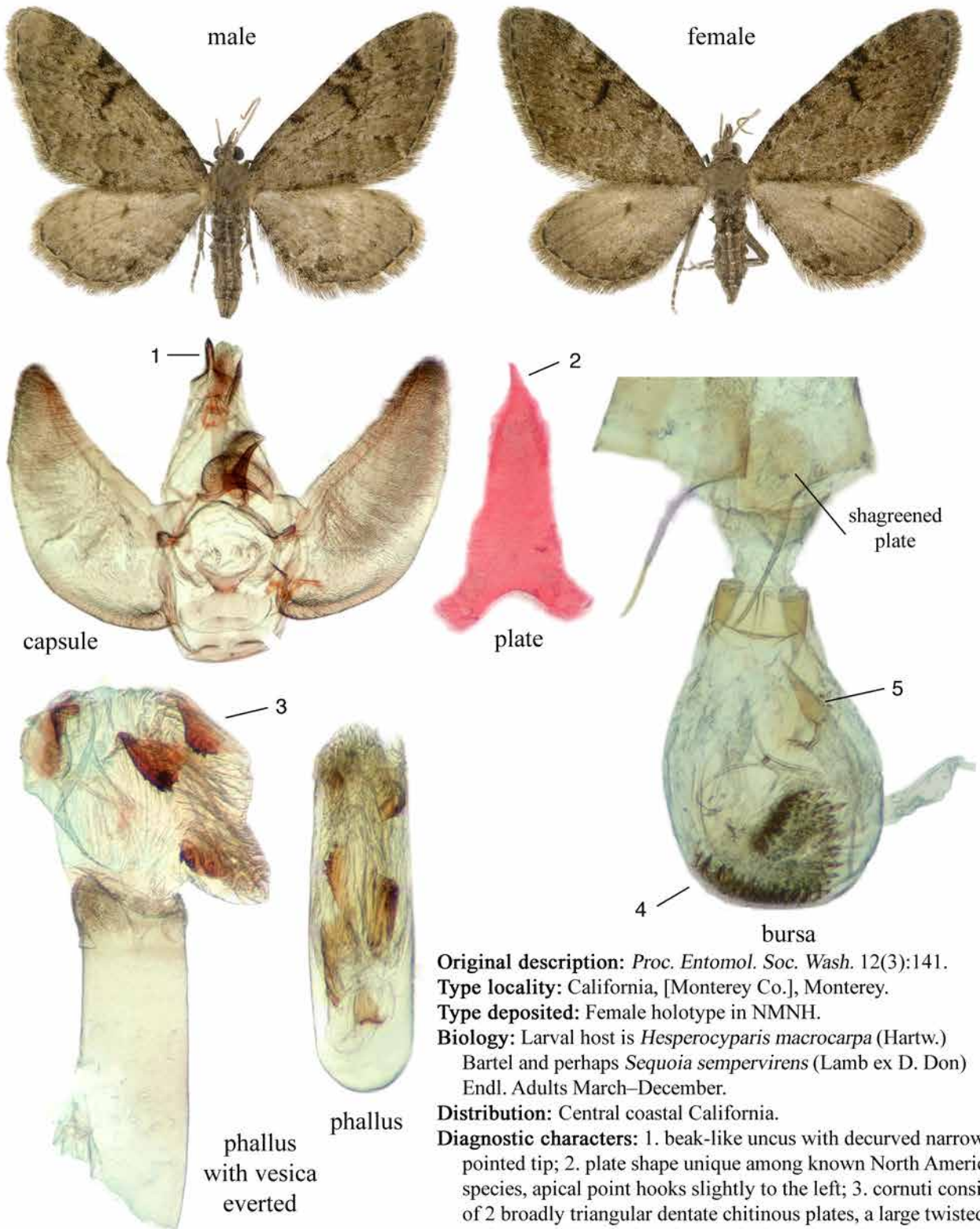
**Comment:** The male and female genitalia of *E. miamata* are identical to those of *E. biedermanata*. McDunnough (1949) illustrated an adult male from Miami, Arizona (Pl. 31 fig. 11) and the male and female genitalia (p. 724, fig. 16A). See Ferris (2004) for additional discussion. The holotype male was collected in March.

**References:**

Ferris, C. D., 2004. *Zootaxa*, 738:1–19.

McDunnough, J. H., 1949. *Bulletin Amer. Mus. Nat. Hist.*, 93(8):664.



*Eupithecia cupressata* Pearsall, 1910

**Original description:** *Proc. Entomol. Soc. Wash.* 12(3):141.

**Type locality:** California, [Monterey Co.], Monterey.

**Type deposited:** Female holotype in NMNH.

**Biology:** Larval host is *Hesperocyparis macrocarpa* (Hartw.)

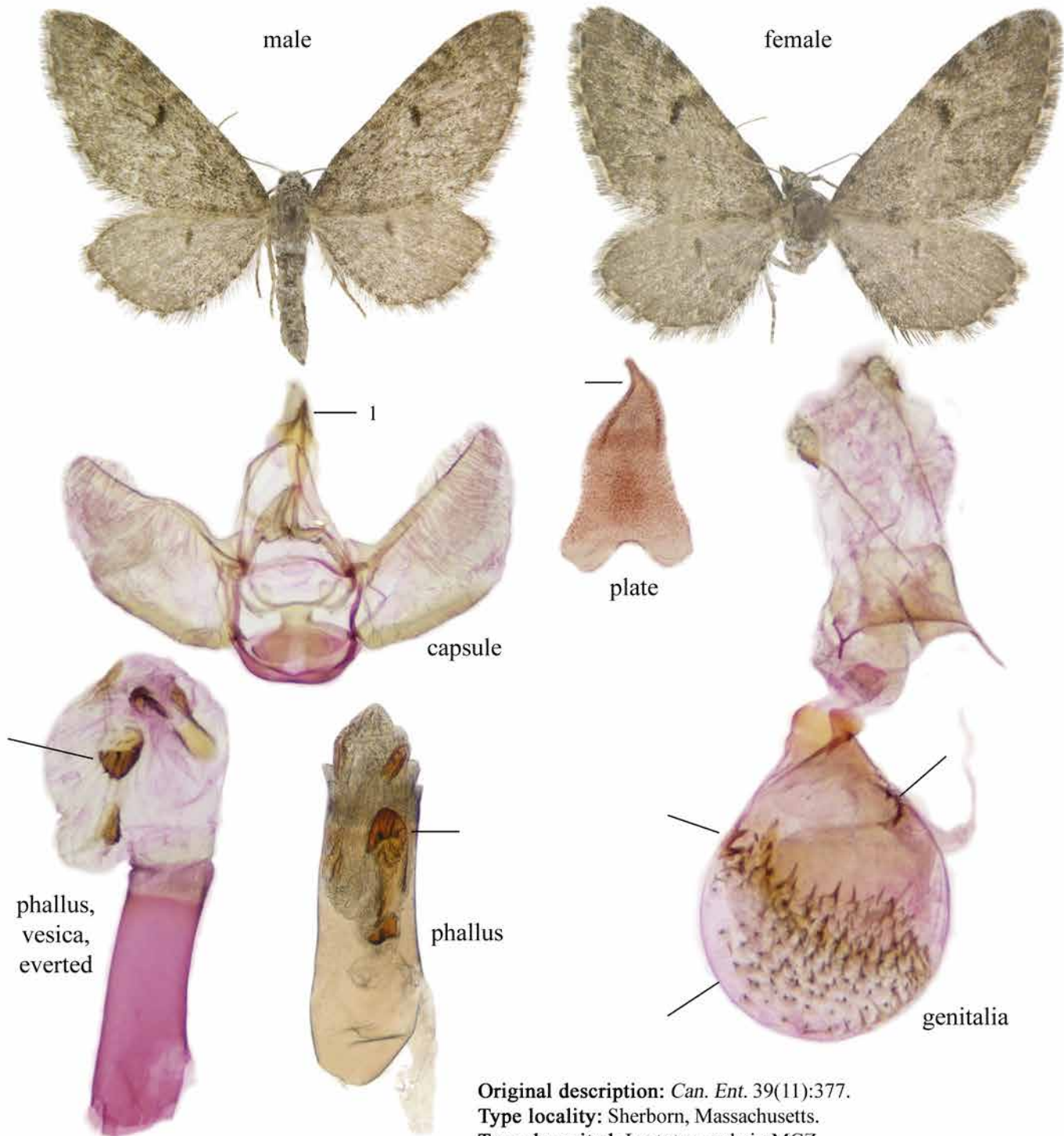
Bartel and perhaps *Sequoia sempervirens* (Lamb ex D. Don)  
Endl. Adults March–December.

**Distribution:** Central coastal California.

**Diagnostic characters:** 1. beak-like uncus with decurved narrow pointed tip; 2. plate shape unique among known North American species, apical point hooks slightly to the left; 3. cornuti consist of 2 broadly triangular dentate chitinous plates, a large twisted and contorted posterior plate, and a lateral small weak irregular piece in the diverticulum; 4. corpus bursae small and membranous

with a patch of spines on the fundus; 5. ductus seminalis arises in the upper half of the bursa.

**References:** Ferris, C. D., 2006. *Zootaxa*, 1255:63–68; McDunnough, J. H., 1949: p. 599; p. 716 fig. 8A; pl. 28 fig. 15 (male not illustrated and unknown to McDunnough).

*Eupithecia intricata taylorata* Swett, 1907

**Original description:** *Can. Ent.* 39(11):377.

**Type locality:** Sherborn, Massachusetts.

**Type deposited:** Lectotyp male in MCZ.

**Biology:** Larval hosts include *Juniperus communis* L., *J. scopulorum* Sarg., *Thuja occidentalis* L., *T. plicata* Donn. and perhaps other Cupressaceae. Adults early May to early July. Pupae overwinter.

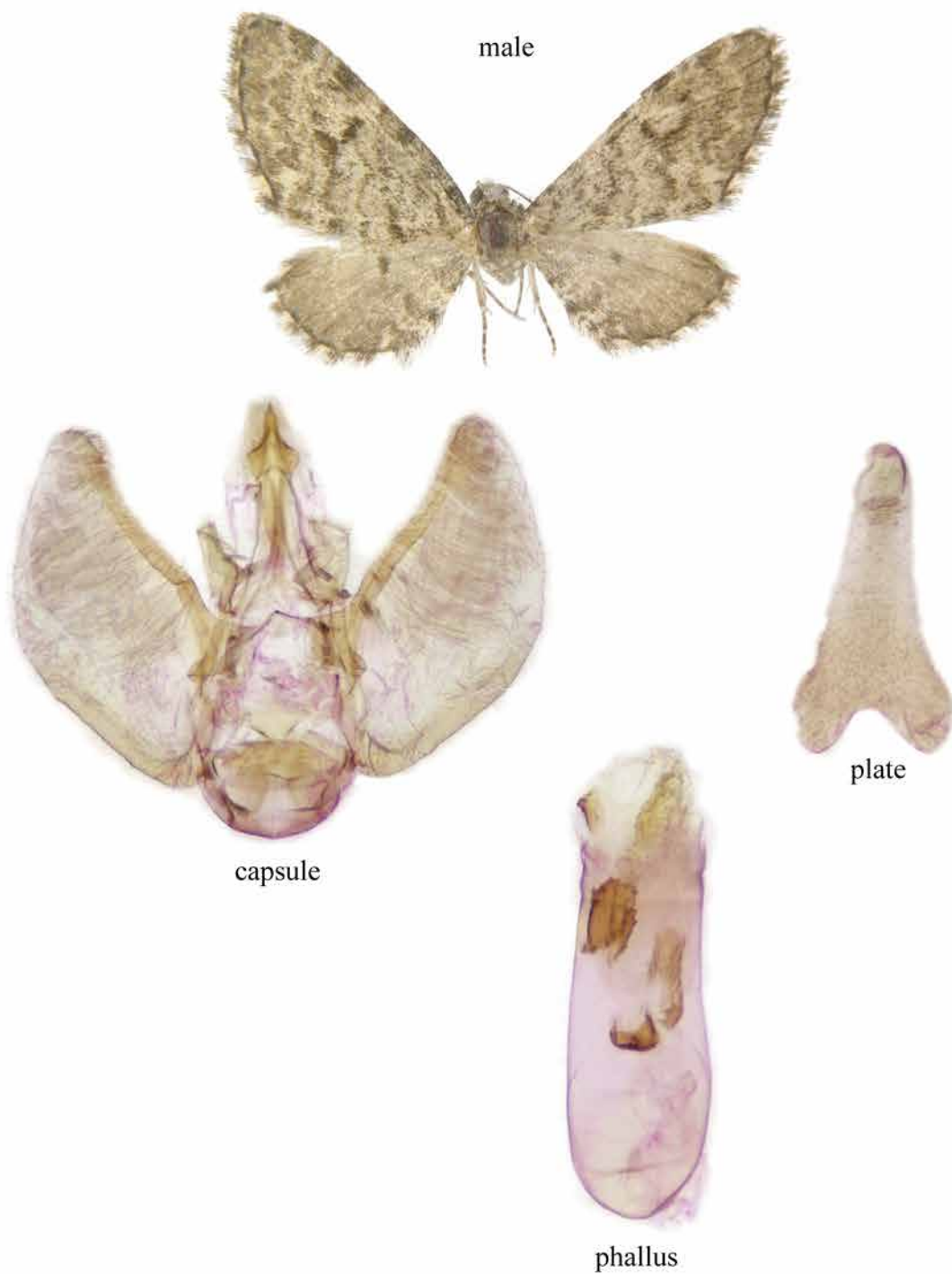
**Distribution:** Eastern Newfoundland to western British Columbia and north to Rampart, Yukon Territory; Maine and Vermont; northern California, Wyoming (Albany, Fremont, Washakie cos.) and northern Colorado.

**Diagnostic characters:** 1. uncus slender with single terminal hook; other features as indicated.

**References:** Bolte, K. B., 1990: p. 73; p. 235; figs. 151–152. McDunnough (1949) treated this species as *E. gibsonata* Taylor.

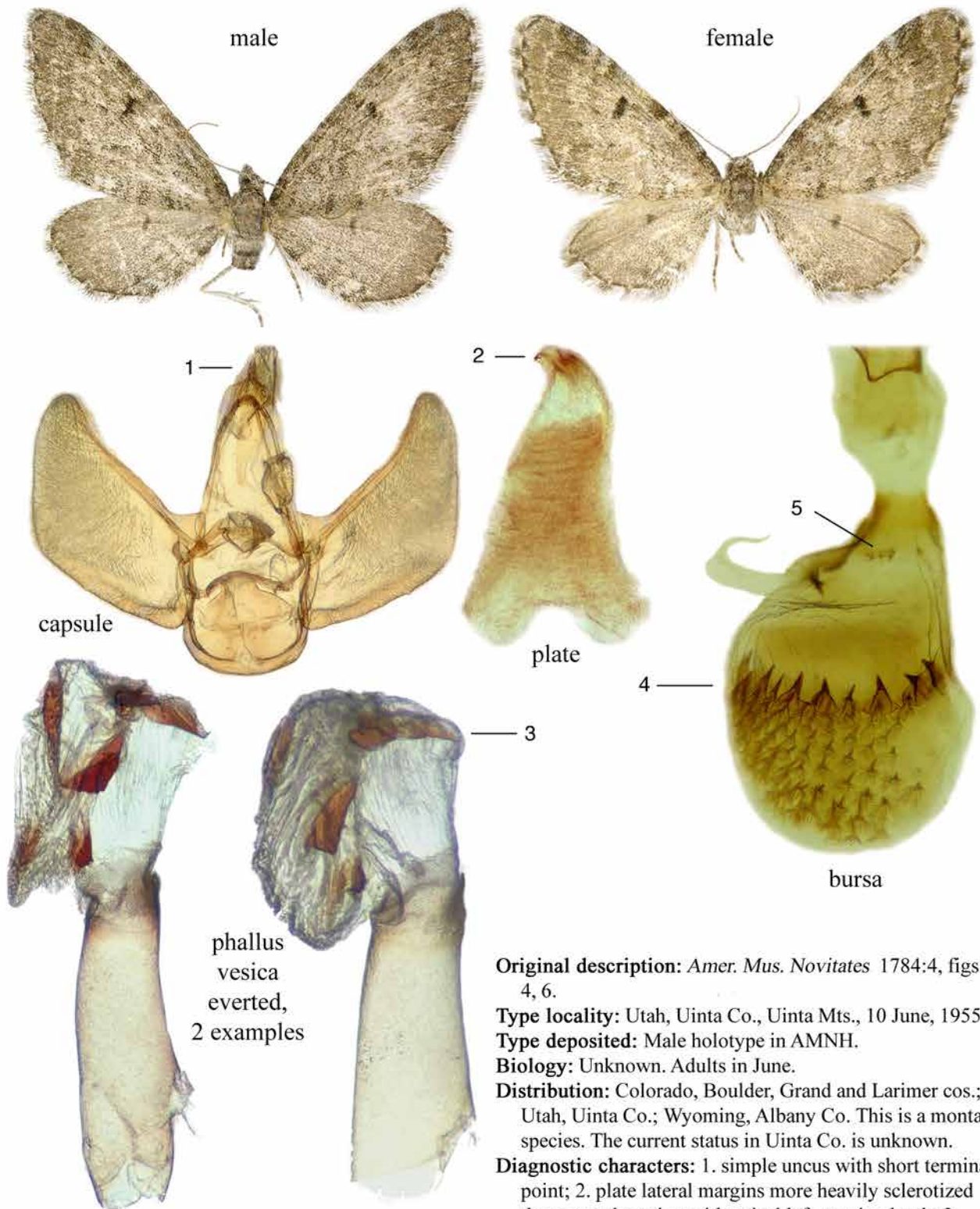


*Eupithecia intricata taylorata* Swett, 1907 continued



Illustrated is a heavily maculated form from Nova Scotia, Canada.



*Eupithecia uinta* Rindge, 1956

**Original description:** *Amer. Mus. Novitates* 1784:4, figs. 3, 4, 6.

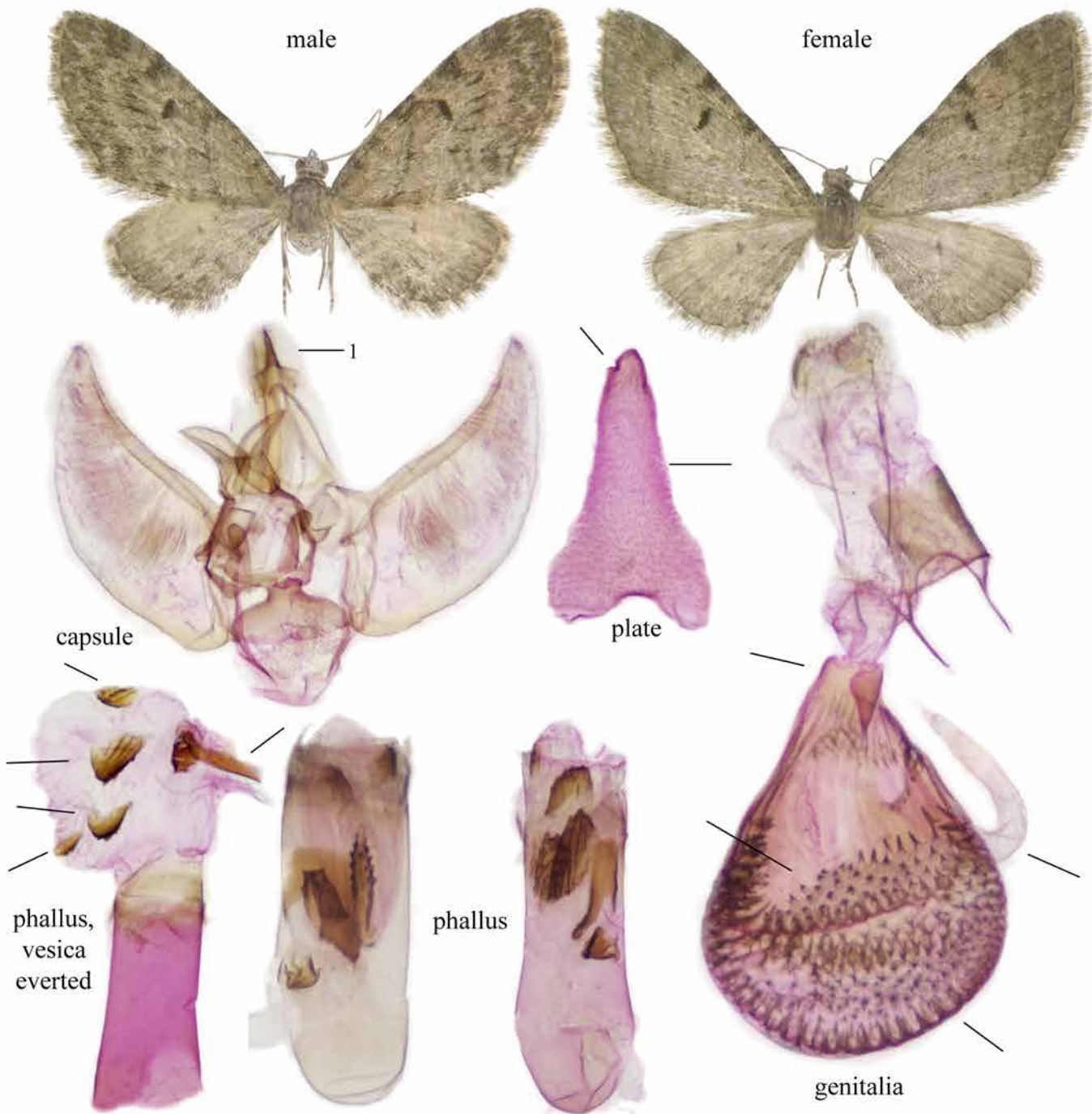
**Type locality:** Utah, Uinta Co., Uinta Mts., 10 June, 1955.

**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adults in June.

**Distribution:** Colorado, Boulder, Grand and Larimer cos.; Utah, Uinta Co.; Wyoming, Albany Co. This is a montane species. The current status in Uinta Co. is unknown.

**Diagnostic characters:** 1. simple uncus with short terminal point; 2. plate lateral margins more heavily sclerotized than central portion with apical left-curving hook; 3. five irregular cornuti; 4. partial ring of large spines; 5. short row of small spines.

*Eupithecia satyrata dodata* Taylor, 1906

**Original description:** *Can. Ent.* 38(3):103.

**Type locality:** Alberta, Calgary, Head of Pine Creek.

**Type deposited:** Female lectotype in NMNH.

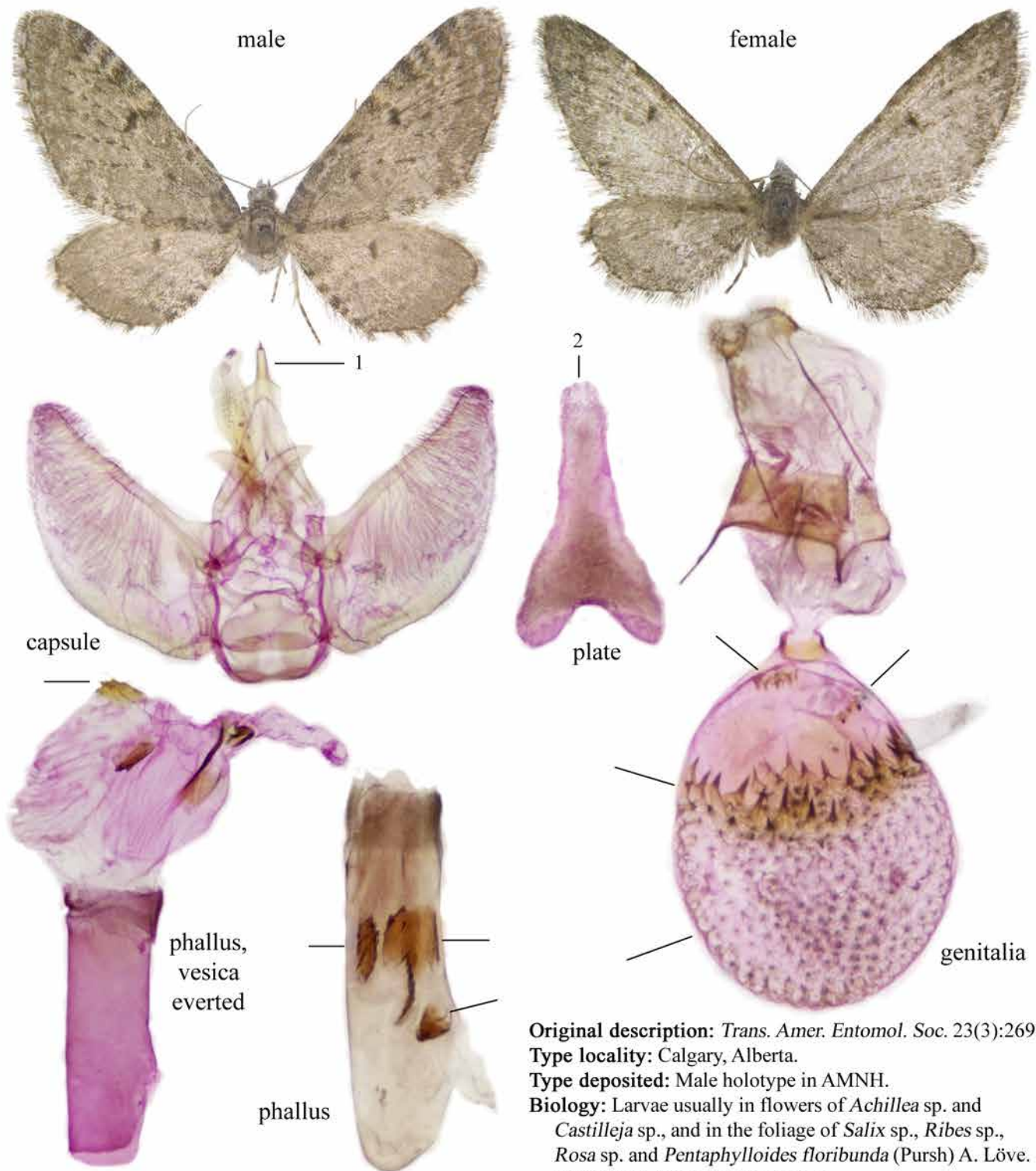
**Biology:** Polyphagous on shrubs and herbaceous perennials. Larvae usually on flowers and fruits. Adults June–August.

**Distribution:** Hopedale, Labrador and eastern Newfoundland to western British Columbia and Vancouver Is., and north to Dawson, Yukon Terr. and Fairbanks, Alaska; southern records include New England states; Arizona (Cochise Co.); California (Sierra Co.); Colorado (Gilpin Co.); Nevada (White Pine Co.); New Mexico (Grant Co.); Oklahoma (Comanche Co.); Utah (San Juan Co.); Wyoming (Albany, Teton cos.).

**Diagnostic characters:** Adults variable in maculation; 1. uncus bifid; other features as indicated.

**References:** Bolte, K. B., 1990: p. 74; p.236; figs. 153–154. McDunnough, J. H., 1949: p. 602; p. 716 figs. 8D, E; pl. 28 figs. 19–21.



*Eupithecia nimbicolor* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):269.

**Type locality:** Calgary, Alberta.

**Type deposited:** Male holotype in AMNH.

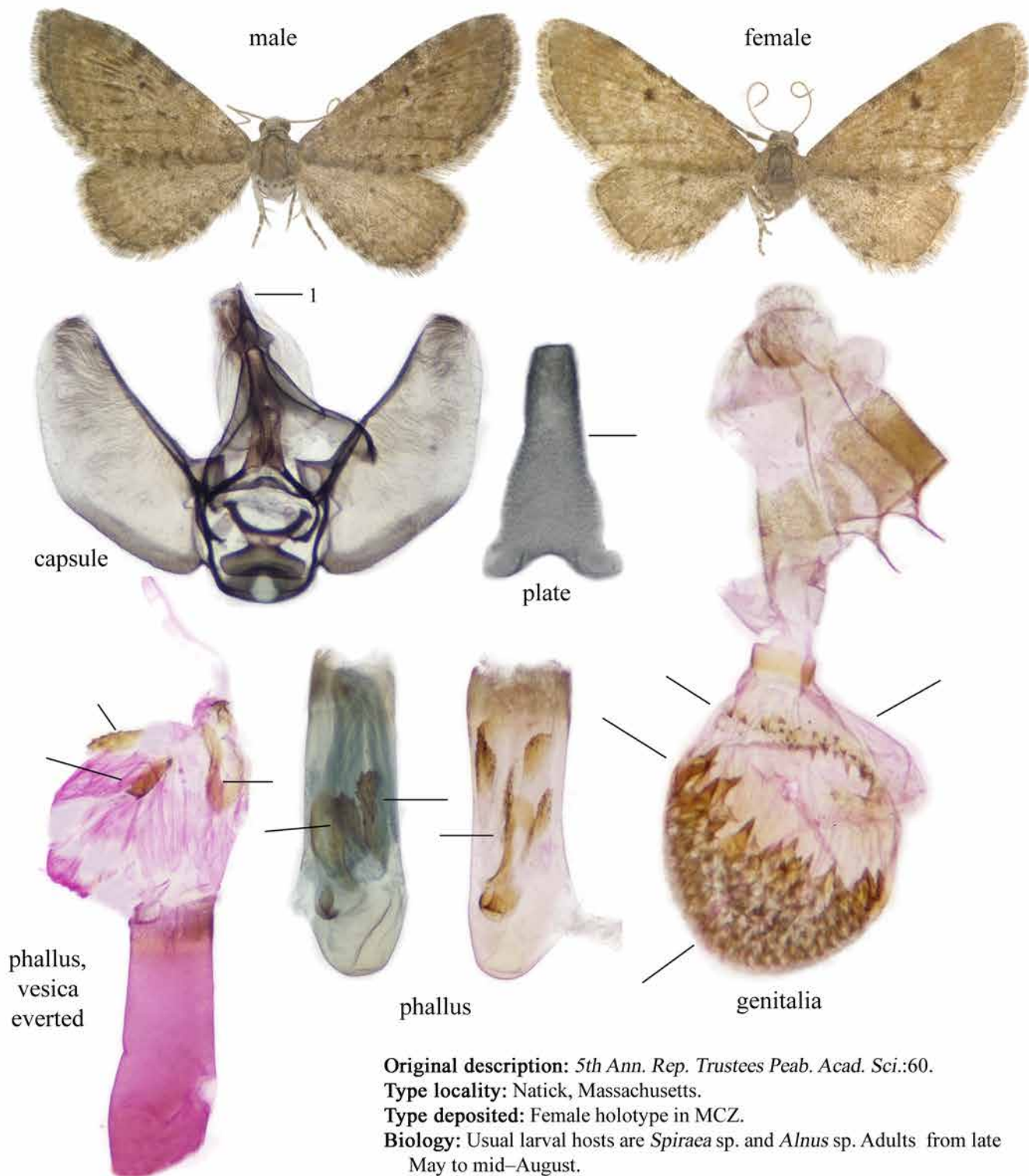
**Biology:** Larvae usually in flowers of *Achillea* sp. and *Castilleja* sp., and in the foliage of *Salix* sp., *Ribes* sp., *Rosa* sp. and *Pentaphylloides floribunda* (Pursh) A. Löve. Adults mid-May to early August.

**Distribution:** Widely distributed from eastern Newfoundland and Maine to western British Columbia, southern Alaska, and southward to Monterey Co., California, Cochise Co., Arizona, and Grant Co., New Mexico, including Idaho, Montana, Wyoming and Colorado.

**Diagnostic characters:** 1. uncus with bifid tip; 2. tip of plate with small central indentation; other features as indicated.

**References:** Bolte, K. B., 1990: p. 77, p. 238, figs. 157–158. McDunnough, J. H. 1949: p. 606, p. 716 fig. 8G; pl. 28 figs. 23–28.



*Eupithecia strattonata* Packard, 1873

**Original description:** 5th Ann. Rep. Trustees Peab. Acad. Sci.:60.

**Type locality:** Natick, Massachusetts.

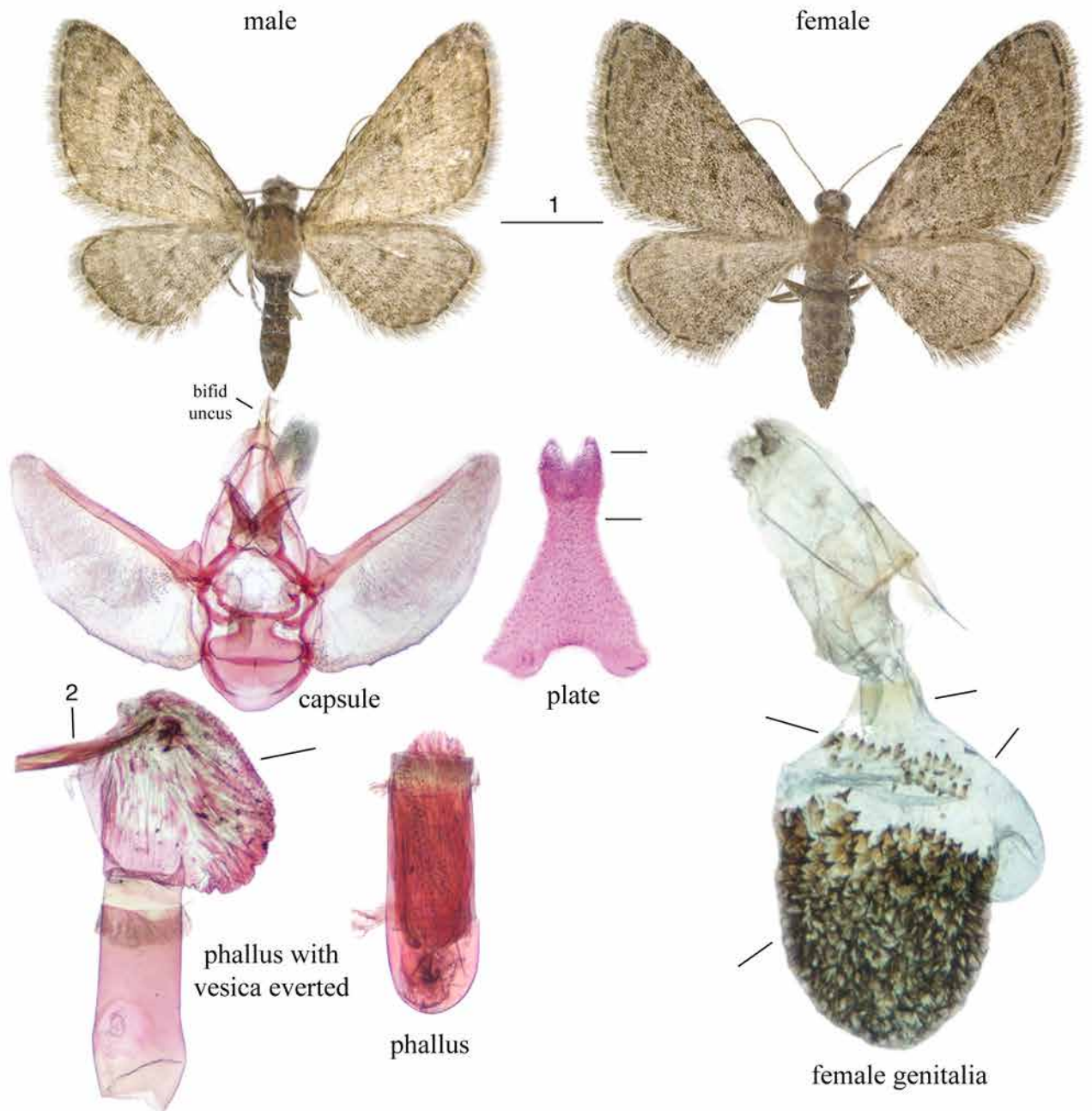
**Type deposited:** Female holotype in MCZ.

**Biology:** Usual larval hosts are *Spiraea* sp. and *Alnus* sp. Adults from late May to mid-August.

**Distribution:** Western Newfoundland to central Ontario, north to Lake Mondor, Quebec, and south to New England, northern Atlantic states westward to Michigan.

**Diagnostic characters:** 1. laterally broad uncus with 2 widely separated blunt points. Other features as pointers indicate.

**References:** McDunnough, J. H., 1949: p. 608; p. 716 fig. 8H; pl. 28 fig. 29. Bolte, K. B., 1990: p. 70; p.239; figs. 159–160.

*Eupithecia macfarlandi* Ferris, 2007

**Original description:** *Zootaxa* 1516:50, figs. 1–13.

**Type locality:** Arizona, Cochise Co., Ash Canyon, Chiricahua Mts., 5170', 31°23.17'N, 110°14.28'W, 24 August, 2006.

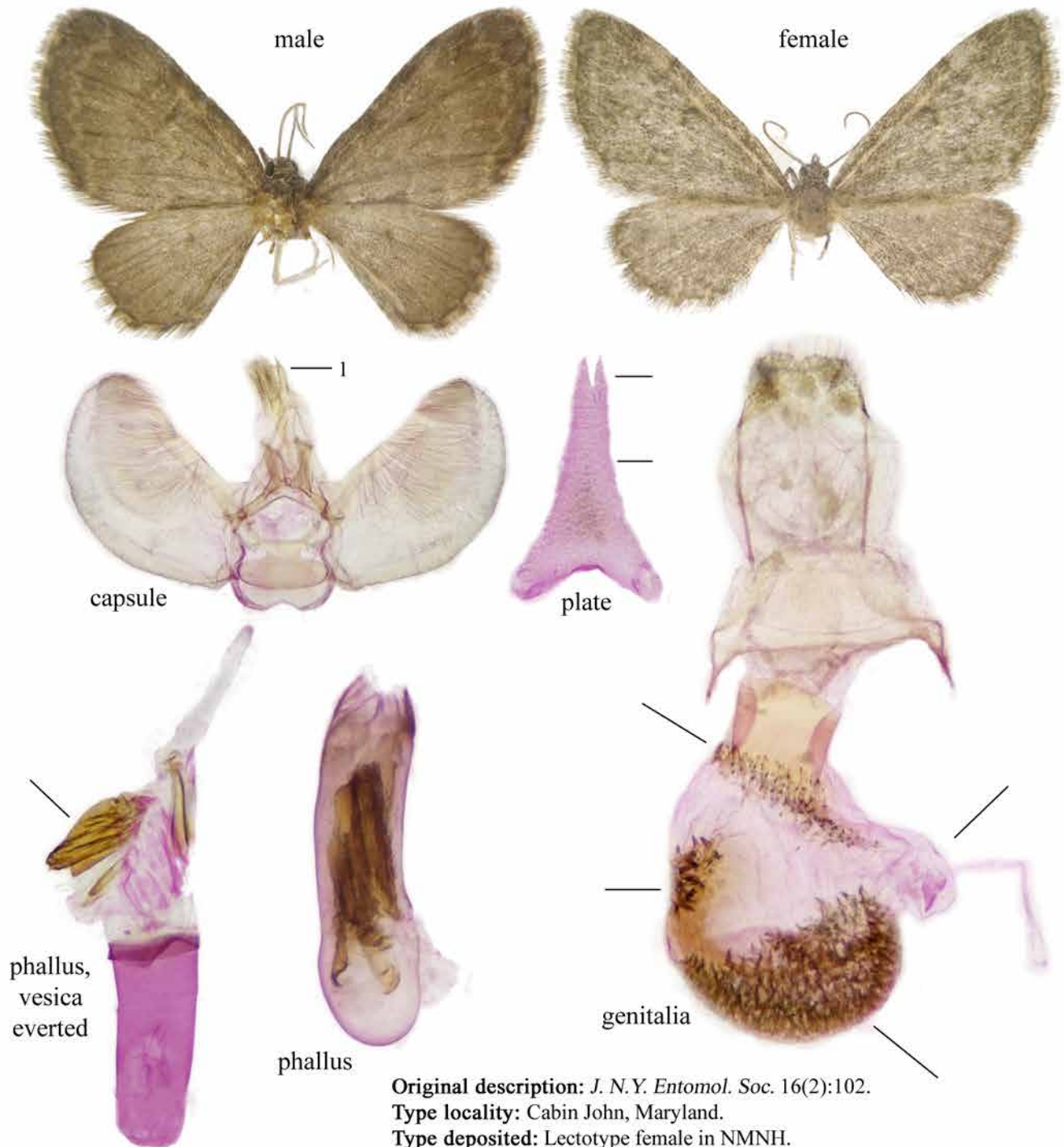
**Type deposited:** Male holotype and female paratype in NMNH.

**Biology:** Unknown. Adults in late August to mid–September; apparently uncommon.

**Distribution:** Canyons on east side of Huachuca Mts., Cochise Co., Arizona.

**Diagnostic characters:** 1. wings almost uniformly brownish-gray, cell and discal spots nearly obsolete, multiple very obscure thin brownish transverse lines and bands; 2. vesica pleated, stippled with small chitinous papillae, shagreened crown, one large half-cylinderlike chitinized plate with straight end; other characters as indicated by pointers.



*Eupithecia cimcifugata* Pearsall, 1908

**Original description:** *J. N.Y. Entomol. Soc.* 16(2):102.

**Type locality:** Cabin John, Maryland.

**Type deposited:** Lectotype female in NMNH.

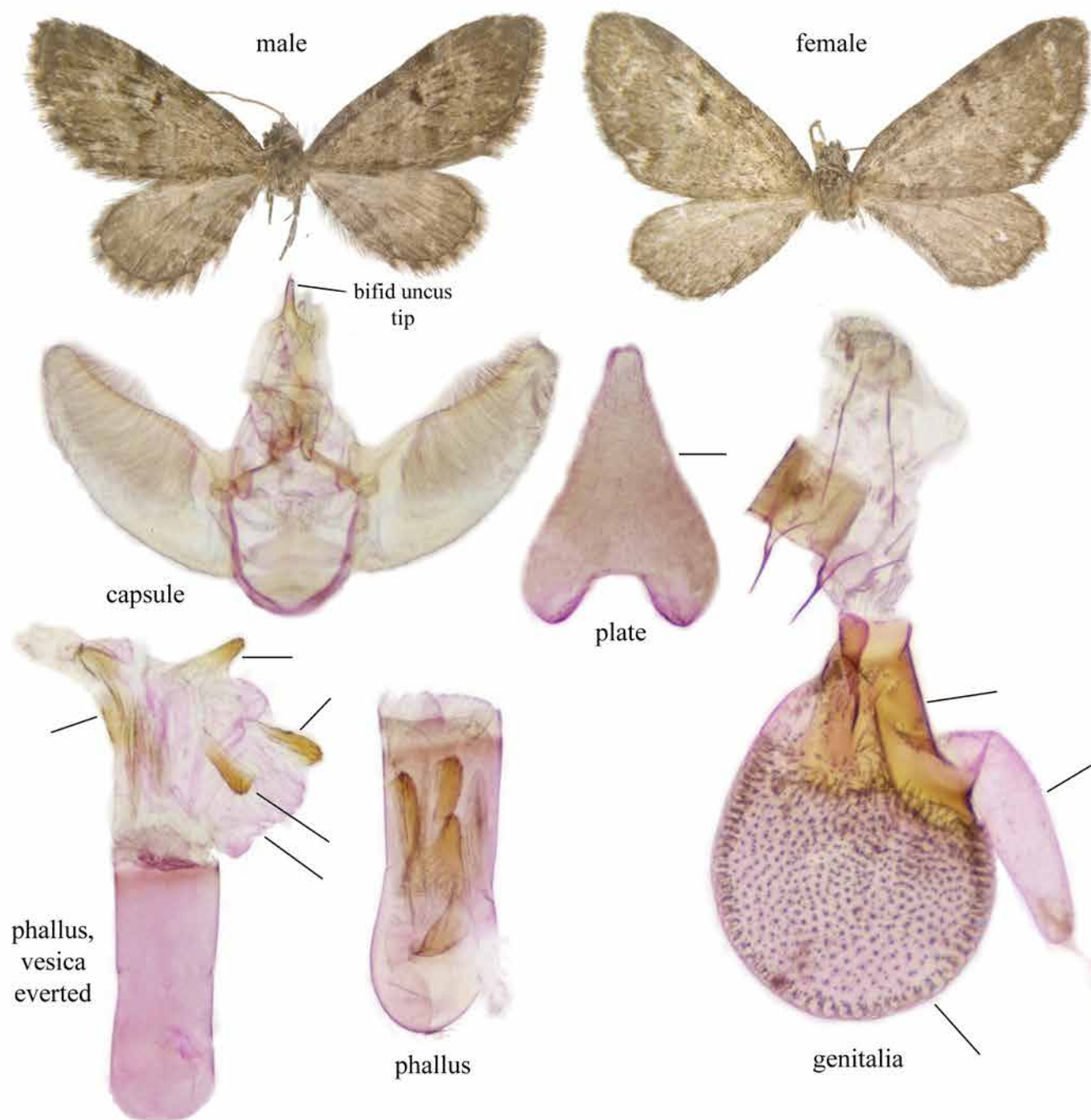
**Biology:** Usually in the fruits of *Actaea* sp. and *Cimcifuga* sp., Ranunculaceae. Adults June–August. Pupae overwinter.

**Distribution:** Western Newfoundland to western Alberta (as far north as Edmonton); south through New England to Maryland; in the West south to California (Plumas Co.), Wyoming (Albany, Teton cos.) and Larimer Co., Colorado. This species seems to be generally uncommon.

**Diagnostic characters:** This species is easily recognized by the viturally unpatterned gray-brown and broad rounded wings; 1. uncus with broadly bifid tip; other features as noted by pointers.

**References:** Bolte, K. B., 1990: p. 87; p. 247; figs. 175–176. McDunnough, J. H., 1949: p. 608; p. 716 fig. 8I; pl. 28 figs. 30–31.



*Eupithecia russeliata* Swett, 1908

**Original description:** *Can. Ent.* 40(7):245.

**Type locality:** Winchendon, Massachusetts.

**Type deposited:** Male holotype in MCZ.

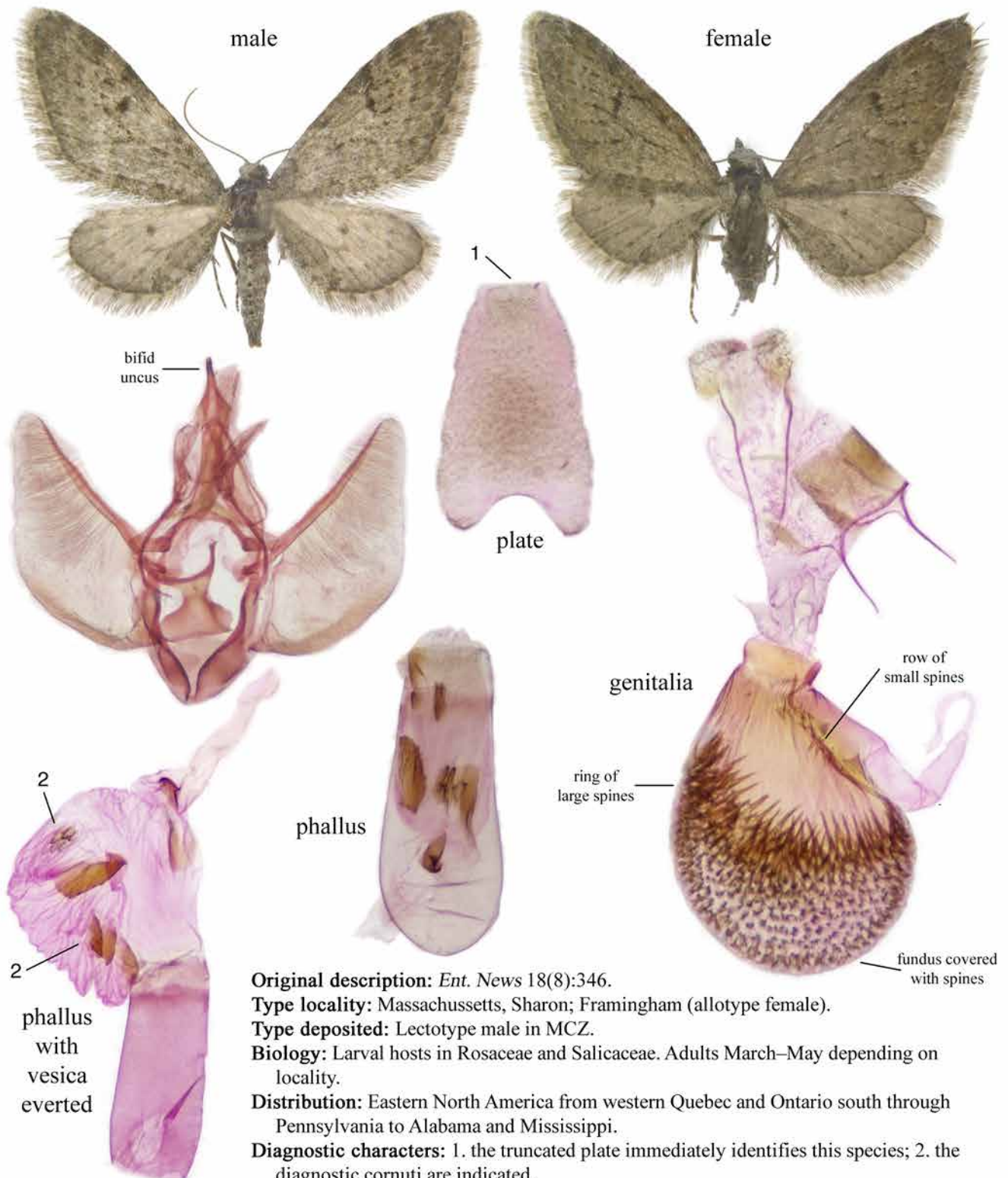
**Biology:** Larvae usually on *Kalmia* sp. and *Rhodora* sp. [Ericaceae]. Adults from April into July.

**Distribution:** Eastern Newfoundland west to central Saskatchewan and eastern United States to Virginia.

**Diagnostic characters:** As indicated by pointers.

**Note:** A weak subspecies *brauneata* Swett, 1908 (not recognized herein) was described from Virginia based on 3 slightly darker specimens.

**References:** McDunnough, J. H., 1949: p.611; p. 717 fig. 9B; pl. 28 figs. 33–34. Bolte, K. B., 1990: p. 85; p. 245; figs. 171–172.

*Eupithecia swettii* Grossbeck, 1907

**Original description:** *Ent. News* 18(8):346.

**Type locality:** Massachusetts, Sharon; Framingham (allotype female).

**Type deposited:** Lectotype male in MCZ.

**Biology:** Larval hosts in Rosaceae and Salicaceae. Adults March–May depending on locality.

**Distribution:** Eastern North America from western Quebec and Ontario south through Pennsylvania to Alabama and Mississippi.

**Diagnostic characters:** 1. the truncated plate immediately identifies this species; 2. the diagnostic cornuti are indicated.

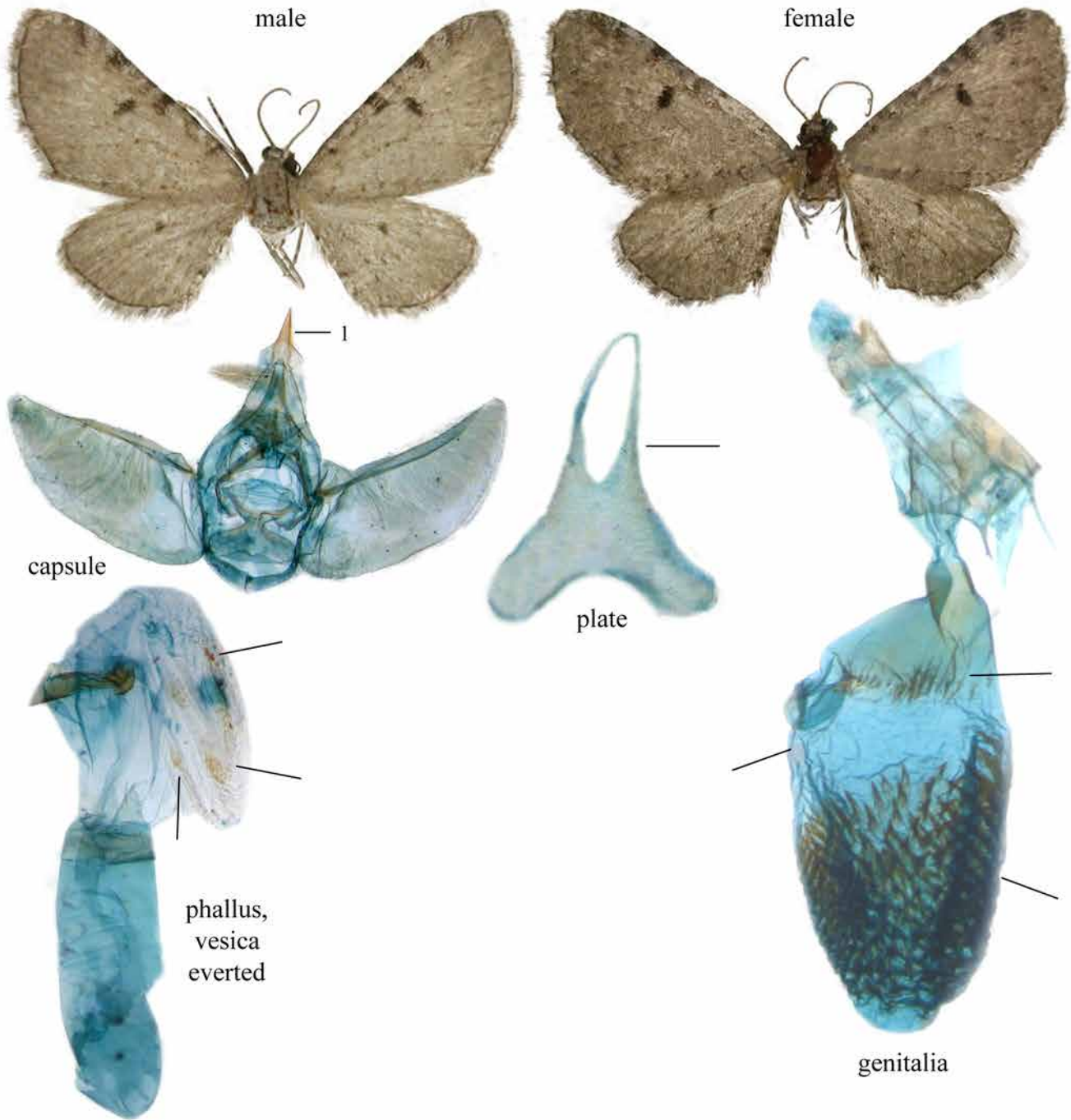
**Note:** Adults of *E. matheri* and *swettii* are easily confused; the genitalia provide immediate separation.

**References:**

Bolte, K. B., 1990: p. 82; p. 243; figs. 167–168.

McDunnough, J. H., 1949: p. 614; p. 717 fig. 9E; pl. 29 figs. 2–3.



*Eupithecia indistincta* Taylor, 1910

**Original description:** *Can. Ent.* 42(3):82.

**Type locality:** New York, Catskill Mountains.

**Type deposited:** Holotype female in NMNH.

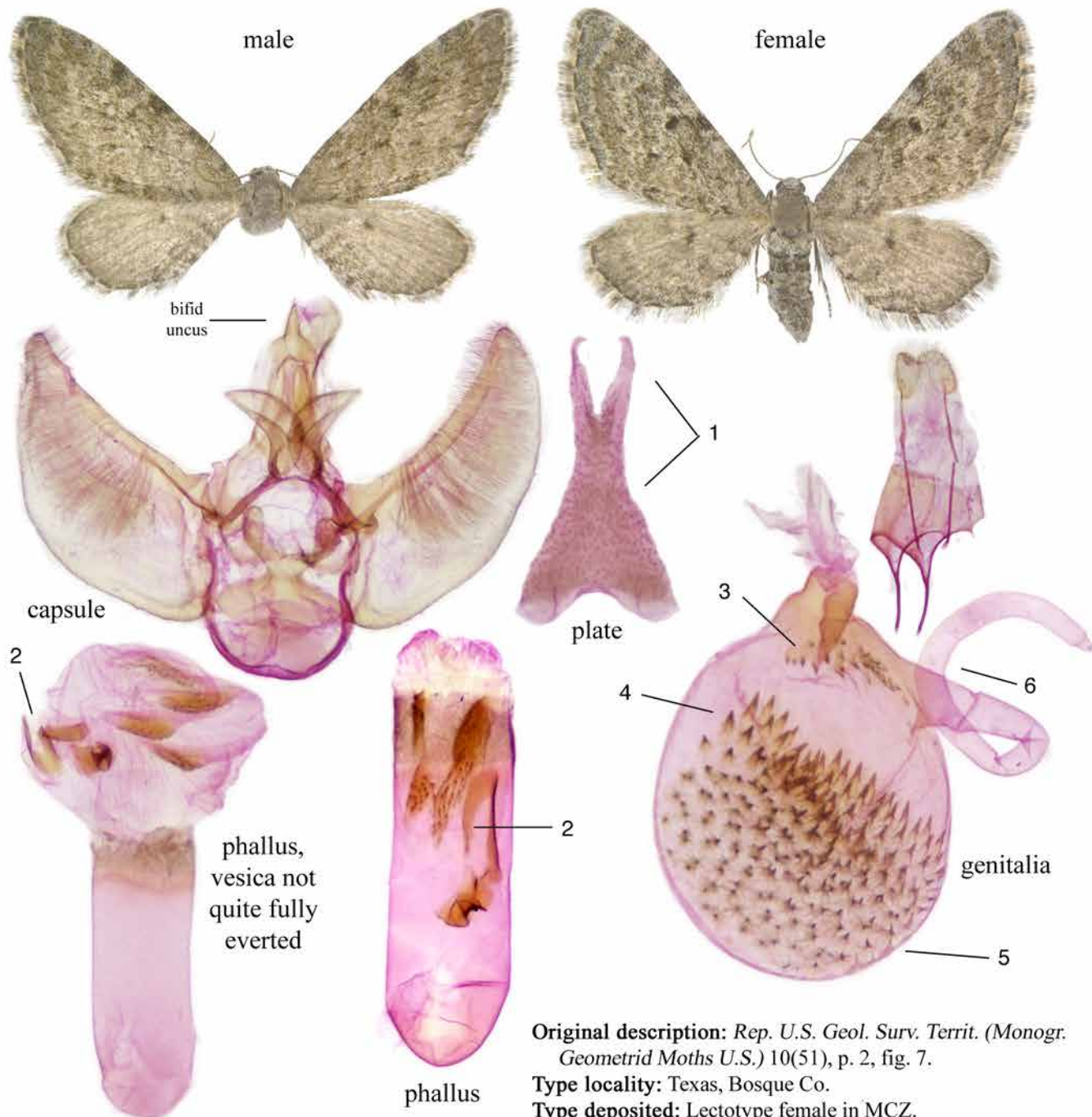
**Biology:** Unknown. Adults late May to August.

**Distribution:** From Quebec south through the Atlantic states to North Carolina.

**Diagnostic characters:** 1. bifid uncus tip; other features as indicated. This species is easily confused with *E. assimolata* with which it flies in some areas. Dissection is necessary to confirm identity.

**References:** McDunnough, J. H., 1949: p. 616; p. 717 fig. 9G; pl. 29 fig. 7. Bolte, K. B., 1990: p. 80; p. 240; figs. 161–162.



*Eupithecia zygadeniata* Packard, 1876

**Original description:** *Rep. U.S. Geol. Surv. Territ. (Monogr. Geometrid Moths U.S.)* 10(51), p. 2, fig. 7.

**Type locality:** Texas, Bosque Co.

**Type deposited:** Lectotype female in MCZ.

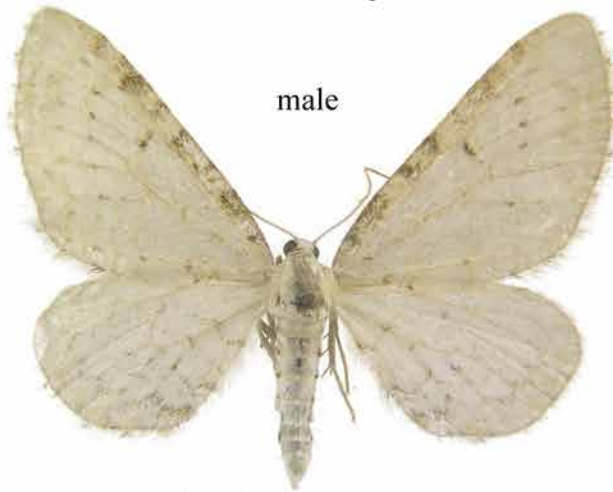
**Biology:** Larval host in Texas is *Zygadenus nuttalli* Gray. *Z. venosus* Wats. var. *gramineus* (Rydb.) Walsh ex Peck suspected in Washakie Co., Wyoming. Adults March and May in Texas; June in Wyoming.

**Distribution:** Montana, Madison Co.; New Mexico, Sandoval Co.; Texas, Bosque, Comal and Kerr cos.; Wyoming, Fremont, Sublette, Teton and Washakie cos.

**Diagnostic characters:** 1. plate tapers to mid-point, then expands to 2 apical arms with incurving tips; 2. irregular plate with open mid-section; 3. small spine patch; 4. rows of large spines; 5. spines smaller in fundus; 6. ductus seminalis forms a loop.

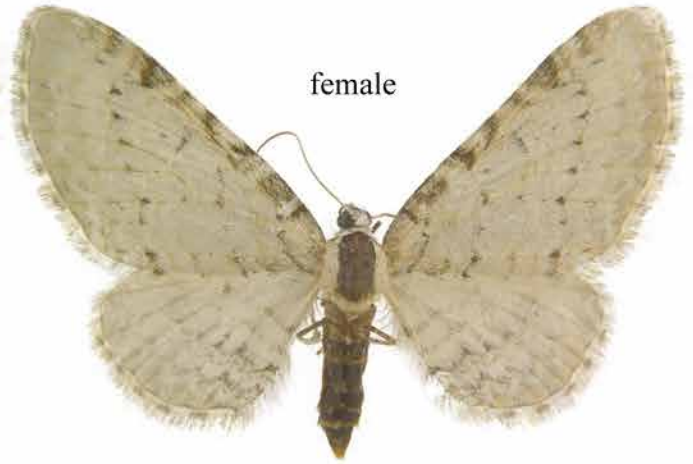
#### References:

- Blanchard, A. & Knudson, E. C., 1985. *Proc. Entomol. Soc. Wash.* 87(3):662–674.  
 McDunnough, J. H., 1949:p. 617; p. 718 fig. 10A; pl. 29 fig. 8.

*Eupithecia cretacea* (Packard, 1874)

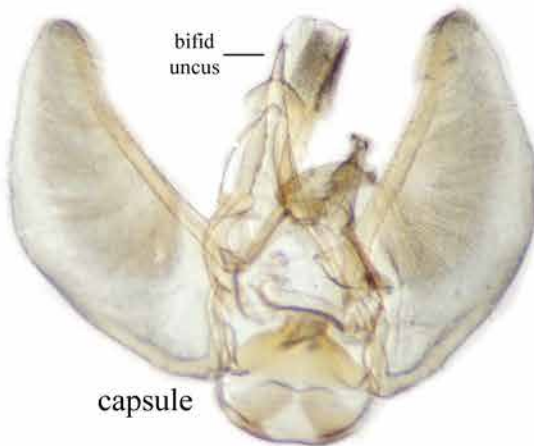
male

Wyoming, Albany Co., Medicine Bow Mts.



female

New Mexico, Sandoval Co., Jemez Mts.

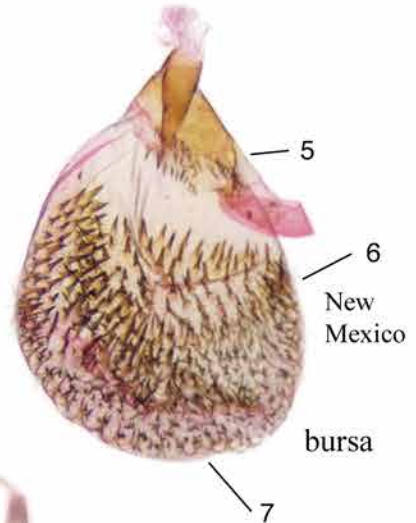
bifid  
uncus

capsule



1

plate



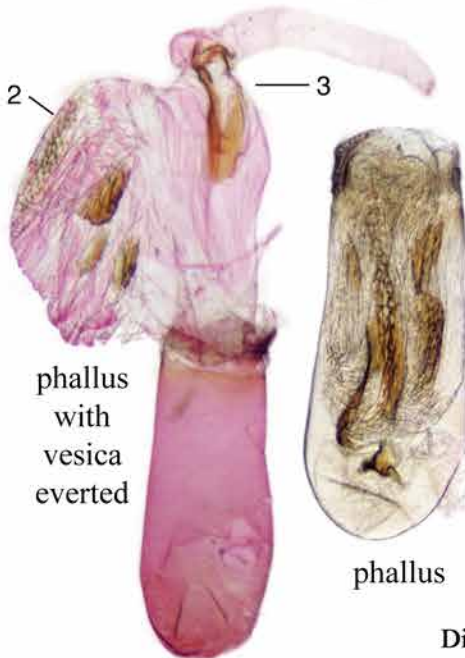
5

6

New  
Mexico

bursa

7

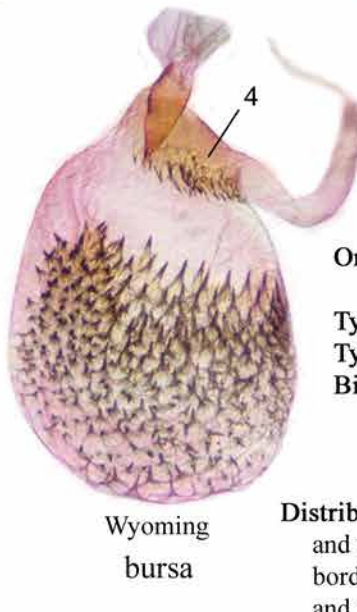


2

3

phallus  
with  
vesica  
everted

phallus



4

Wyoming  
bursa

**Original description:** 6th Ann. Rep. Trustees  
Peab. Acad. Sci.:40.

**Type locality:** California, Sierra Nevada.

**Type deposited:** Female lectotype in MCZ.

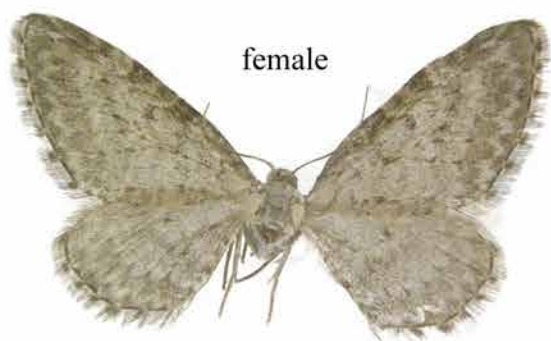
**Biology:** Larvae on leaves, flowers and seeds  
of *Veratrum viride* Alt.; *V. californicum*  
Durand in Wyoming. Adults May–mid-  
August.

**Distribution:** Southern Alaska south to California  
and eastward across most of southern Canada and  
bordering U.S. states to western New Brunswick  
and Vermont; in the Rocky Mts. southward from  
Idaho, Wyoming and Colorado to northern New  
Mexico.

**Diagnostic characters:** 1. plate with incurving tips forming an oval; 2. spiculate  
band; 3. irregular chitinous plate with open center; 4. spine patch; 5. ductus  
seminalis arises from chitinated shoulder of corpus bursae; partial ring of large  
spines; 7. spines smaller and becoming diffuse on fundus.

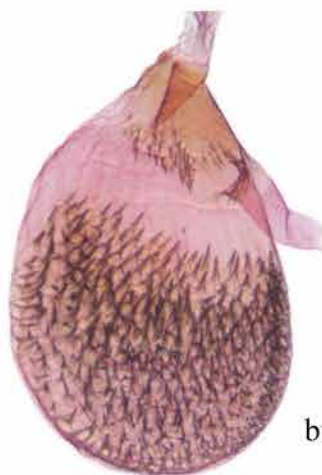
Species continued next plate.



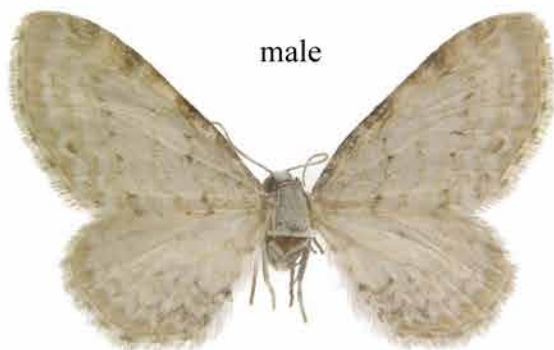
*Eupithecia cretacea* (Packard, 1874) continued

female

Lemihi Co., Idaho

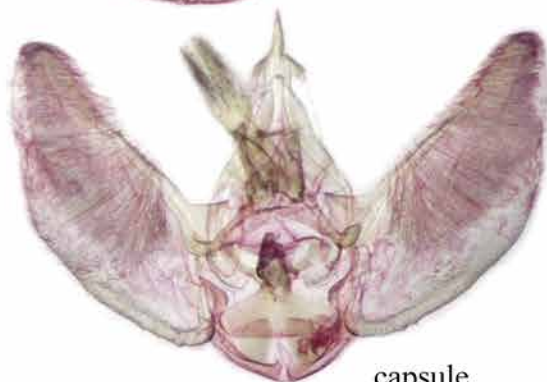


bursa

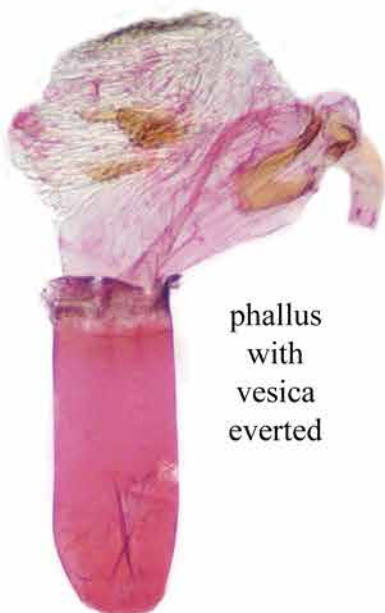


male

Chittenden Co., Vermont



capsule

phallus  
with  
vesica  
everted

phallus



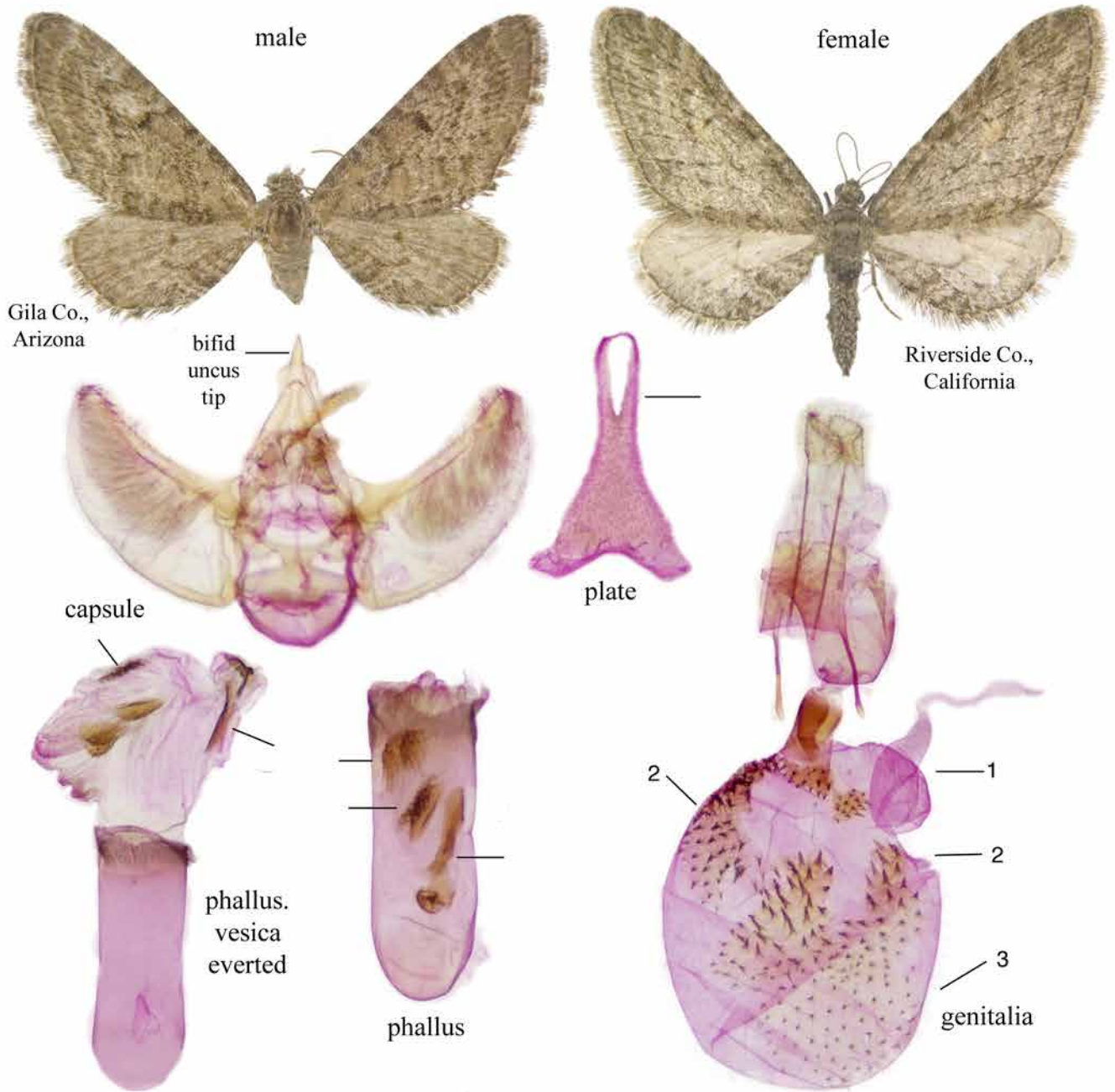
plate

**References:**

Bolte, K. B., 1990: pp. 80–81; p. 276; figs. 163–164.

McDunnough, J. H., 1949: p. 618; p. 718 fig. 10B; pl. 29 figs. 9–11.



*Eupithecia nimbosa* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(5):269.

**Type locality:** Arizona, California.

**Type deposited:** Female lectotype in AMNH.

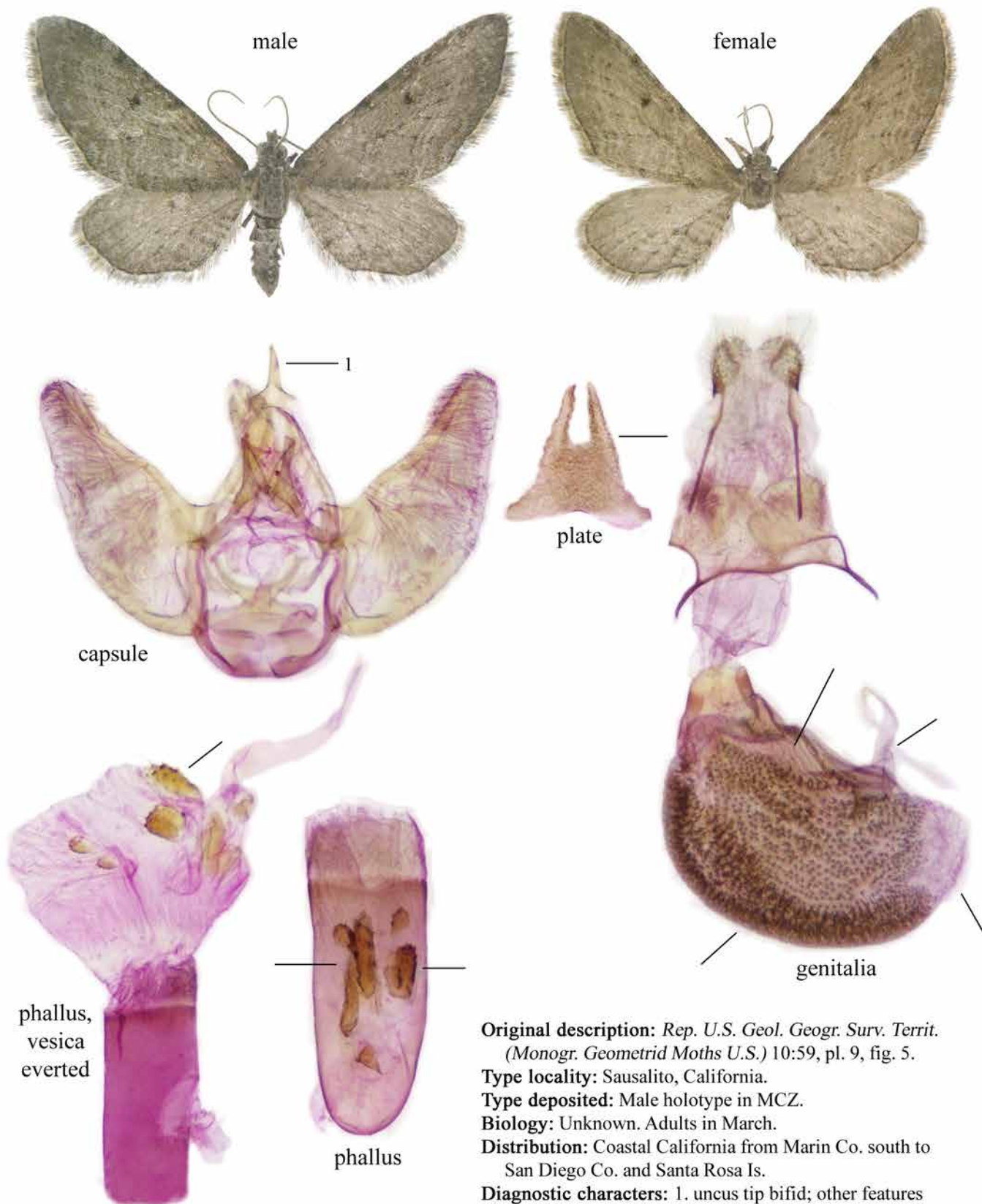
**Biology:** Unknown. Adults February–July, depending on geographic locality.

**Distribution:** Locally distributed, Arizona, Yavapai Co.; California, Plumas, Riverside and Sierra cos.; Colorado, Gunnison, Montrose and Routt cos.; Oregon, Baker, Harney and Wallowa cos.; Utah, Park Co.; Washington, Whitman Co.

**Diagnostic characters:** 1. ductus seminalis originates from shoulder and loops; 2. spine patches; 3. spines small and diffusely distributed over fundus.

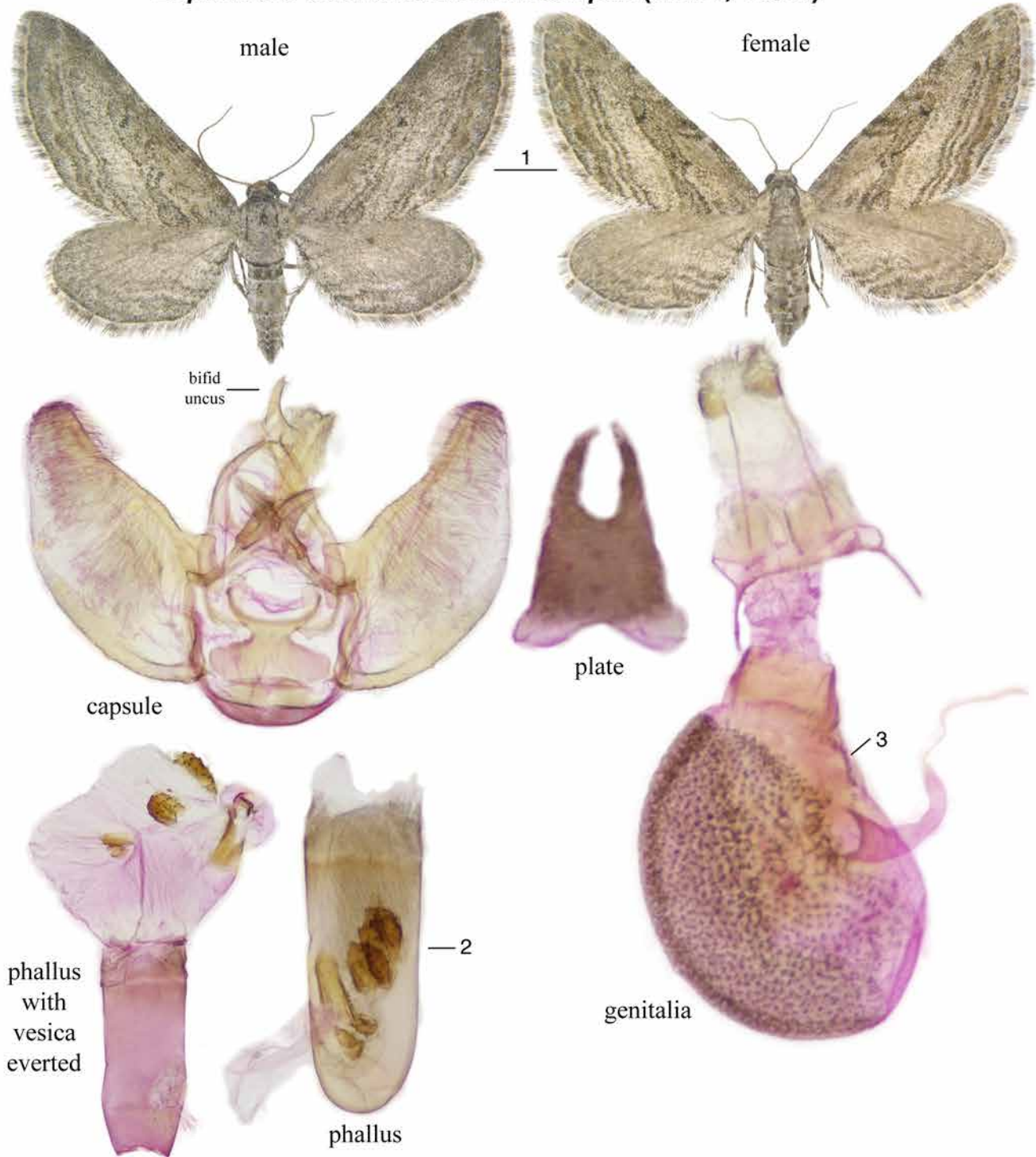
**Note:** See discussion in associated text material.

**Reference:** McDunnough, J. H., 1949: p. 620; p. 718 fig. 10E; pl. 29 fig. 14.

*Eupithecia behrensata behrensata* Packard, 1876

**Reference:** McDunnough, J. H., 1949: p. 622; p. 718 fig. 10D; pl. 29 fig. 16 (syn. *perillata* Pearsall).



*Eupithecia behrensata multiscripta* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):270.

**Type locality:** Colorado, [Garfield Co.], Glenwood Springs.

**Type deposited:** Female holotype in AMNH.

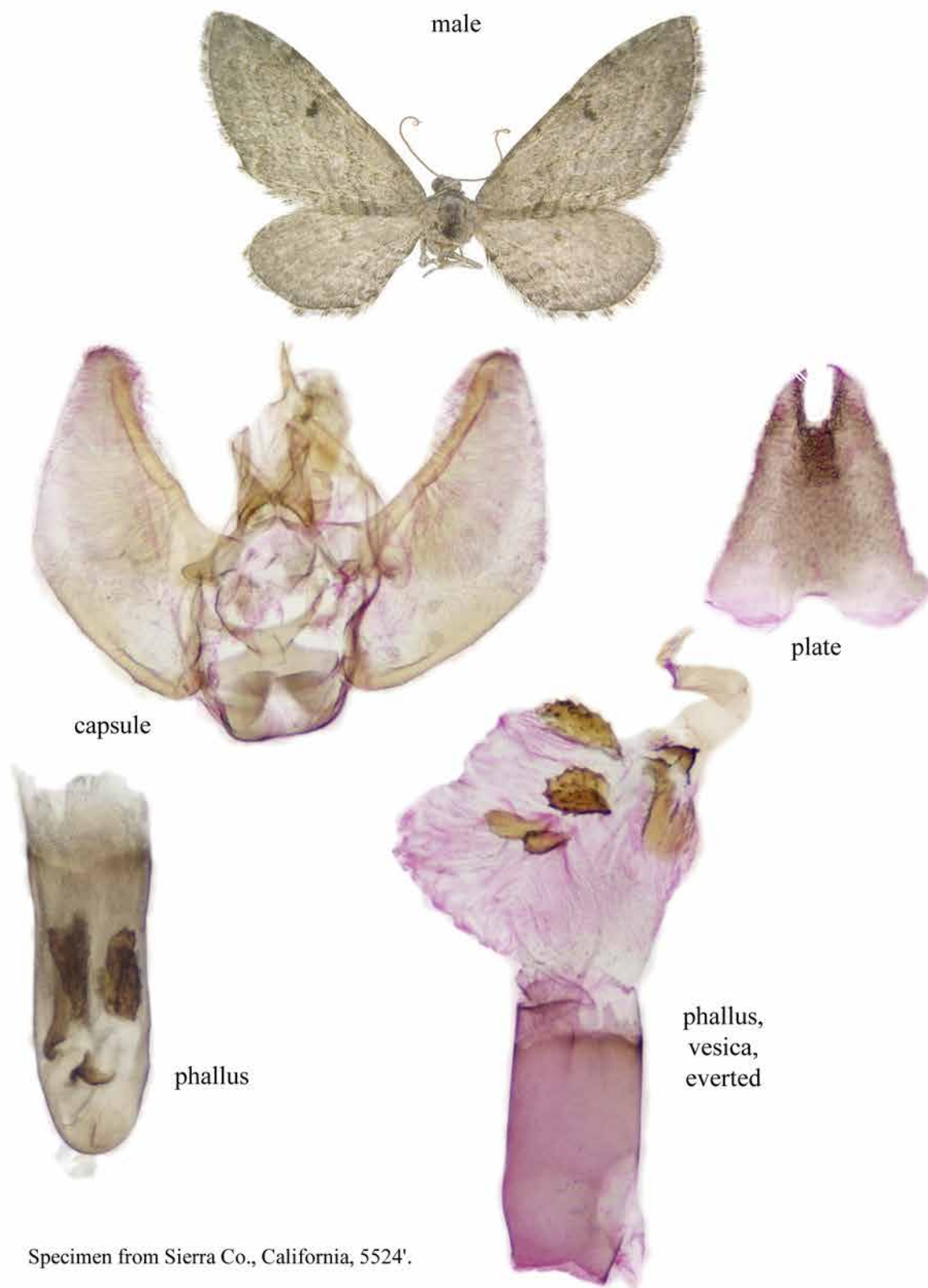
**Biology:** Unknown. Adults May–June.

**Distribution:** Idaho, Boise, Cassia and Owyhee cos.; Colorado, Douglas, Garfield and Mesa cos.; Utah; Wyoming, Albany Co.

**Diagnostic characters:** 1. large size, distinctive shape and maculation of forewings; 2. three overlapping cornuti; 3. slender row of small spines.

**Reference:** McDunnough, J. H., 1949: p. 662, p. 718 fig. 10G; pl. 29, fig. 17.



*Eupithecia behrensata multiscripta* (Hulst, 1896) continued

Specimen from Sierra Co., California, 5524'.

*Eupithecia sewardata* Bolte, 1977

male holotype



female allotype



1\



capsule



plate

2

phallus  
with vesica  
evertedductus  
seminalis

genitalia

**Original description:** *Can. Ent.* 109(7):1019, figs. 1, 2, 3a-h.

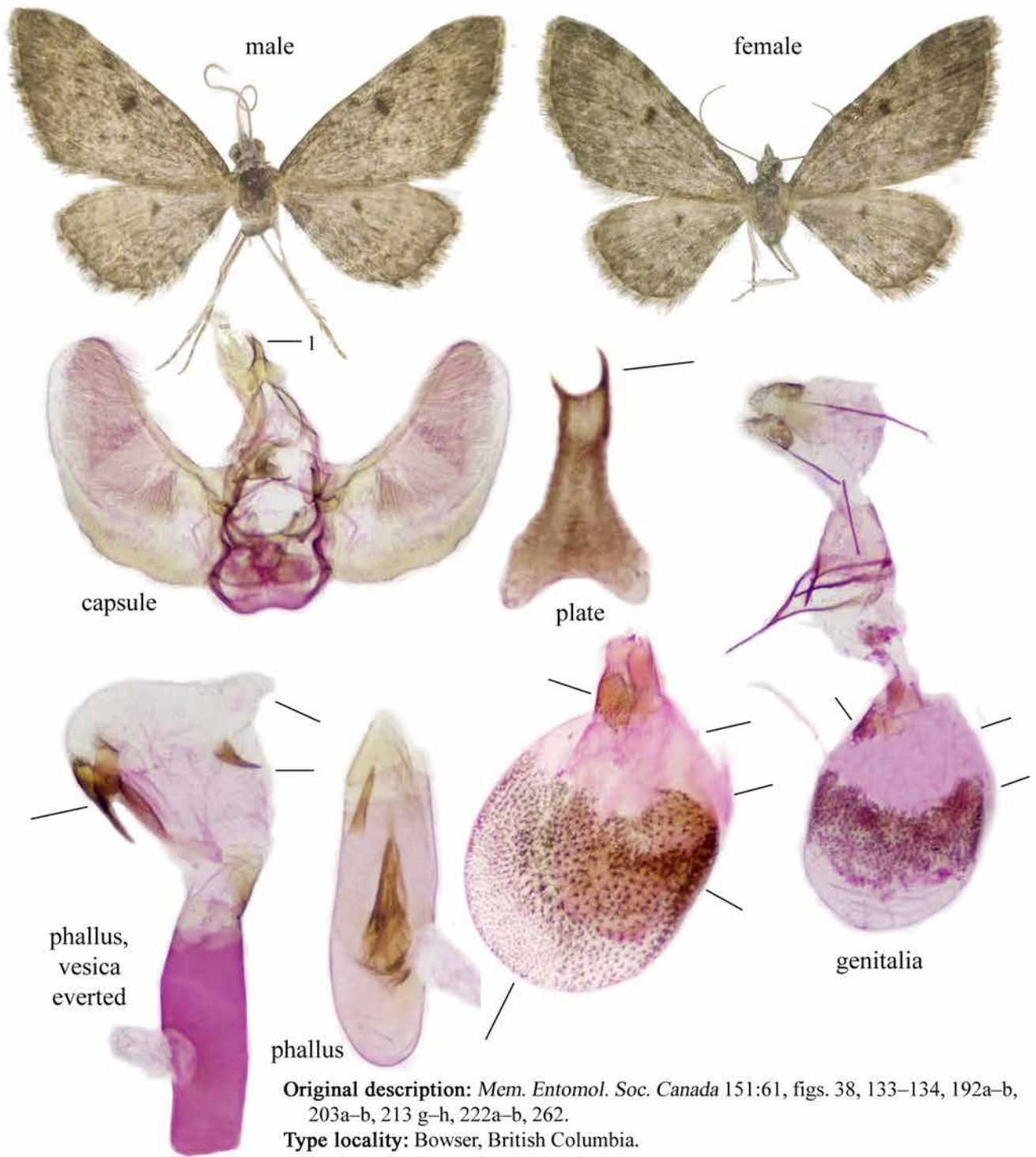
**Type locality:** Alaska, Seward.

**Type deposited:** Male holotype and female allotype in CNC.

**Biology:** Unknown. Male collected 14 July, 1951; female 5 July, 1951.

**Distribution:** Known only from two specimens from type locality.

**Diagnostic characters:** 1. bifid uncus; 2. plate shape unique among North American *Eupithecia* species.

*Eupithecia sharronata* Bolte, 1990

**Original description:** *Mem. Entomol. Soc. Canada* 151:61, figs. 38, 133–134, 192a–b, 203a–b, 213 g–h, 222a–b, 262.

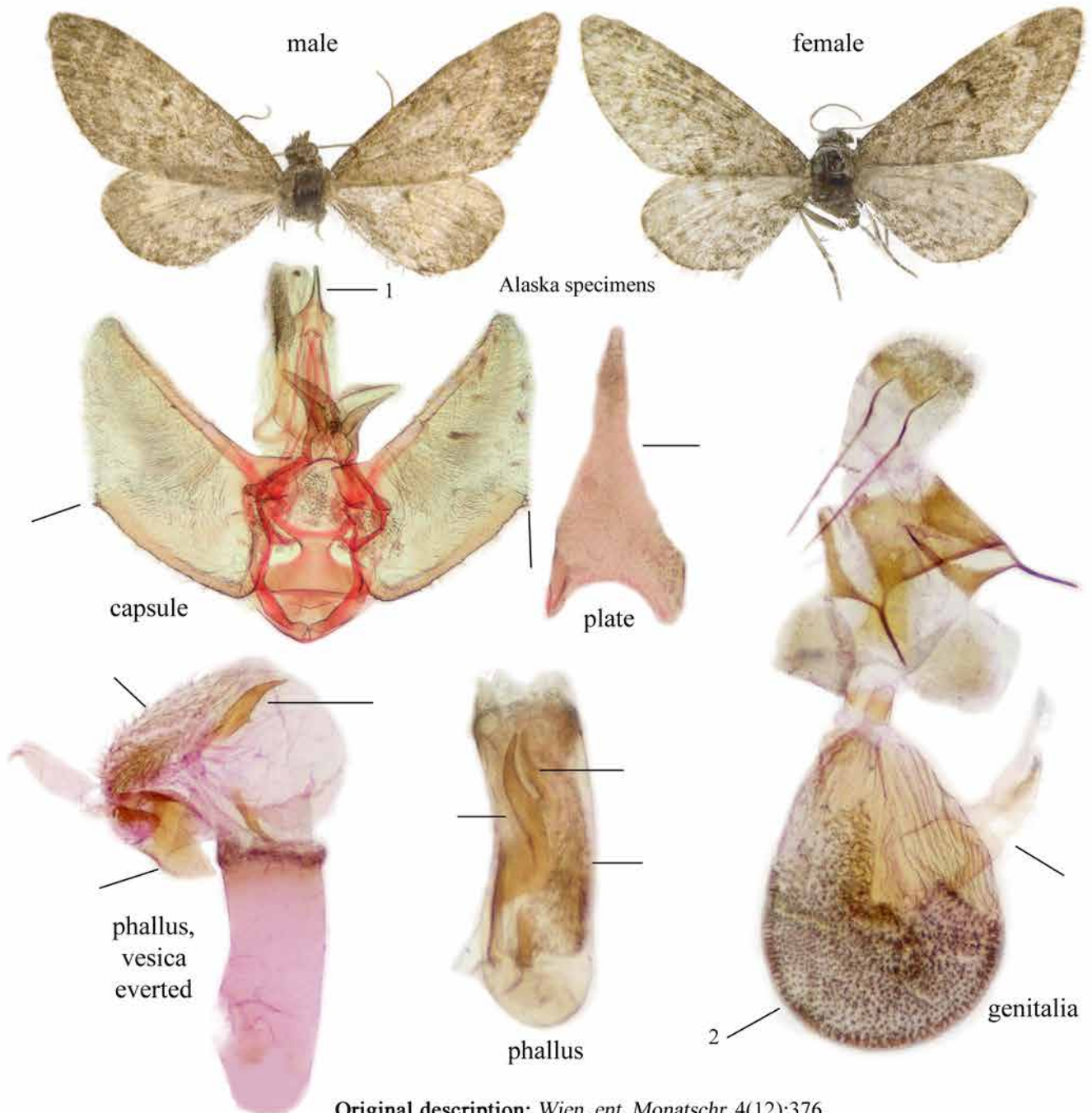
**Type locality:** Bowser, British Columbia.

**Type deposited:** Female holotype in CNC.

**Biology:** Single host record of *Salix* sp. Adults mid–April to late August. Pupae hibernate.

**Distribution:** Disjunct; Eastern Newfoundland and Labrador; Alberta to western British Columbia including Vancouver Is.; north to Dawson, Yukon Territory; south to Seattle, Washington, Benton Co., Oregon, and Franklin Co., Idaho (specimens illustrated above).



*Eupithecia gelidata* Möschler, 1860

**Original description:** *Wien. ent. Monatschr.* 4(12):376.

**Type locality:** Labrador.

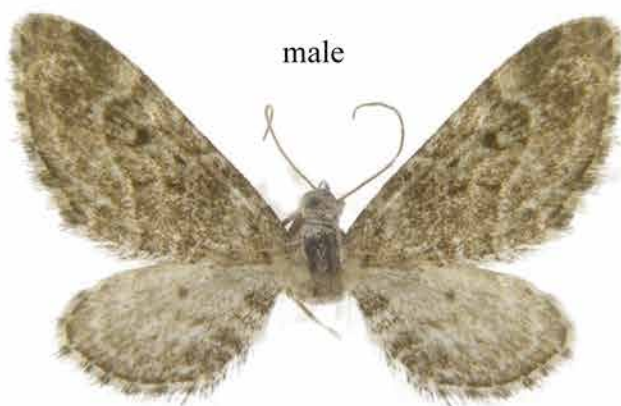
**Type deposited:** Type apparently lost.

**Biology:** Larvae usually on *Ledum* sp., but also on *Betula* sp., *Alnus* sp., and *Salix* sp.  
Adults from June to August.

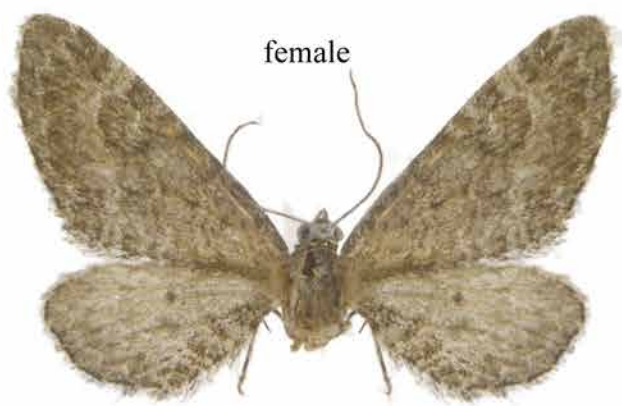
**Distribution:** Holarctic, usually in peat bogs. In North America from eastern Newfoundland to western British Columbia, north to Alaska, and south to Colorado, northern Arizona and northern New Mexico.

**Diagnostic characters:** 1. uncus tip bifid with lower cusp longer than upper one; 2. spines on bursa small; other features as pointers indicate.

**References:** Bolte, K. B., 1990: p. 91; p. 250; figs.181–182. McDunnough, J. H., 1949: p. 624; p. 719 fig. 11A; pl. 29 fig. 18.

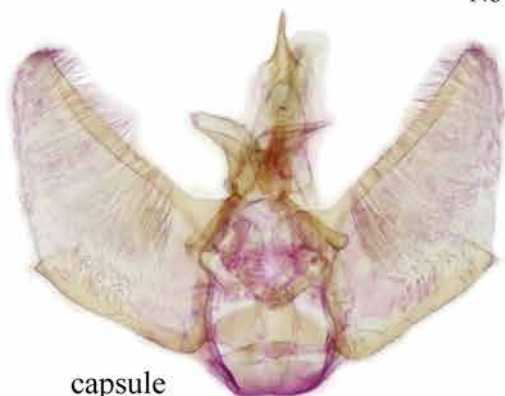
*Eupithecia gelidata* Möschler, 1860 *continued*

male



female

Nova Scotia specimens



capsule



plate



phallus, vesica everted

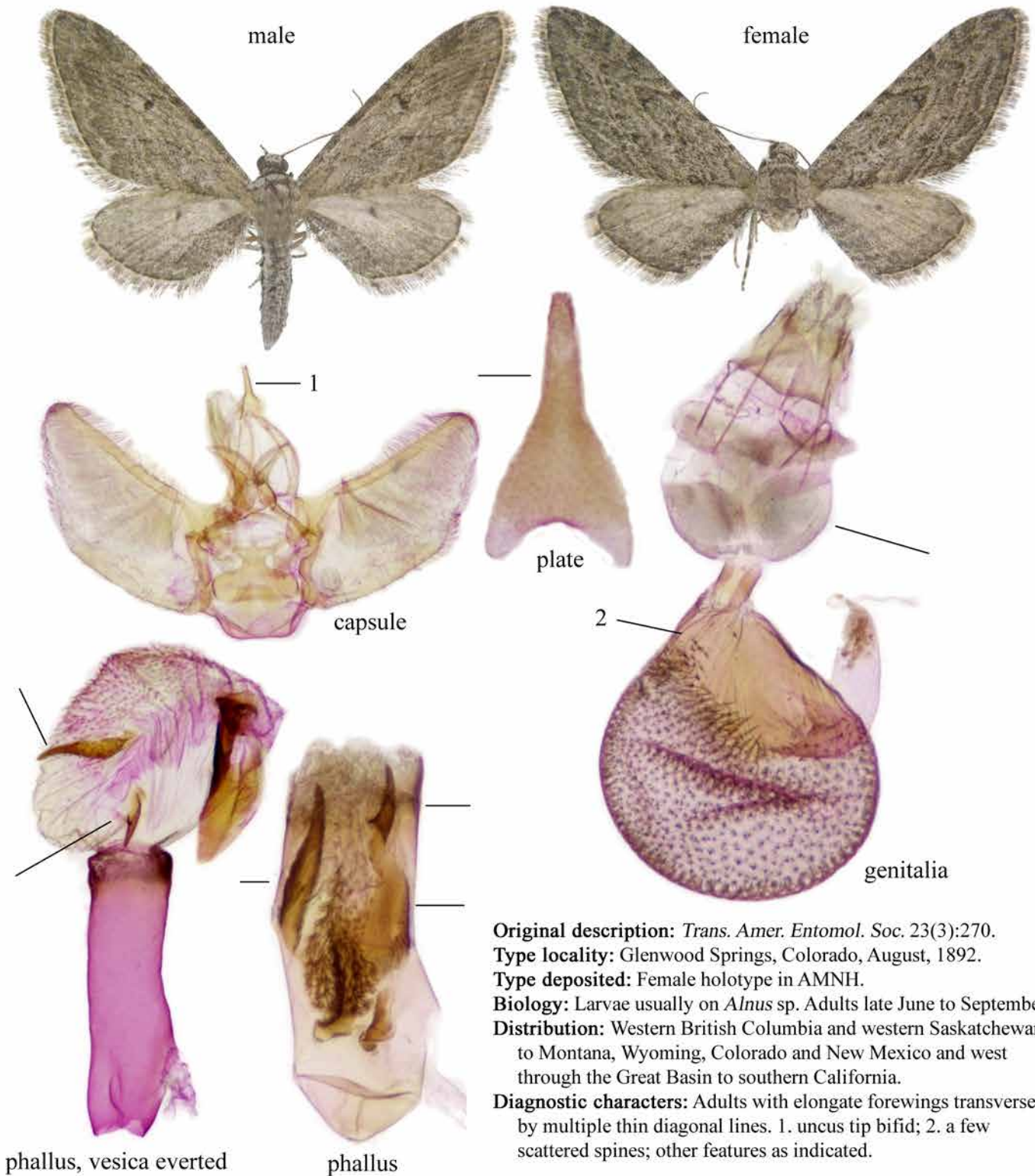


phallus



genitalia



*Eupithecia multistrigata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):270.

**Type locality:** Glenwood Springs, Colorado, August, 1892.

**Type deposited:** Female holotype in AMNH.

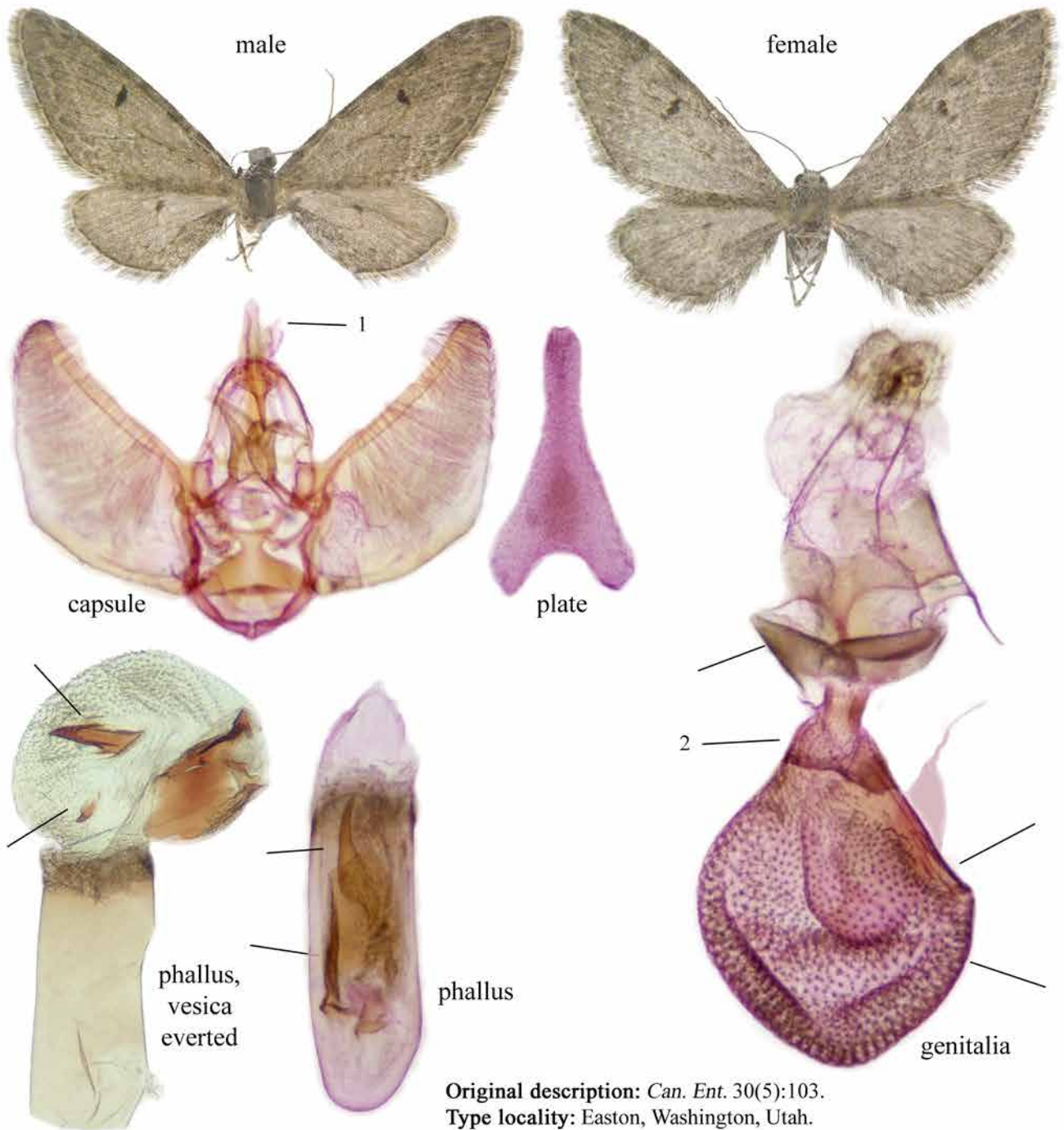
**Biology:** Larvae usually on *Alnus* sp. Adults late June to September.

**Distribution:** Western British Columbia and western Saskatchewan to Montana, Wyoming, Colorado and New Mexico and west through the Great Basin to southern California.

**Diagnostic characters:** Adults with elongate forewings transversed by multiple thin diagonal lines. 1. uncus tip bifid; 2. a few scattered spines; other features as indicated.

**References:** Bolte, K. B., 1990: p. 90; p. 249, figs. 179–180. McDunnough, J. H., 1949: p. 626; p. 719 fig. 11B, C; pl. 29 figs. 21–23.



*Eupithecia perfusca* (Hulst, 1898)

**Original description:** *Can. Ent.* 30(5):103.

**Type locality:** Easton, Washington, Utah.

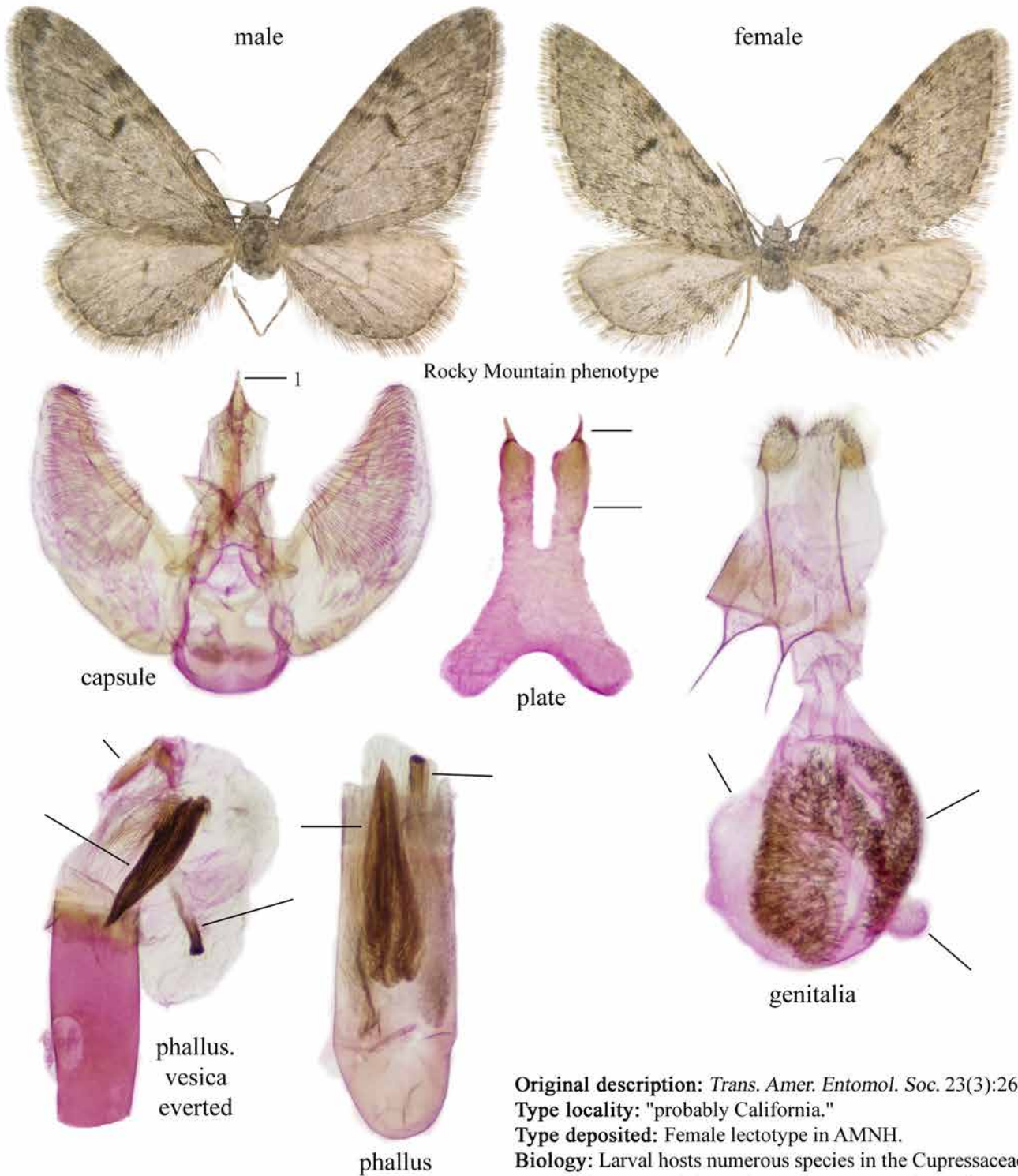
**Type deposited:** Female lectotype in NMNH.

**Biology:** *Salix* sp. is usual host, but also *Alnus* sp., *Betula* sp., and occasionally on *Prunus* sp. and *Malus* sp. Adults mid-June into August.

**Distribution:** Hopedale, Labrador and eastern Newfoundland to Dawson area, Yukon Territory and western British Columbia, southward to Oregon, California, Idaho, Nevada, Utah, Wyoming, Colorado and Arizona.

**Diagnostic characters:** Adults gray and indistinctly marked other than black discal spots; 1. uncus tip bifid; 2. spines to colliculum; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 89; p. 248; figs. 177–178. McDunnough, J. H., 1949: p. 628–631; p. 719 figs. D–F; pl. 29 figs. 24–30.

*Eupithecia annulata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):267.

**Type locality:** "probably California."

**Type deposited:** Female lectotype in AMNH.

**Biology:** Larval hosts numerous species in the Cupressaceae and Pinaceae. Adults early April to August, depending on the locality.

**Distribution:** Eastern Newfoundland and Labrador to Vancouver Is. and north to the Yukon Territory and interior Alaska; south through Washington and Oregon to at least Marin Co., California; Cochise Co., Arizona; Grant Co., New Mexico.

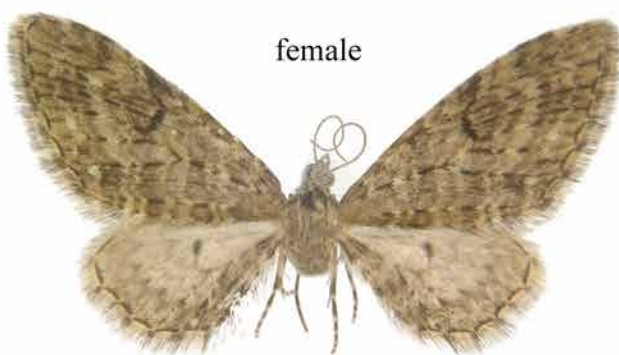
**Diagnostic characters:** 1. uncus tip bifid; other features as pointers indicate.

**References:** Bolte, K. B., 1990: p. 64; p. 230; figs. 139–140. McDunnough, J. H., 1949: pp. 632–636 (includes *filmata* Pearsall and *ursupata* Pearsall); p. 719 figs. 11G, H; pl. 30 figs. 1–6 (includes *filmata* and *ursupata*).



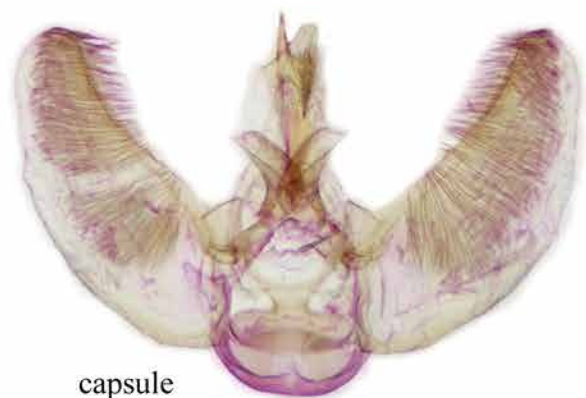
*Eupithecia annulata* (Hulst, 1896) *continued*

male



female

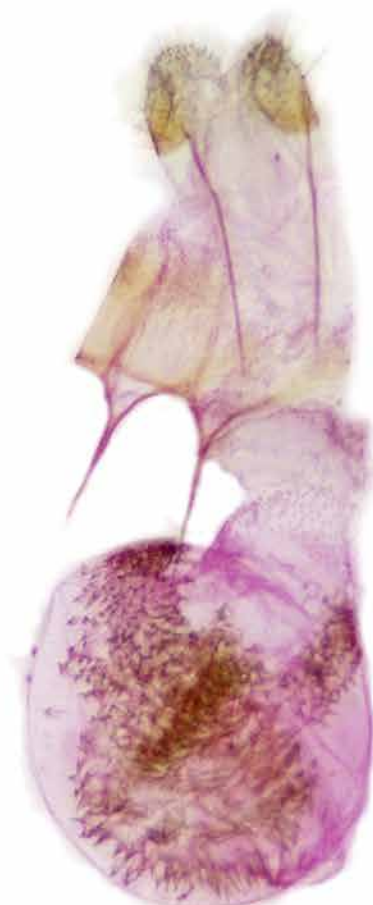
Coastal California phenotype



capsule



plate

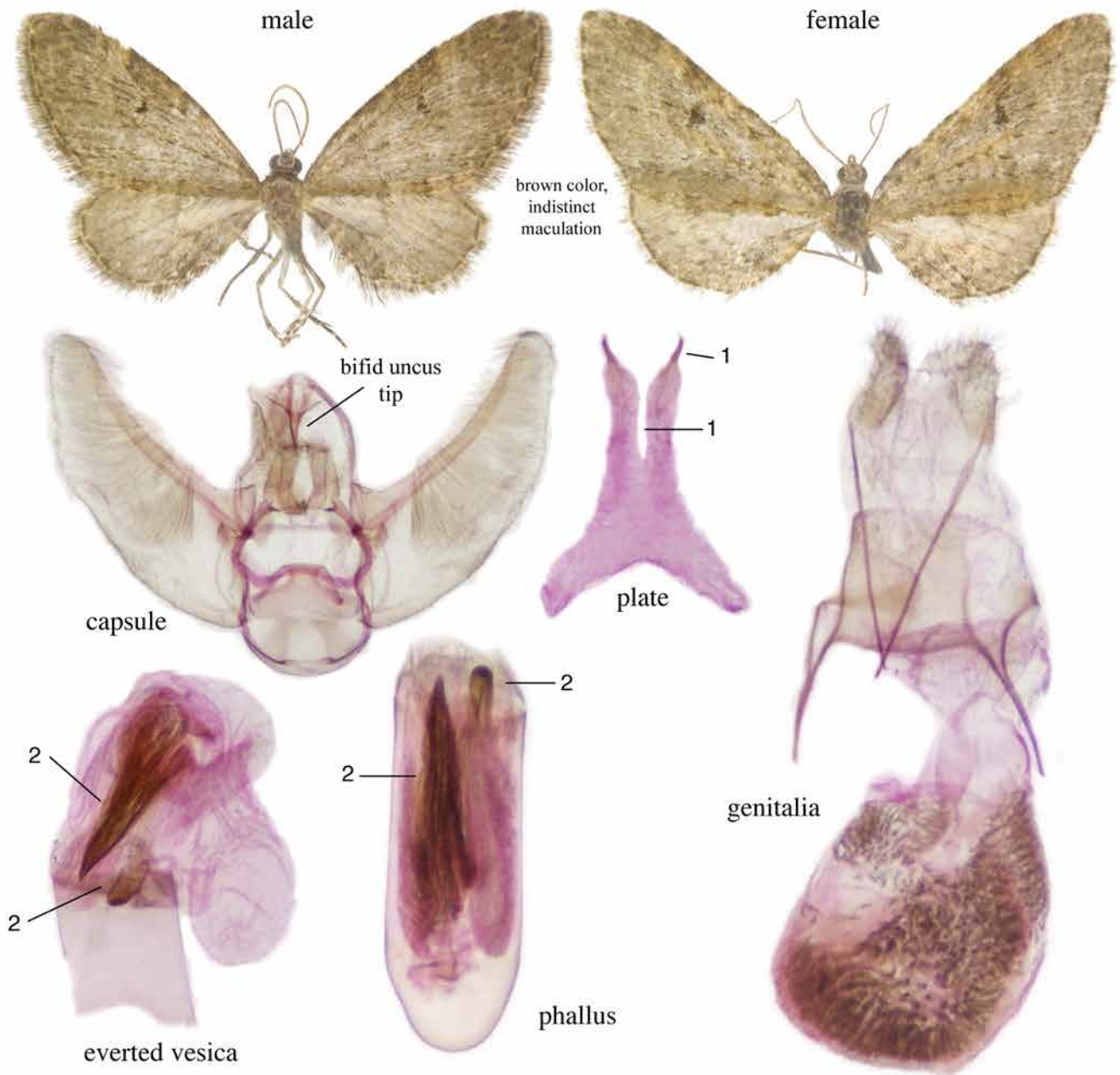


genitalia

phallus,  
vesica  
everted

phallus



*Eupithecia cognizata* Pearsall, 1910

**Original description:** *Ent. News* 21(10):404.

**Type locality:** California, San Diego Co., Witch Creek.

**Type deposited:** Male lectotype in AMNH.

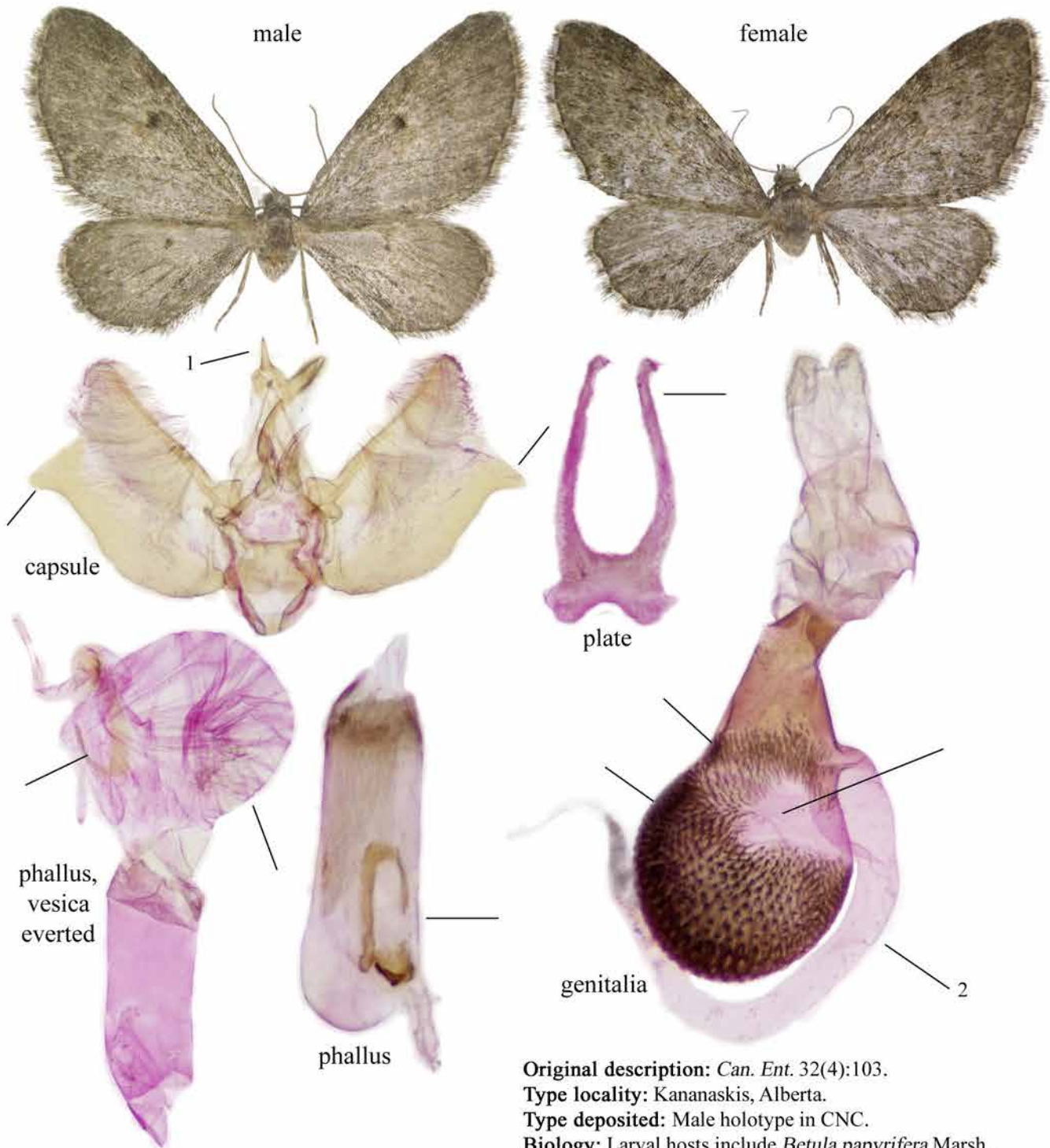
**Biology:** Unknown. Adults (material examined) December, February and April.

**Distribution:** Mainly southern coastal California.

**Diagnostic characters:** 1. plate deeply incised with apical sharply pointed and incurving hooks; 2. one long and broad tapered cornutus and one short blunt conutus.

**Note:** This species may prove to be a smaller and browner form of *E. olivacea*.

**Reference:** McDunnough, J. H., 1949: p. 637; p. 719 fig. 11J (female genitalia only); pl. 30 figs. 8–10.

*Eupithecia lachrymosa* (Hulst, 1900)

**Original description:** *Can. Ent.* 32(4):103.

**Type locality:** Kananaskis, Alberta.

**Type deposited:** Male holotype in CNC.

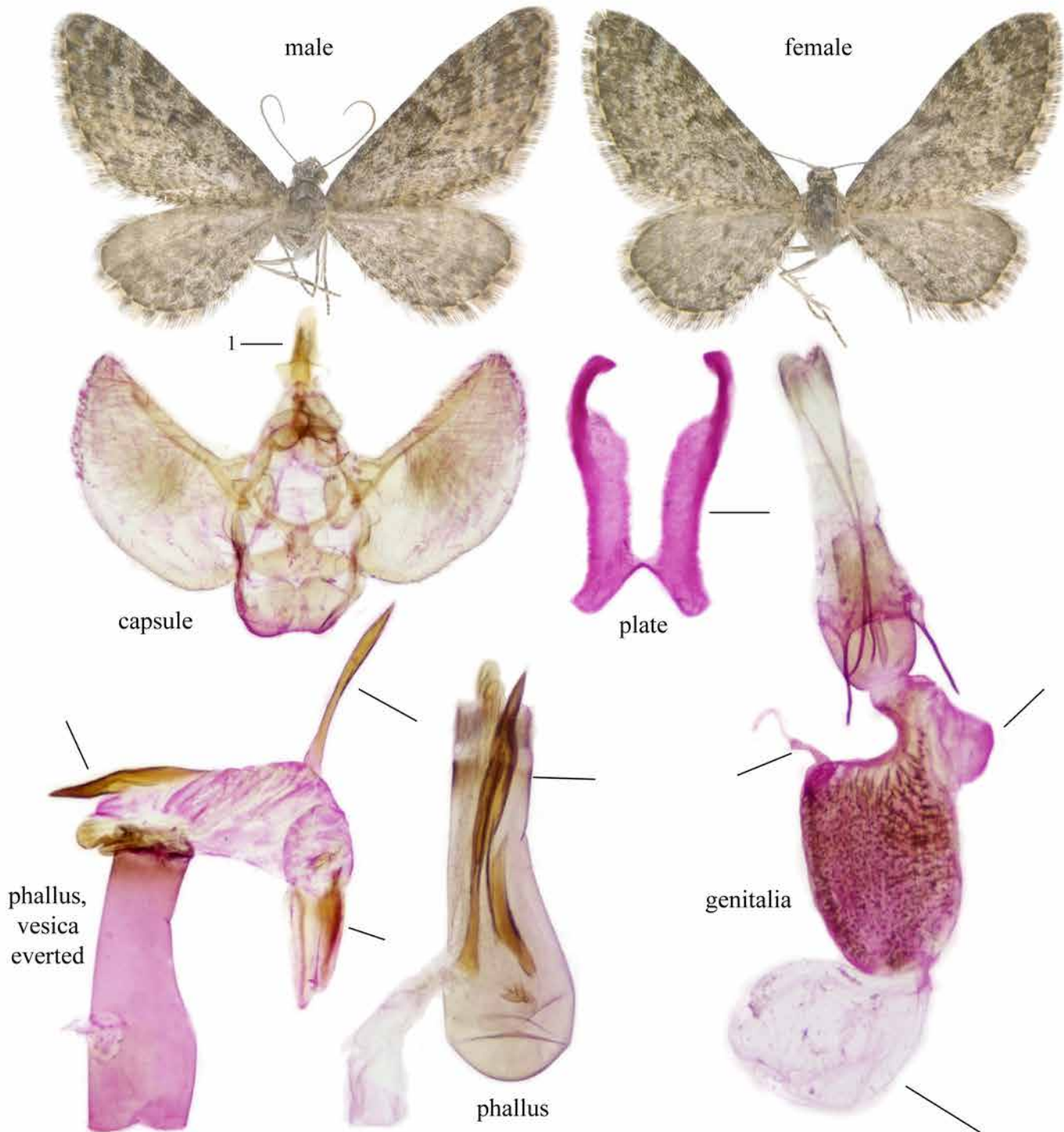
**Biology:** Larval hosts include *Betula papyrifera* Marsh., *Ceanothus* sp., *Salix* sp., and *Alnus* sp. Adults mid-May to early July.

**Distribution:** Central Saskatchewan to western British Columbia, southward into Washington, Oregon, northern California, Idaho, Wyoming, to southwestern Colorado.

**Diagnostic characters:** Adults drab gray and generally indistinctly marked; 1. uncus narrow vertically with bifid tip; 2. long prominent ductus seminalis; other features as indicated.

**References:** Bolte, K. B., 1990: p. 35; p. 209; figs. 95–96. McDunnough, J. H., 1949: p. 638–639; p. 720 fig. 12A (as *georgii* McDunnough); pl. 30 figs. 11–14.



*Eupithecia lafontaineata* Bolte, 1990

**Original description:** *Mem. Entomol. Soc. Can.* 151:38, figs. 18, 99, 100, 188g–h, 200c–d, 210i–j, 246.

**Type locality:** Hedley, British Columbia.

**Type deposited:** Holotype male in CNC.

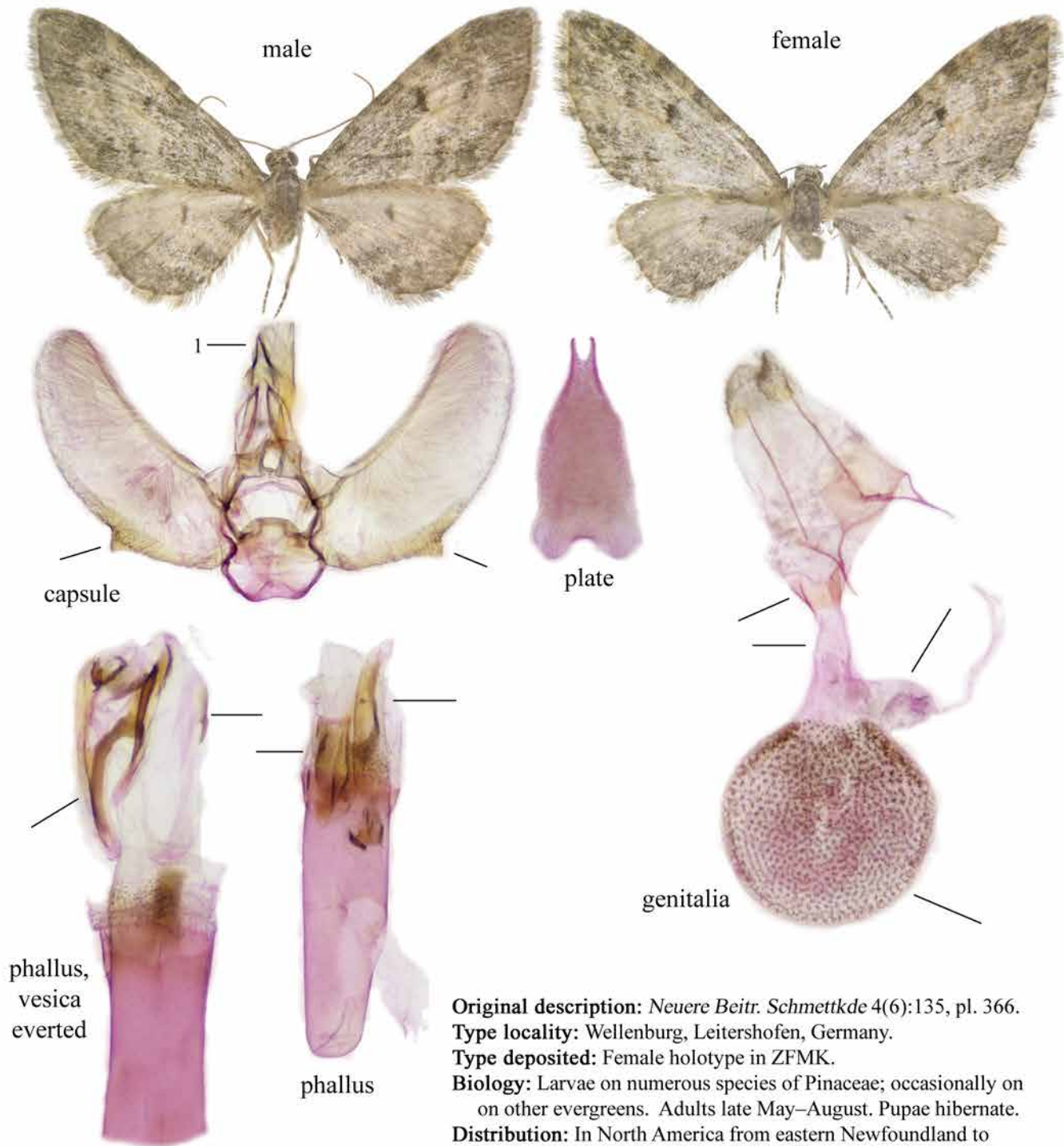
**Biology:** Unknown. Adults early June to late August.

**Distribution:** Eastern Alberta to western British Columbia; south to California (Lassen, Sierra cos.); Colorado (Gilpin, Larimer cos.); Montana (Madison Co.); Oregon (Harney Co.); Utah (San Juan Co.); Wyoming (Albany, Teton, Washakie cos.)

**Diagnostic characters:** 1. uncus laterally broad tapering to a point; other features as indicated.

**Note:** McDunnough, J. H., 1949 incorrectly treated this species as the European *E. undata* Freyer.



*Eupithecia lariciata* (Freyer, 1841)

**Original description:** *Neuere Beitr. Schmettkde* 4(6):135, pl. 366.

**Type locality:** Wellenburg, Leitershofen, Germany.

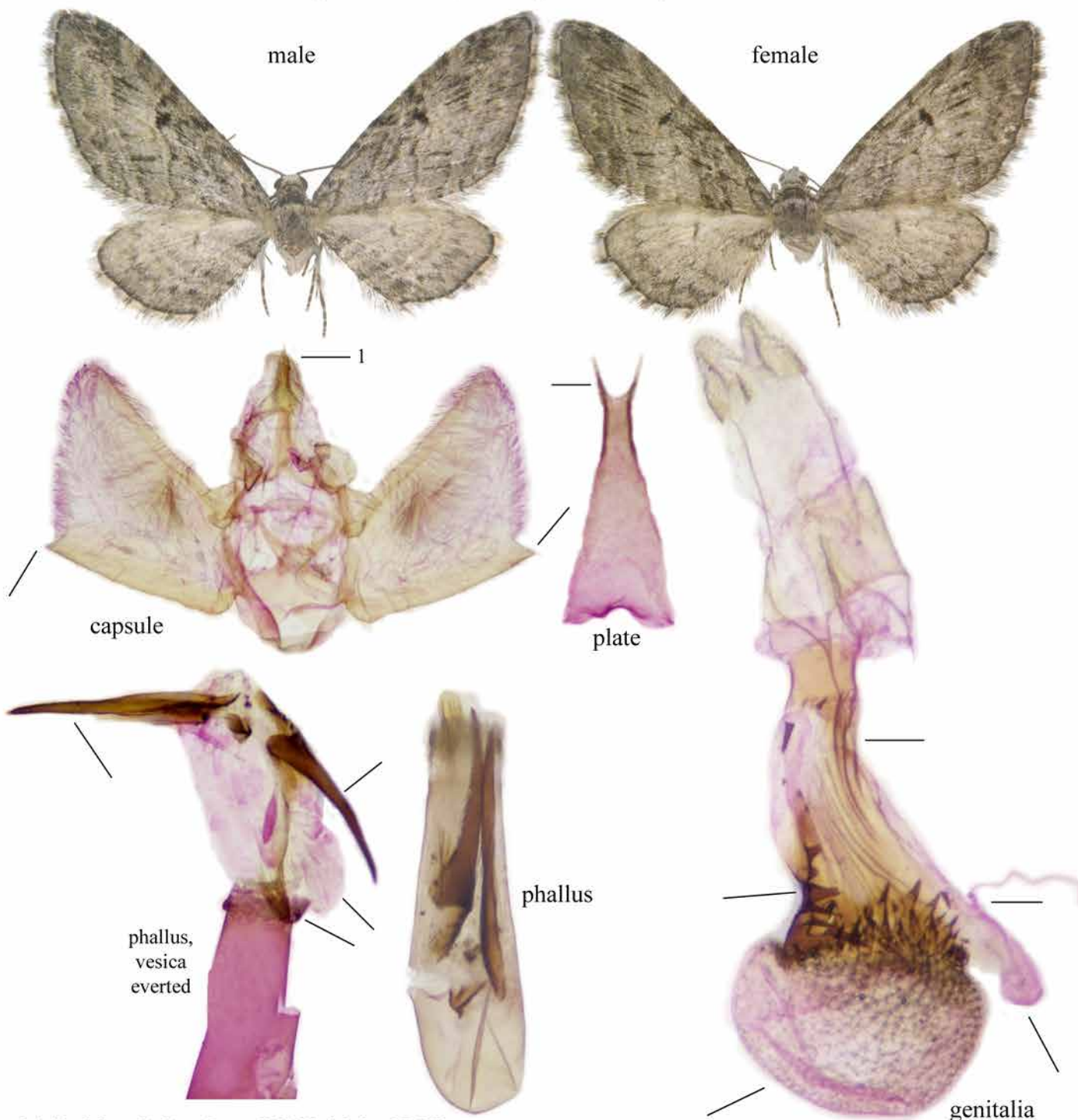
**Type deposited:** Female holotype in ZFMK.

**Biology:** Larvae on numerous species of Pinaceae; occasionally on other evergreens. Adults late May–August. Pupae hibernate.

**Distribution:** In North America from eastern Newfoundland to western British Columbia including Vancouver Is. and Queen Charlotte Is.; north to Dawson, Yukon Territory; south to White Mts. in Arizona, Colorado (Boulder, Larimer cos.) and Wyoming (Albany Co.).

**Diagnostic characters:** 1. Laterally broad uncus with bifid tip; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 58; p. 225; figs. 129–130. McDunnough, J. H., 1949: p. 578–589 (as *E. luteata* Packard); p. 713 fig. 5D; pl. 27 figs. 19–21.

*Eupithecia niphadophilata* Dyar, 1904

**Original description:** *Proc. U.S. Natl. Mus.* 27:890.

**Type locality:** Glacier, British Columbia.

**Type deposited:** Male lectotype in NMNH.

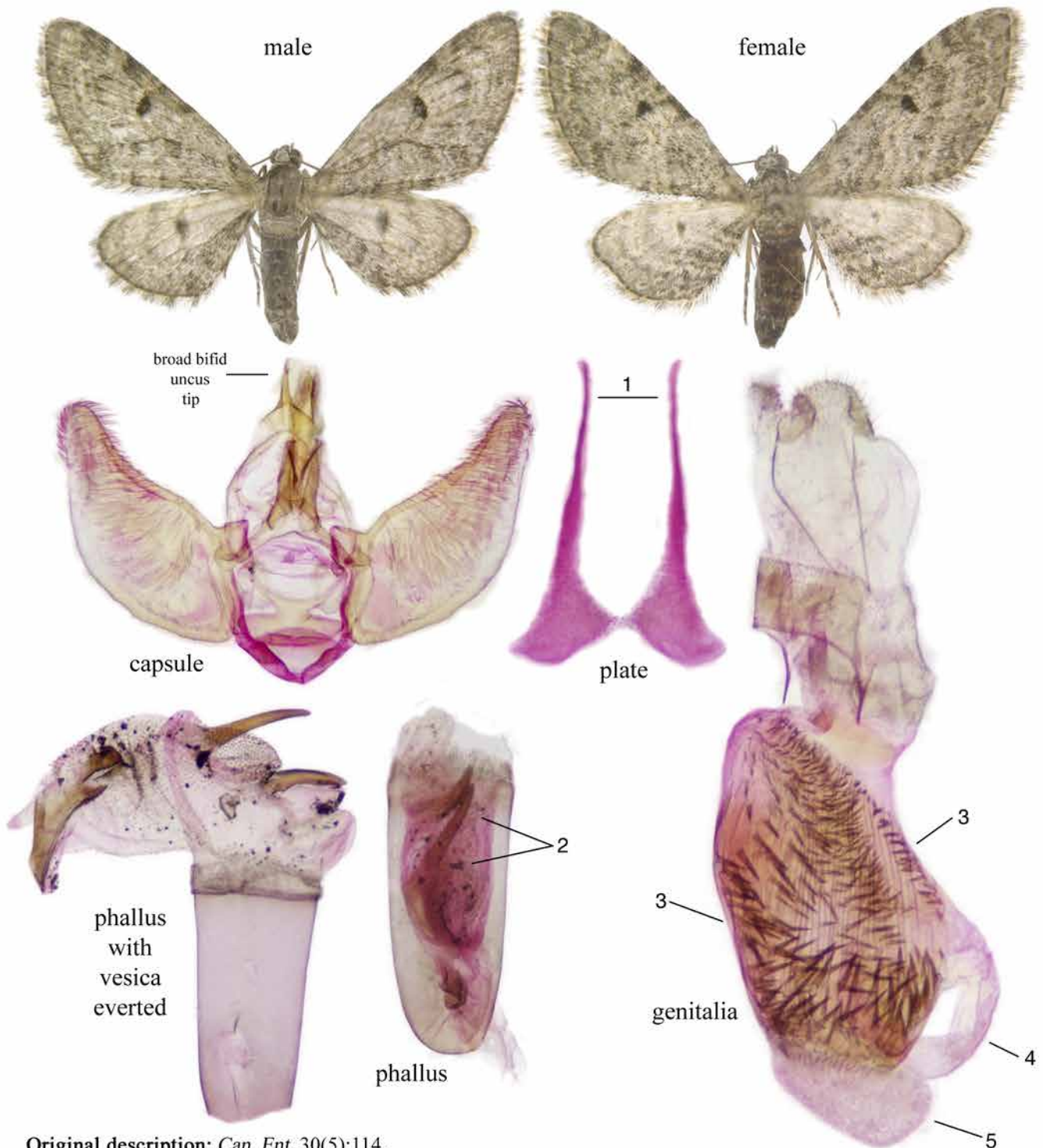
**Biology:** Larvae on *Juniperus scopulorum* Sarg. & *J. communis* L. Adults Late July to September.

**Distribution:** A western species ranging from eastern Alberta and western British Columbia south through Montana, Wyoming, Colorado, New Mexico (to Grant Co.), and westward into Utah (Sanpete Co.), Arizona (Cochise Co.), and California (Sierra Co.).

**Diagnostic characters:** 1. uncus tip bifid; other features as indicated by pointers. The phallus sheath is very fragile.

**References:** Bolte, K. B, 1990: p. 68; p. 232; figs. 145–146. McDunnough, J. H., 1949: p. 641; p. 720 fig. 12C; pl. 30 fig. 16.



*Eupithecia subcolorata* (Hulst, 1898)

**Original description:** *Can. Ent.* 30(5):114.

**Type locality:** Arizona, [Coconino Co.], San Francisco Mts.

**Type deposited:** Male lectotype in AMNH.

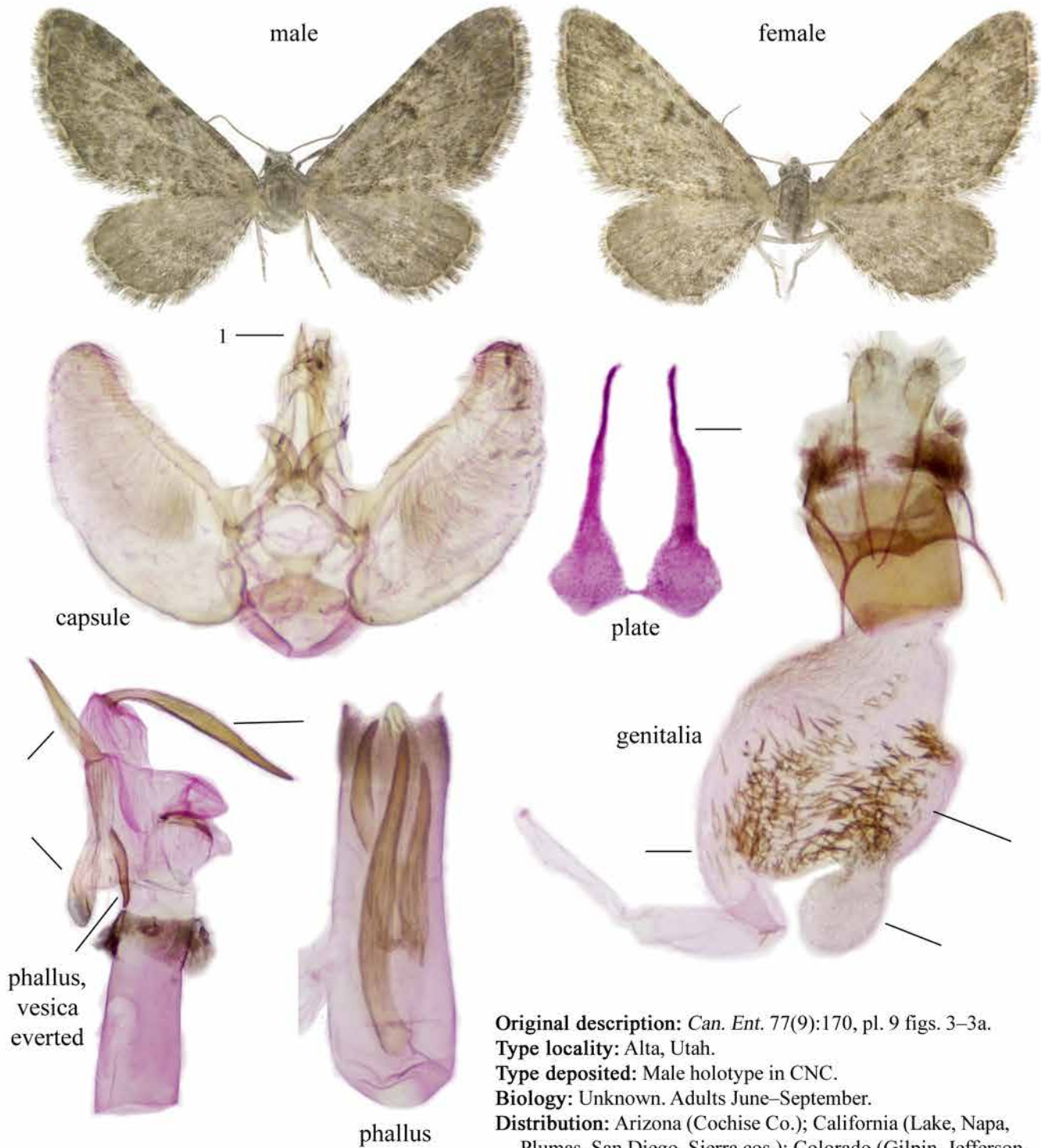
**Biology:** Unknown. Adults July–August.

**Distribution:** Widely distributed in mountain areas from Oregon, Wyoming, Utah, southward through Colorado into southwestern New Mexico and to Coconino, Yavapai, Gila and Cochise cos., Arizona.

**Diagnostic characters:** 1. plate with long narrow rods terminating in slightly enlarged and out-curving tips; 2. two spines, multiple black speckles; 3. multiple long spines; 4. ductus seminae; 5. appendix bursae.

**Reference:** McDunnough, J. H., 1949: p. 642; p. 720 fig. 12D; pl. 20 fig. 17.



*Eupithecia appendiculata* McDunnough, 1945

**Original description:** *Can. Ent.* 77(9):170, pl. 9 figs. 3–3a.

**Type locality:** Alta, Utah.

**Type deposited:** Male holotype in CNC.

**Biology:** Unknown. Adults June–September.

**Distribution:** Arizona (Cochise Co.); California (Lake, Napa, Plumas, San Diego, Sierra cos.); Colorado (Gilpin, Jefferson,

Larimer, Montezuma cos.); Nevada (White Pine Co.); New Mexico (Grant Co.); Utah (Lake, San Juan cos.); Wyoming (Albany Co.).

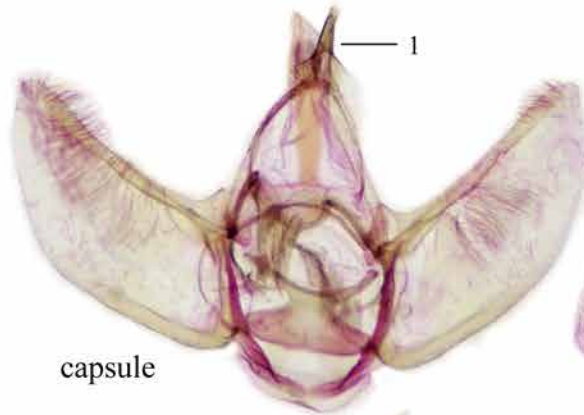
**Diagnostic characters:** 1. uncus bifid, upper point sharp and thin, lower point apically rounded and broader; other features as indicated.

**Reference:** McDunnough, J. H., 1949: p. 642; p. 720 fig. 12E; pl. 30 fig. 18.

*Eupithecia assimilata* Doubleday, 1856

male

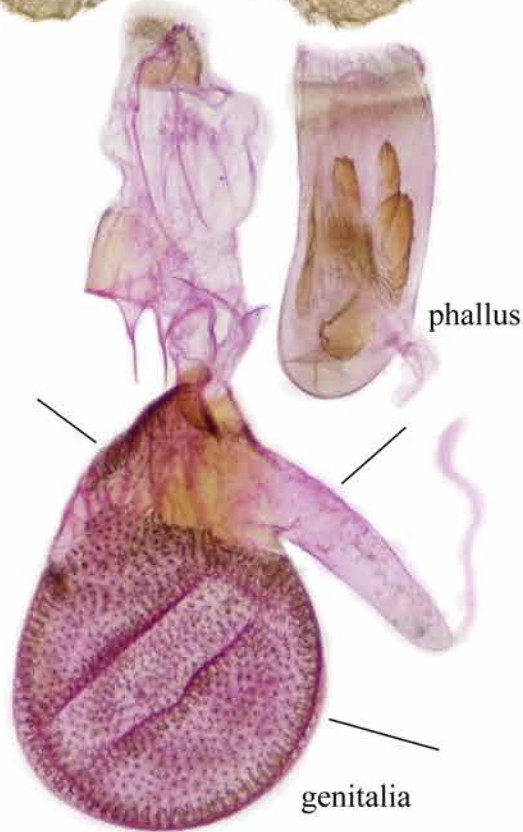
female



capsule

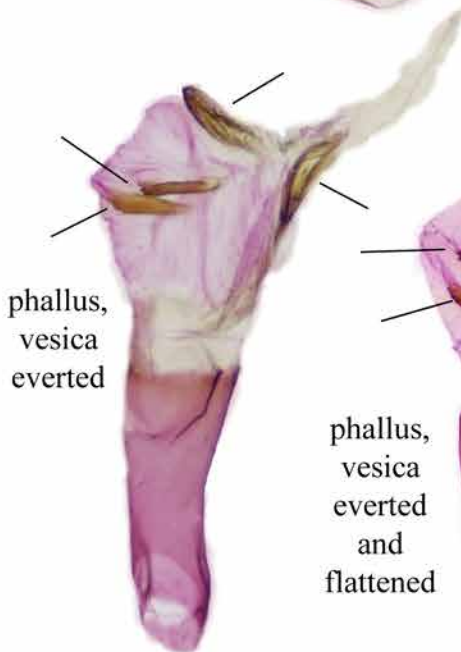
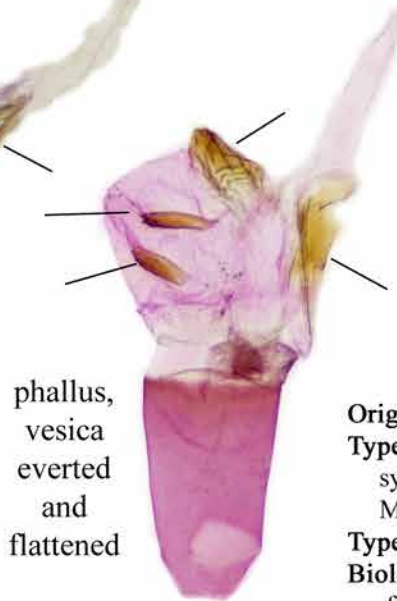


plate



phallus

genitalia

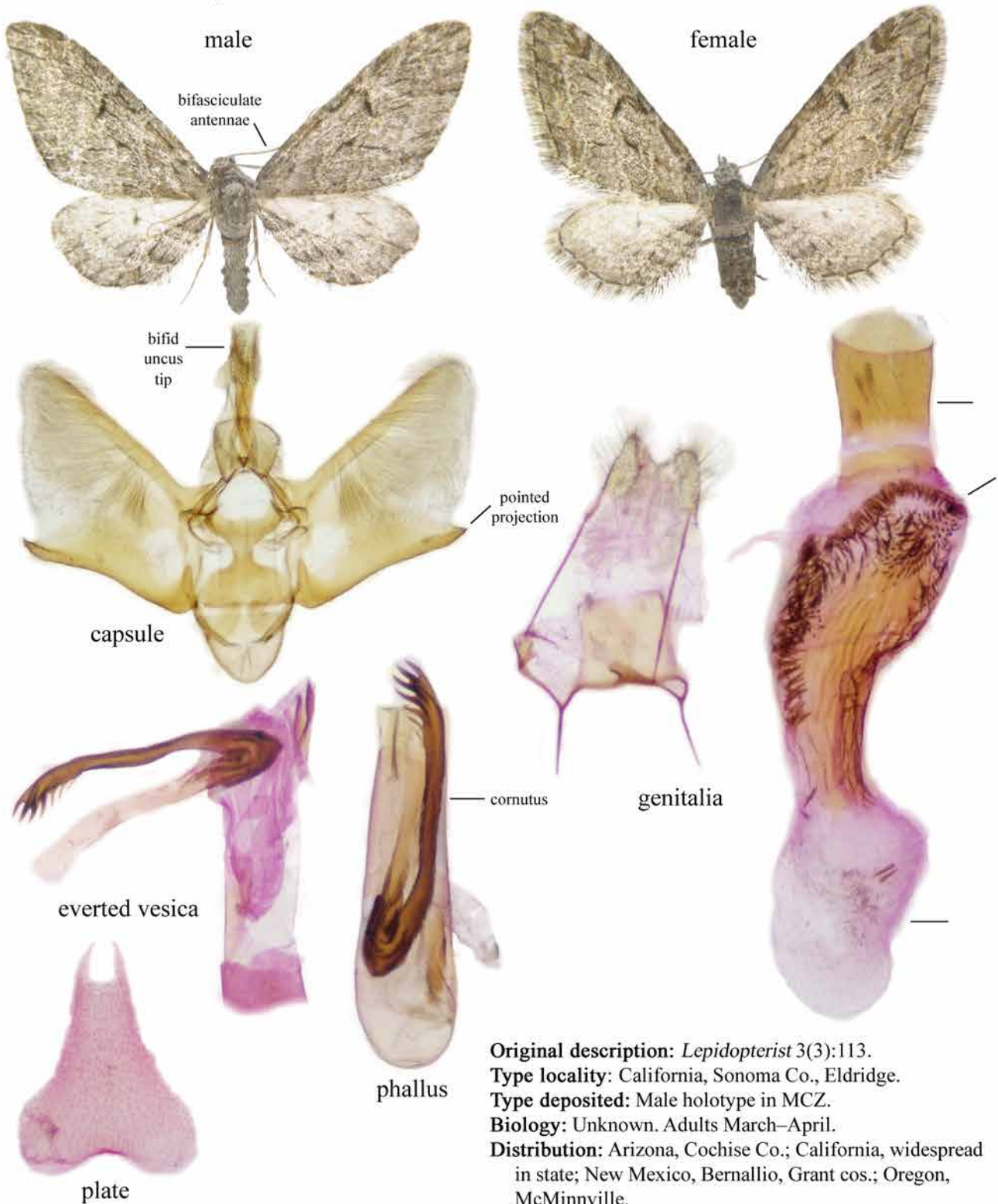
phallus,  
vesica  
evertedphallus,  
vesica  
everted  
and  
flattened**Original description:** *Zoologist* 1856:5140.**Type locality:** European origin, United Kingdom? Junior synonym *fumosa* (Hulst, 1896) from South Abington, Massachusetts.**Type deposited:** Unknown; male lectotype of *fumosa* in AMNH.**Biology:** Larvae usually on *Ribes* sp. in North America. Adults from early June to late August.

**Distribution:** In North America from western Newfoundland to central British Columbia; south to Mendocino Co., California, Idaho (Shoshone Co.), Utah (Emery, San Pete, Tooele cos.), Wyoming (Albany, Teton, Yellowstone N.P. cos.), Colorado (Bent, Chaffee, Larimer, San Miguel cos.), Arizona (Coconino, Pinal cos.), New Mexico (Grant, Otero cos.); in the East south to at least Massachusetts.

**Diagnostic characters:** 1. uncus broad laterally, tip bifid with widely separated hooks; other features indicated by pointers.

**References:** Bolte, K. B., 1990: p. 84; p. 244; figs. 169–170. McDunnough, J. H., 1949 (as *coagulata*): p. 613; p. 717 fig. 9D; pl. 26 fig. 1.



*Eupithecia zelmira* Swett & Cassino, 1920

**Original description:** *Lepidopterist* 3(3):113.

**Type locality:** California, Sonoma Co., Eldridge.

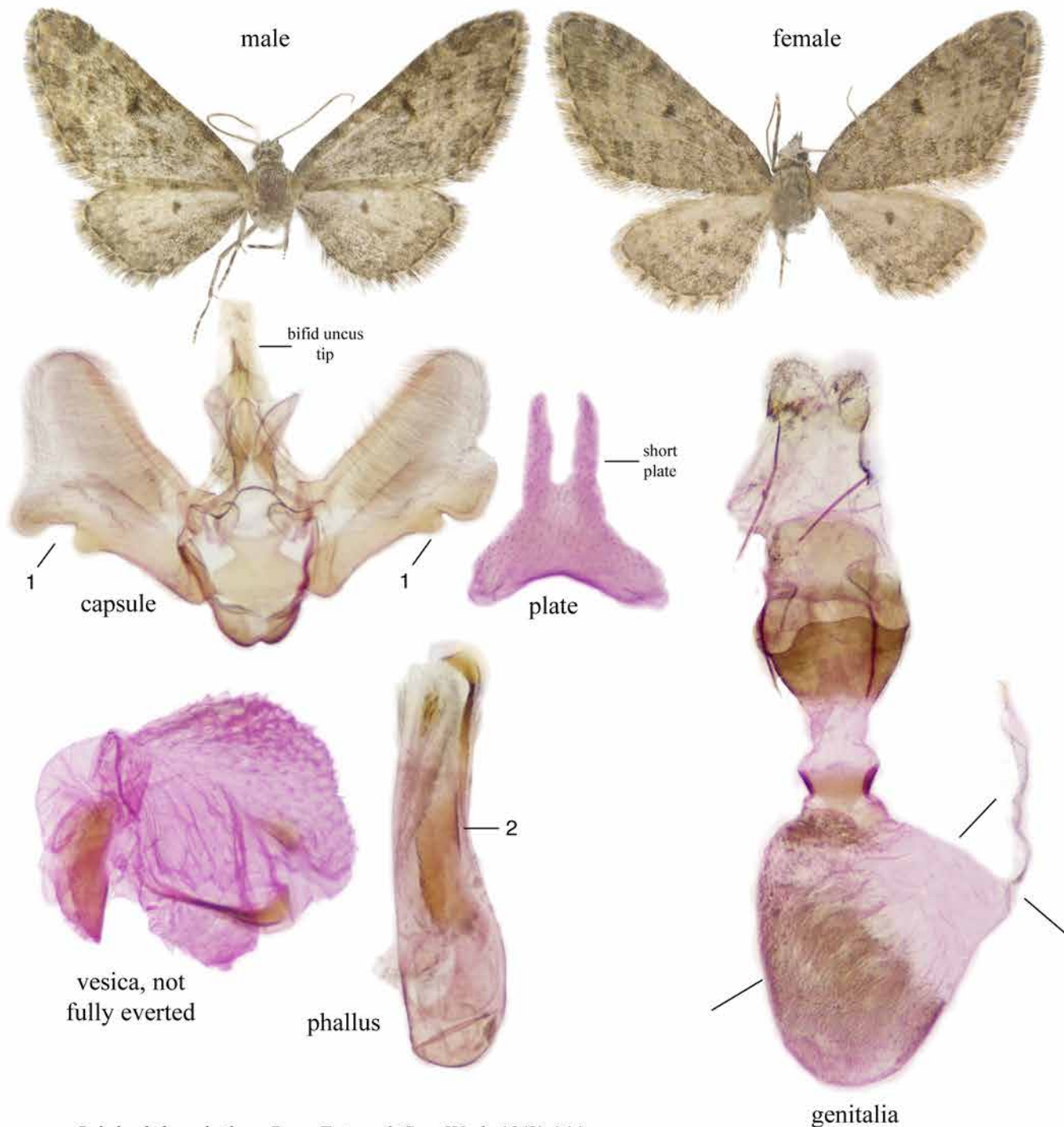
**Type deposited:** Male holotype in MCZ.

**Biology:** Unknown. Adults March–April.

**Distribution:** Arizona, Cochise Co.; California, widespread in state; New Mexico, Bernalillo, Grant cos.; Oregon, McMinnville.

**Diagnostic characters:** The major identifying characters are indicated in the plate, with pointers for the female genitalia. The specimens illustrated are from Grant Co., New Mexico.



*Eupithecia segregata* Pearsall, 1910

**Original description:** *Proc. Entomol. Soc. Wash.* 12(3):144.

**Type locality:** Oregon.

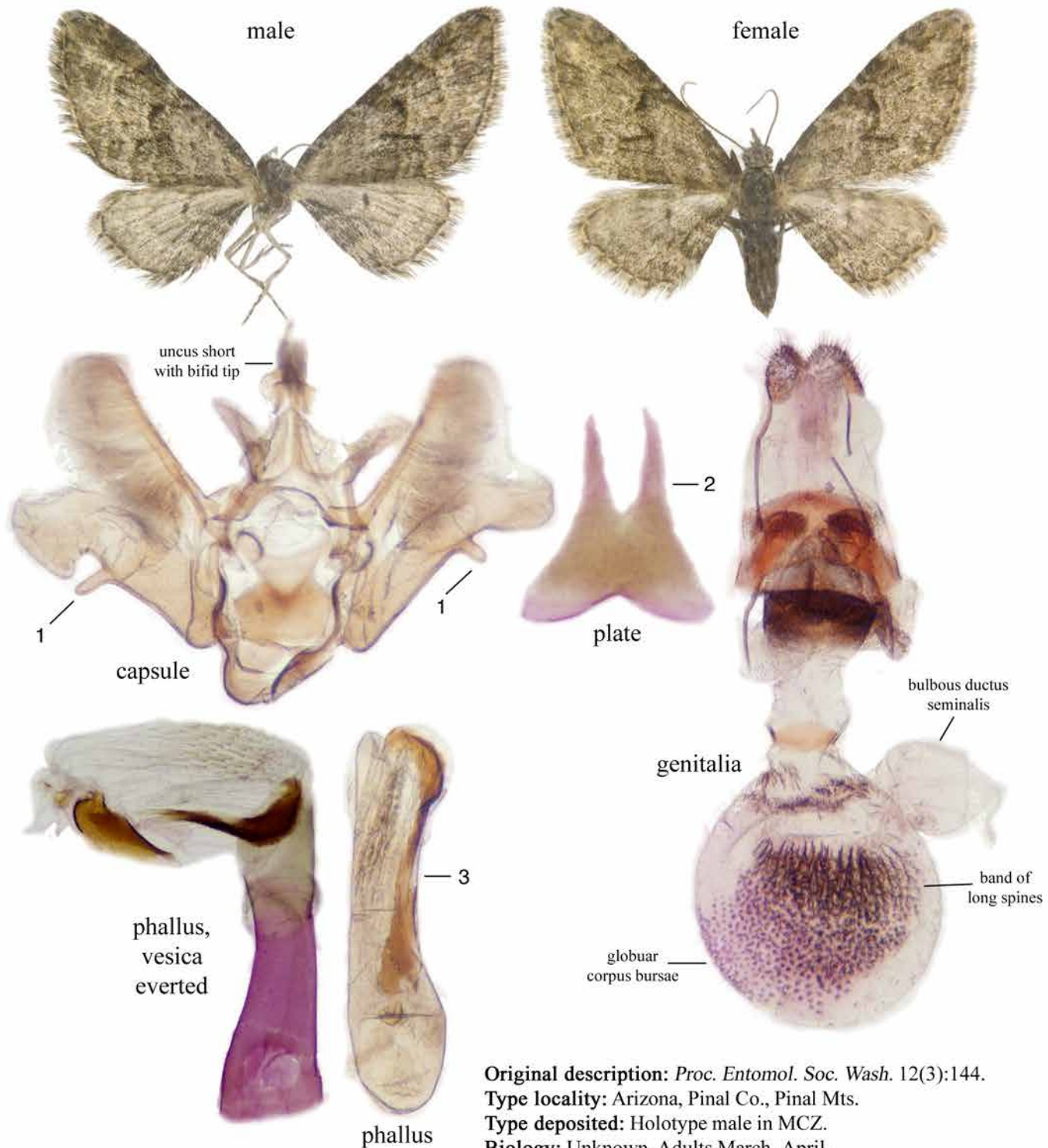
**Type deposited:** Female lectotype in NMNH.

**Biology:** Unknown. Adults in February in San Diego Co., California.

**Distribution:** Oregon south to San Diego Co., California. Arizona records may relate to *E. pinata*.

**Diagnostic characters:** 1. asymmetric projections from valves; 2. long broad curved plate. Adult maculation is very variable.

**Reference:** McDunnough, J. H., 1949: p. 644, p. 721 fig. 13A; pl. 30 figs 22–24.

*Eupithecia pinata* Cassino, 1925

**Original description:** *Proc. Entomol. Soc. Wash.* 12(3):144.

**Type locality:** Arizona, Pinal Co., Pinal Mts.

**Type deposited:** Holotype male in MCZ.

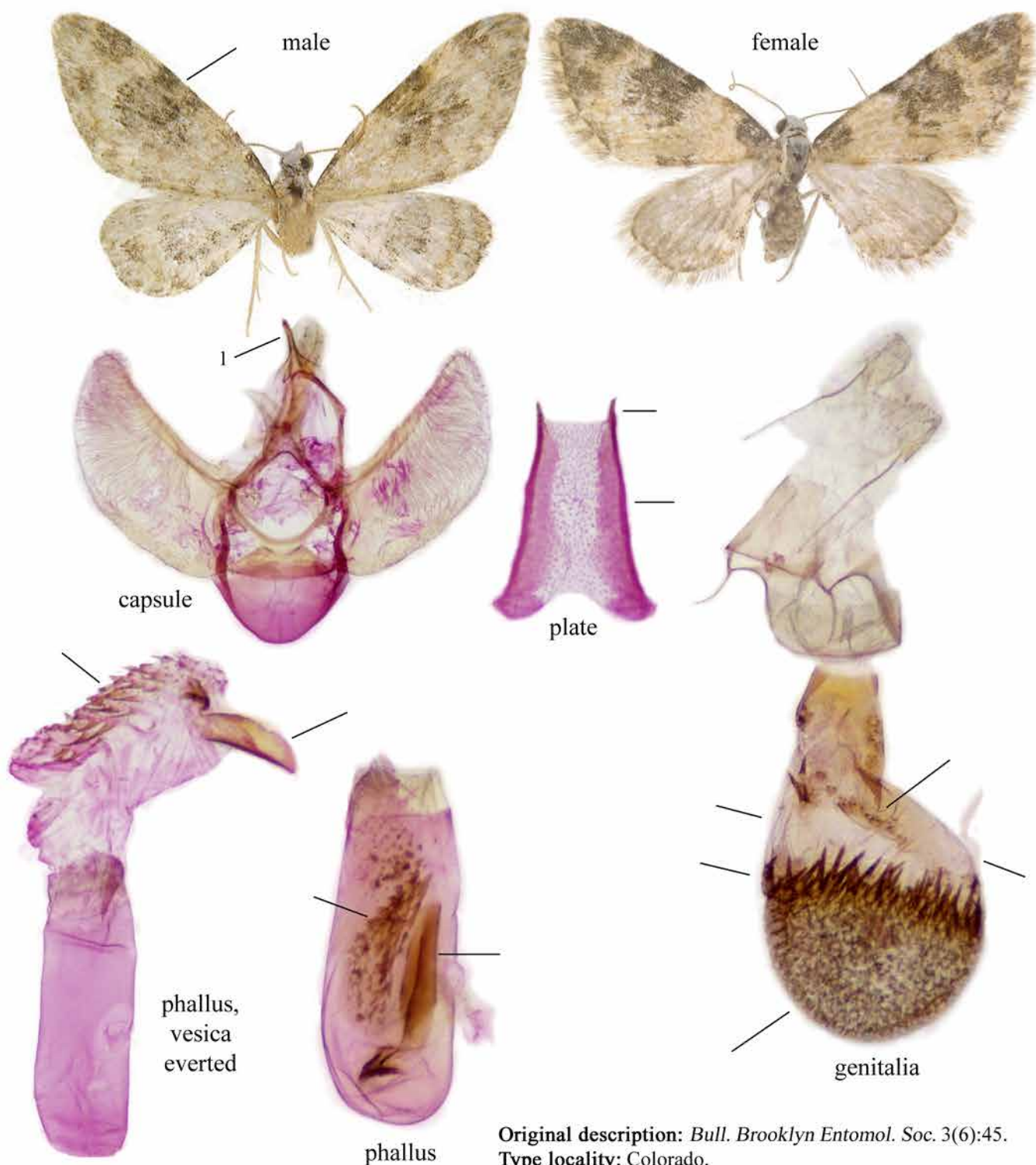
**Biology:** Unknown. Adults March–April.

**Distribution:** Arizona, Cochise, Coconino, Pinal cos.; Colorado, Mesa Co.; New Mexico, Grant and Hidalgo cos.

**Diagnostic characters:** 1. asymmetric projections from valves (somewhat variable); 2. short lightly chitinated plate; 3. cornutus long, curved and twisted, much expanded at ends.

**Reference:** McDunnough, 1949: p. 646; p. 721 fig. 13B; pl. 30 fig. 25.



*Eupithecia tenuata* Hulst, 1880

**Original description:** *Bull. Brooklyn Entomol. Soc.* 3(6):45.

**Type locality:** Colorado.

**Type deposited:** Holotype in AMNH.

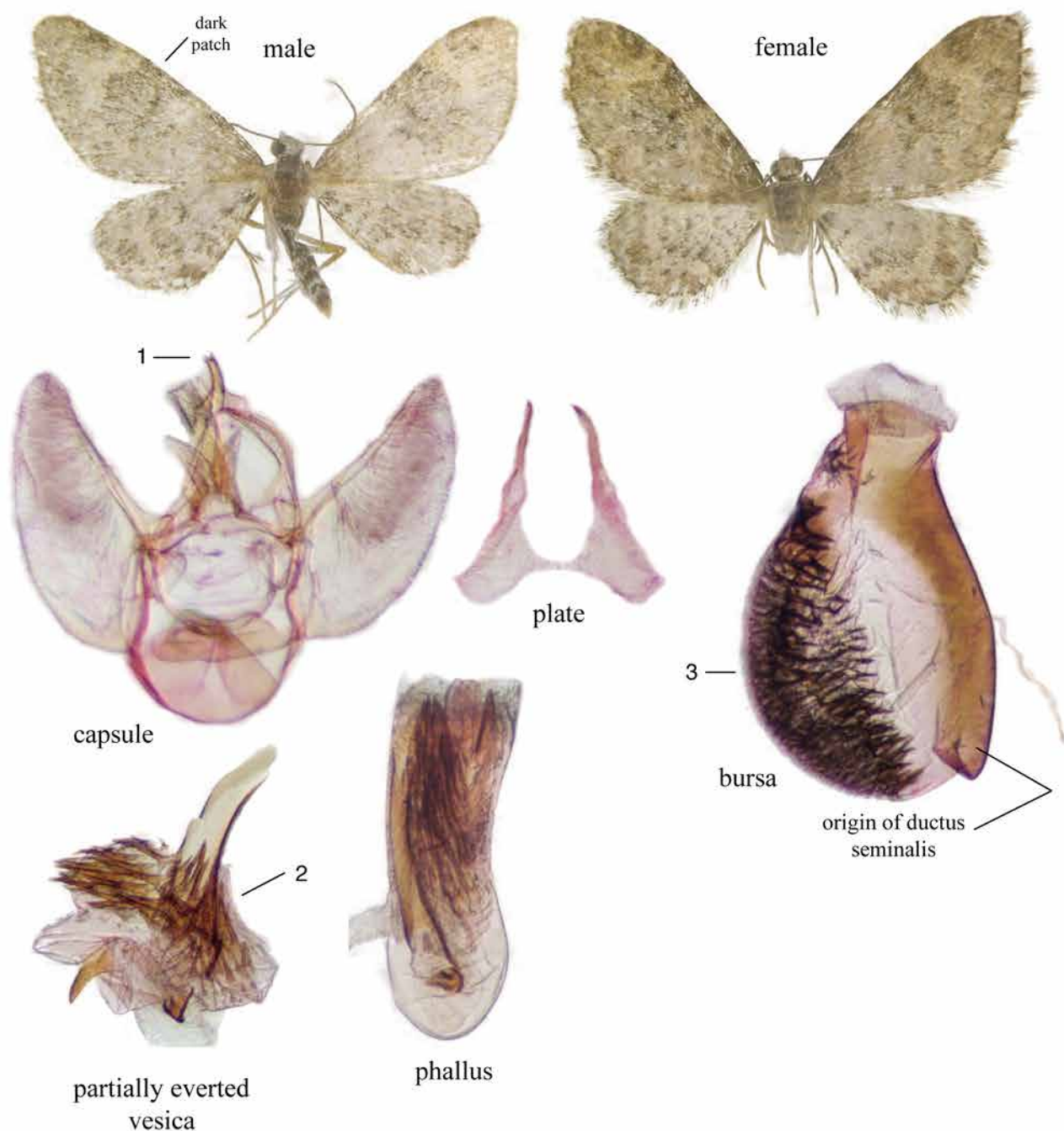
**Biology:** Unknown. Adults June–August.

**Distribution:** Southern British Columbia and Vancouver Is. south to New Mexico.

**Diagnostic characters:** 1. uncus robust with bifid tip; other features as pointers indicate.

**References:** Bolte, K. B., 1990: p. 49; p. 219; figs. 115–116. McDunnough, J. H., 1949: p. 647; p. 721 fig. 13C; pl. 30 fig. 26.



*Eupithecia phyllisae* Rindge, 1963

**Original description:** *Amer. Mus. Novitates* 2147:12, fig. 1, 5.

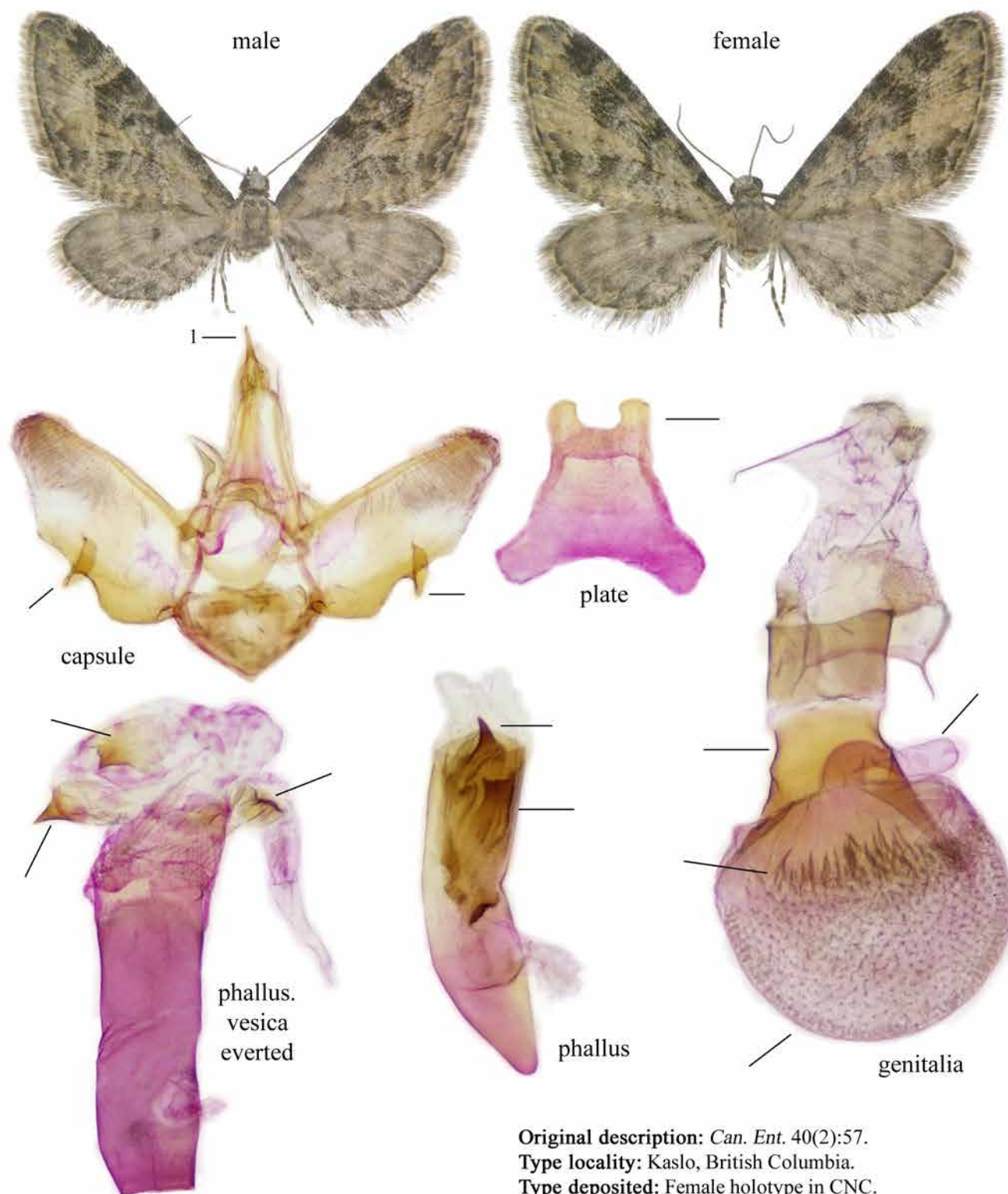
**Type locality:** New Mexico, Sandoval Co., Horseshoe Camp, 2 miles west of La Cueva.

**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adults mid-July to mid-August.

**Distribution:** Arizona, Cochise Co. (Chiricahua Mts.); New Mexico, Catron and Sandoval cos.

**Diagnostic characters:** 1. uncus bifid, pointed upper hook and blunted lower hook; 2. one large curved plate-like cornutus and multiple smaller robust spines; 3. left half of corpus bursae covered with spines; margin of right side of corpus bursae lightly sclerotized almost to fundus with recurved tip from which ductus seminalis arises.

*Eupithecia agnesata* Taylor, 1908

**Original description:** *Can. Ent.* 40(2):57.

**Type locality:** Kaslo, British Columbia.

**Type deposited:** Female holotype in CNC.

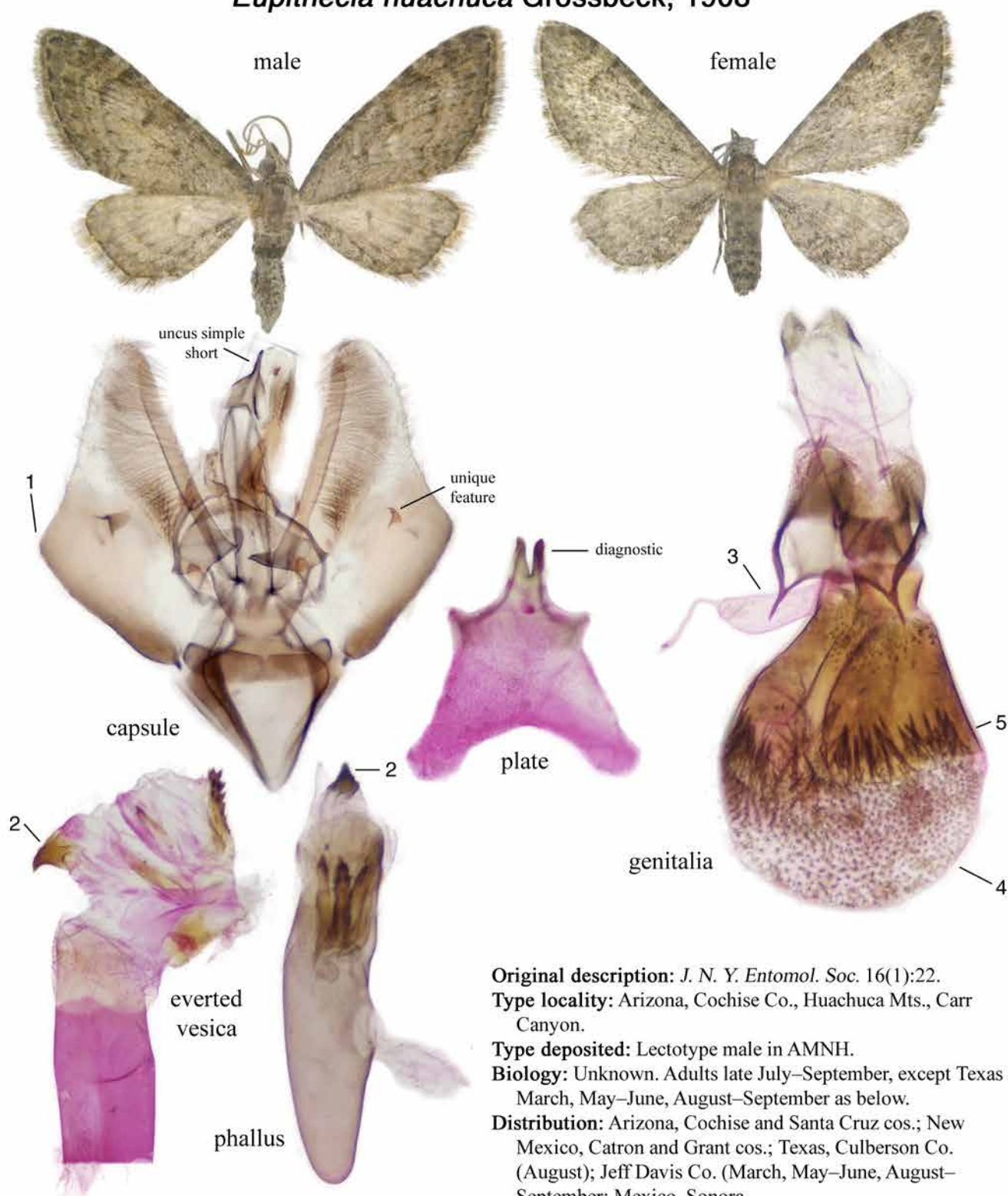
**Biology:** Unknown. Adults late May–late July.

**Distribution:** South–central British Columbia to San Diego Co., California; Franklin Co., Idaho; Wyoming.

**Diagnostic characters:** 1. slender uncus with apical hook. Other features as indicated by pointers.

**References:** McDunnough, J. H., 1949: p. 648; p. 721 fig. 13D; pl. 30 fig. 27. Bolte, K. B., 1990: p. 52; p. 222; figs. 121–122.



*Eupithecia huachuca* Grossbeck, 1908

**Original description:** *J. N. Y. Entomol. Soc.* 16(1):22.

**Type locality:** Arizona, Cochise Co., Huachuca Mts., Carr Canyon.

**Type deposited:** Lectotype male in AMNH.

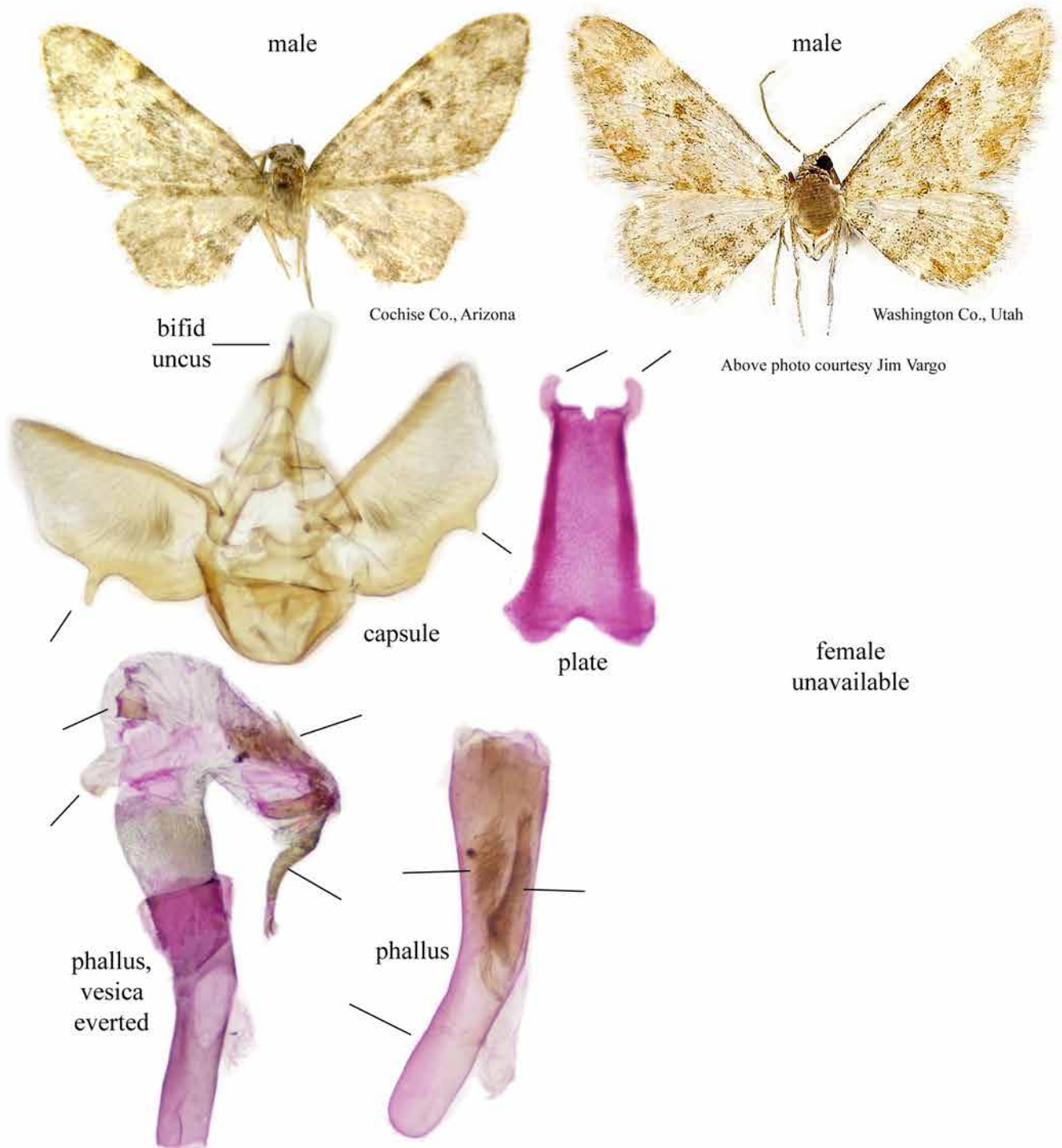
**Biology:** Unknown. Adults late July–September, except Texas March, May–June, August–September as below.

**Distribution:** Arizona, Cochise and Santa Cruz cos.; New Mexico, Catron and Grant cos.; Texas, Culberson Co. (August); Jeff Davis Co. (March, May–June, August–September; Mexico, Sonora.

**Diagnostic characters:** 1. subtriangular valves; 2. chitinized beak; 3. broad ductus seminalis emerges from shoulder of corpus bursae; 3. lower half of corpus bursae diffusely covered with small spines; 5. circle of long spines.

**Reference:** McDunnough, J. H., 1949: p. 649; p. 721 fig. 13E; pl. 30 fig. 28.



*Eupithecia woodgatata* (Cassino & Swett, 1923)

**Original description:** *Lepidopterist* 4(4):28.

**Type locality:** Jemez Springs, Frijoles Canyon, [Sandoval Co.], New Mexico.

**Type deposited:** Male holotype in MCZ.

**Biology:** Unknown. Adults August.

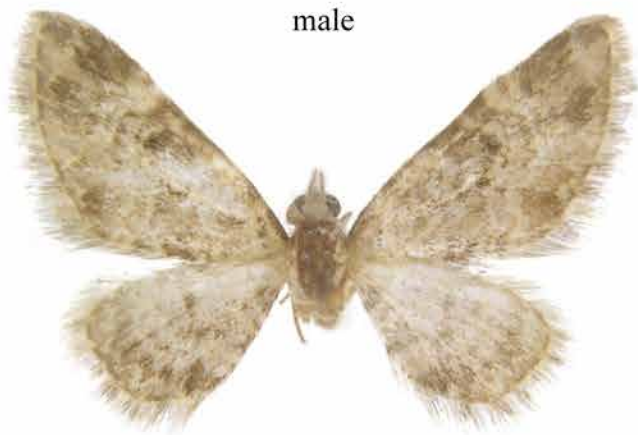
**Distribution:** Arizona (Cochise Co., Carr Cyn., Huachuca Mts.); ?California (Inyo Co.); New Mexico (Sandoval Co.).  
Texas (Culberson Co.); Utah (Washington Co.).

**Diagnostic characters:** As noted by pointers. This species is easily confused with one of the pale *Porella* species.

**Reference:** McDunnough, J. H. 1949: p. 650; p. 721 fig. 13F; adult not illustrated.

*Eupithecia woodgatata* (Cassino & Swett, 1923) *continued*

male



capsule



plate

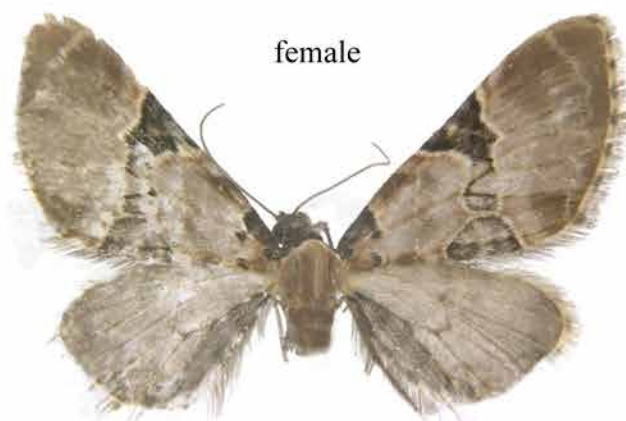


phallus

Specimen from Culberson Co., Texas

*Eupithecia stellata* (Hulst, 1896)

male  
not available



female



ductus  
seminalis

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):270.

**Type locality:** Colorado.

**Type deposited:** Male holotype in AMNH.

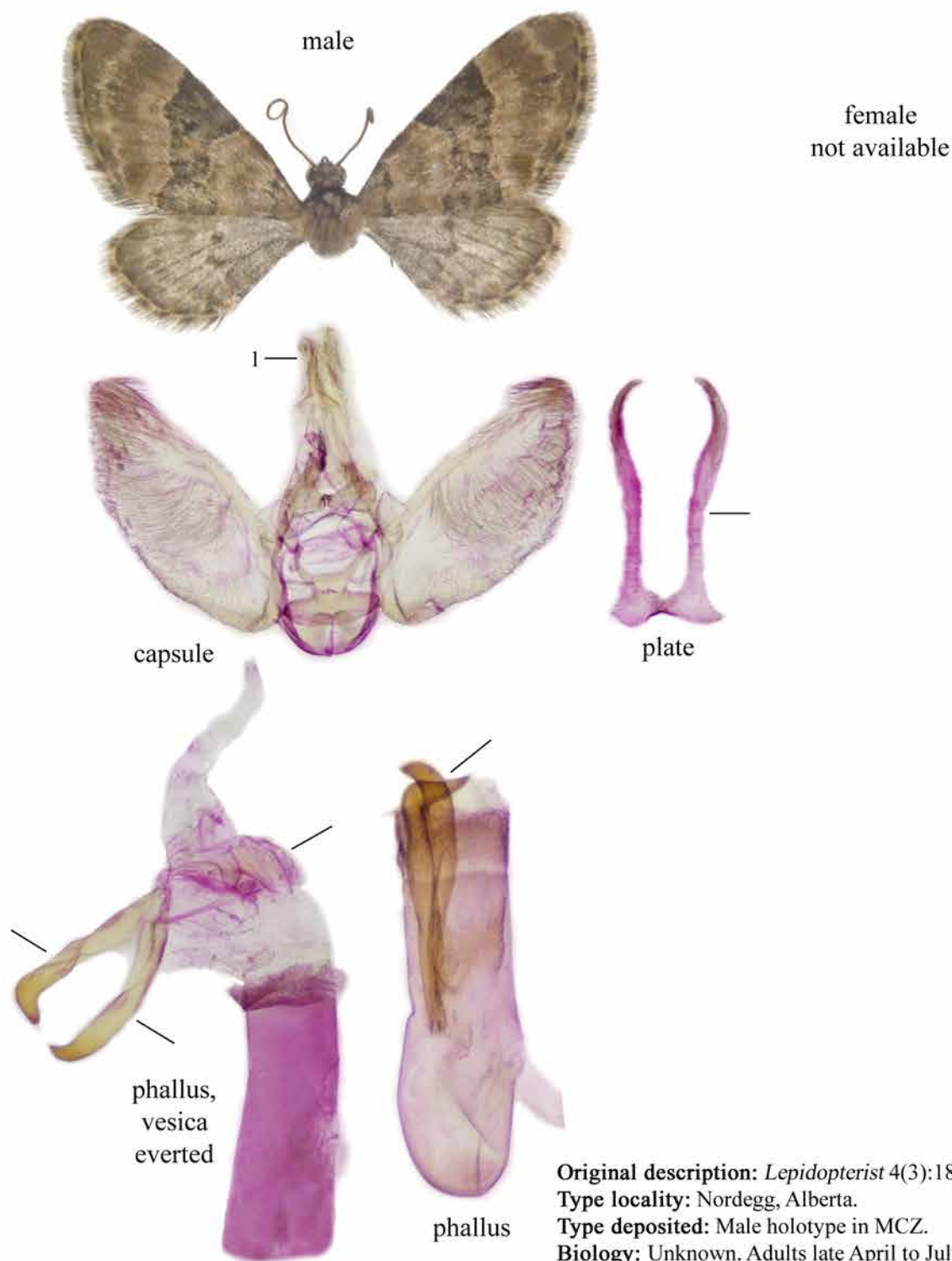
**Biology:** Unknown. Adults June–August.

**Distribution:** Central Alberta and Manitoba south to El Salto, Durango, Mexico, including Sierra Co., California and Grant Co., New Mexico.

**Diagnostic characters:** The wing pattern is distinctive and diagnostic; other features as indicated.

**References:** McDunnough, J. H., 1949: p. 651; p.721 fig. 13G; pl. 30 fig. 29. Bolte, K. B., 1990: p. 31; p. 204; figs. 85–86.



*Eupithecia bowmani* Cassino & Swett, 1923

**Original description:** *Lepidopterist* 4(3):18;

**Type locality:** Nordegg, Alberta.

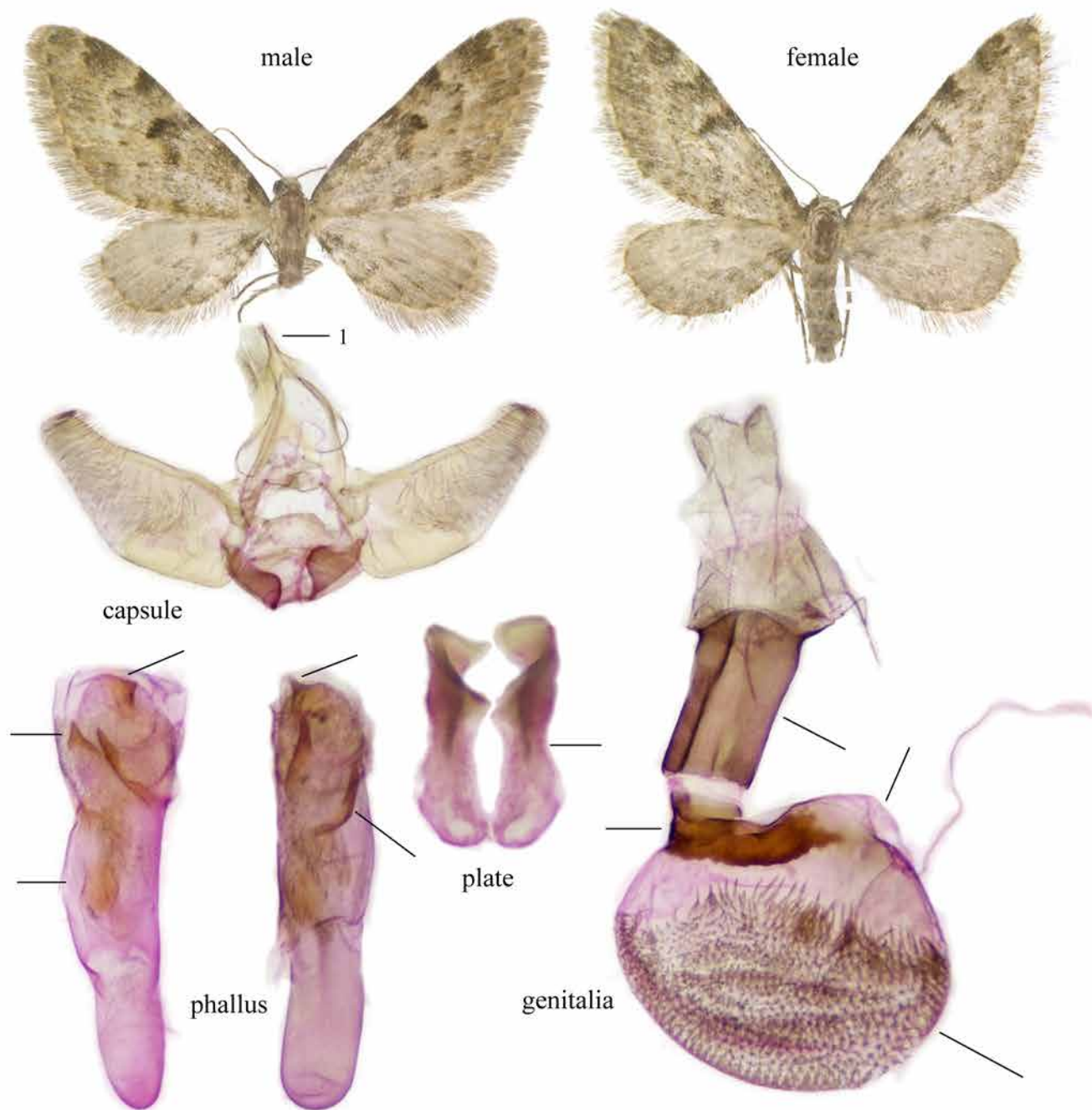
**Type deposited:** Male holotype in MCZ.

**Biology:** Unknown. Adults late April to July.

**Distribution:** West-central Alberta; Manitoulin Is., Ontario;  
Michigan (Drummond Is., Chippewa Co., Kalamazoo Co.).

**Diagnostic characters:** Adults easily recognized by the distinctive color and pattern. 1. uncus tip bifid; other features as pointers indicate.

**References:** Bolte, K. B., 1990: p. 30; p. 203; figs. 83–84. McDunnough, J. H., 1949: p. 652; p. 732 fig. 14A; adult not shown.

*Eupithecia niveifascia* (Hulst, 1898)

**Original description:** *Can. Ent.* 30(5):115.

**Type locality:** Santa Fe, New Mexico.

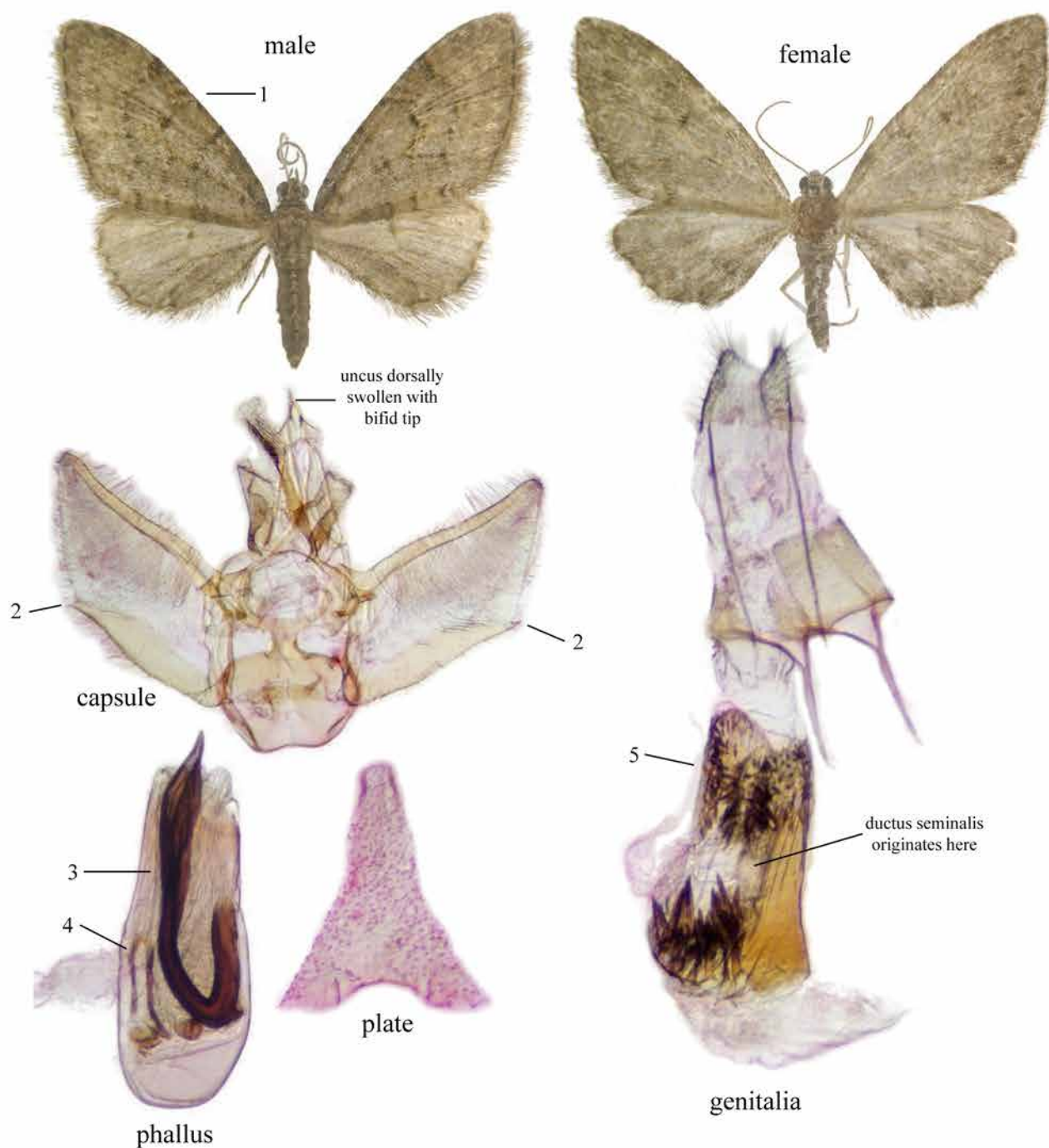
**Type deposited:** Male lectotype in AMNH.

**Biology:** Unknown. Adults May–July.

**Distribution:** Central British Columbia west to Vancouver Is. Southern records include: Washington (Chelan Co.); Nevada (White Pine Co.); Wyoming (Albany, Washakie cos.); Colorado (Boulder, Chaffee, Hinsdale, Larimer cos.); New Mexico (Catron, Grant, Santa Fe cos.); Arizona (Cochise Co.); Mexico (Sonora).

**Diagnostic characters:** 1. uncus tip broadly bifid; other features as indicated by pointers.

**References:** Bolte, K. B. 1990: p. 28; p. 202; figs. 81–82. McDunnough, J. H., 1949: p. 652; p. 722 fig. 14B; pl. 30 figs. 30–31.

*Eupithecia broui* Rindge, 1985

**Original description:** *Amer. Mus. Novitates* 2809:16, figs. 12, 21, 22, 38.

**Type locality:** Louisiana, West Feliciana Parish, Weyanoke.

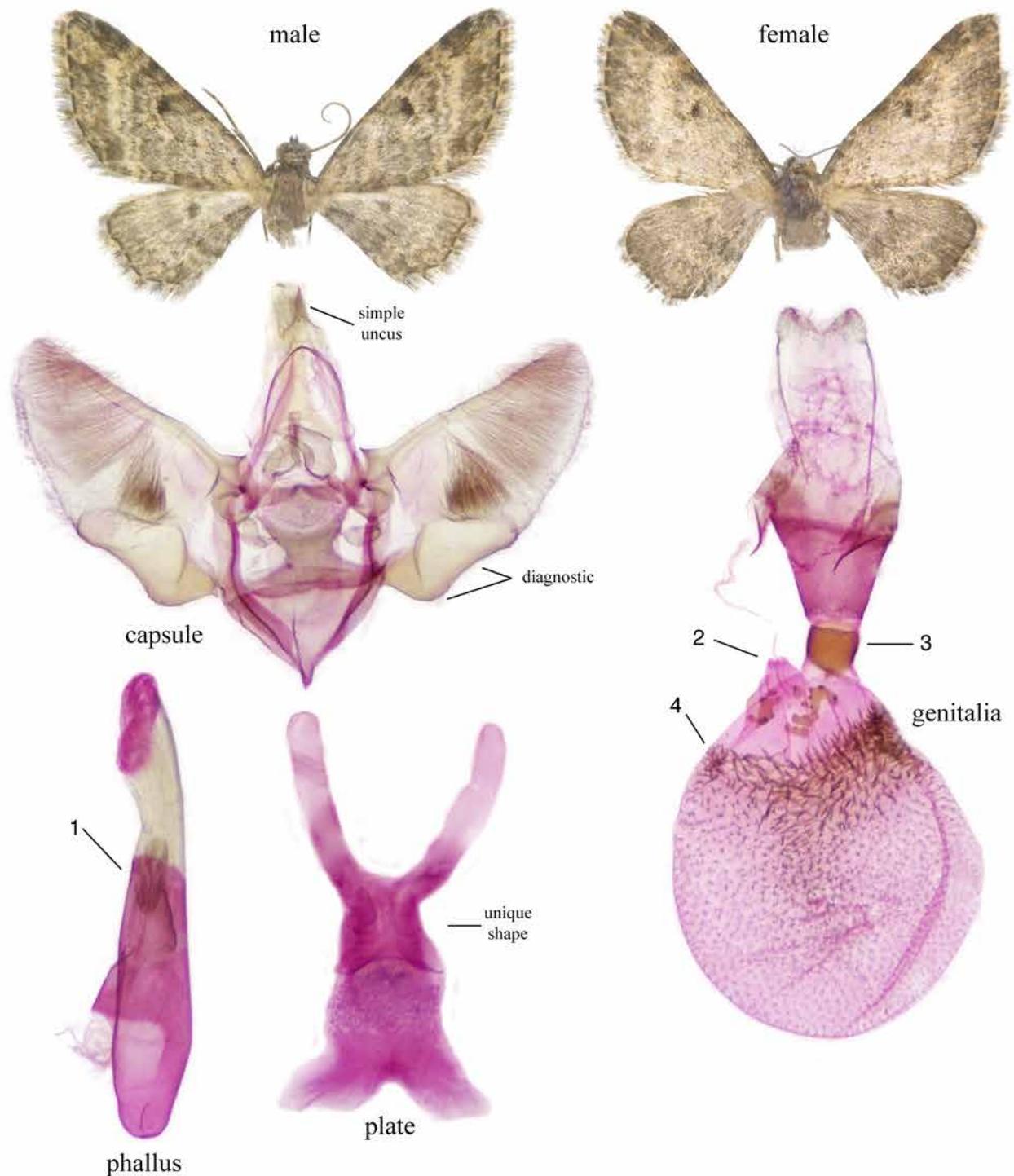
**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adults February–early May.

**Distribution:** Coastal North Carolina, Mississippi, Louisiana.

**Diagnostic characters:** 1. broad forewings, lightly maculated; 2. small projections; 3. heavily sclerotized, apically-pointed rod; 4. slender sclerotized U-shaped rod; 5. corpus bursae nearly rectangular with 2 separated patches of robust spines and produced fundus.



*Eupithecia joanata* Cassino & Swett, [1922]

**Original description:** *Lepidopterist* 3(10):172.

**Type locality:** California, San Diego.

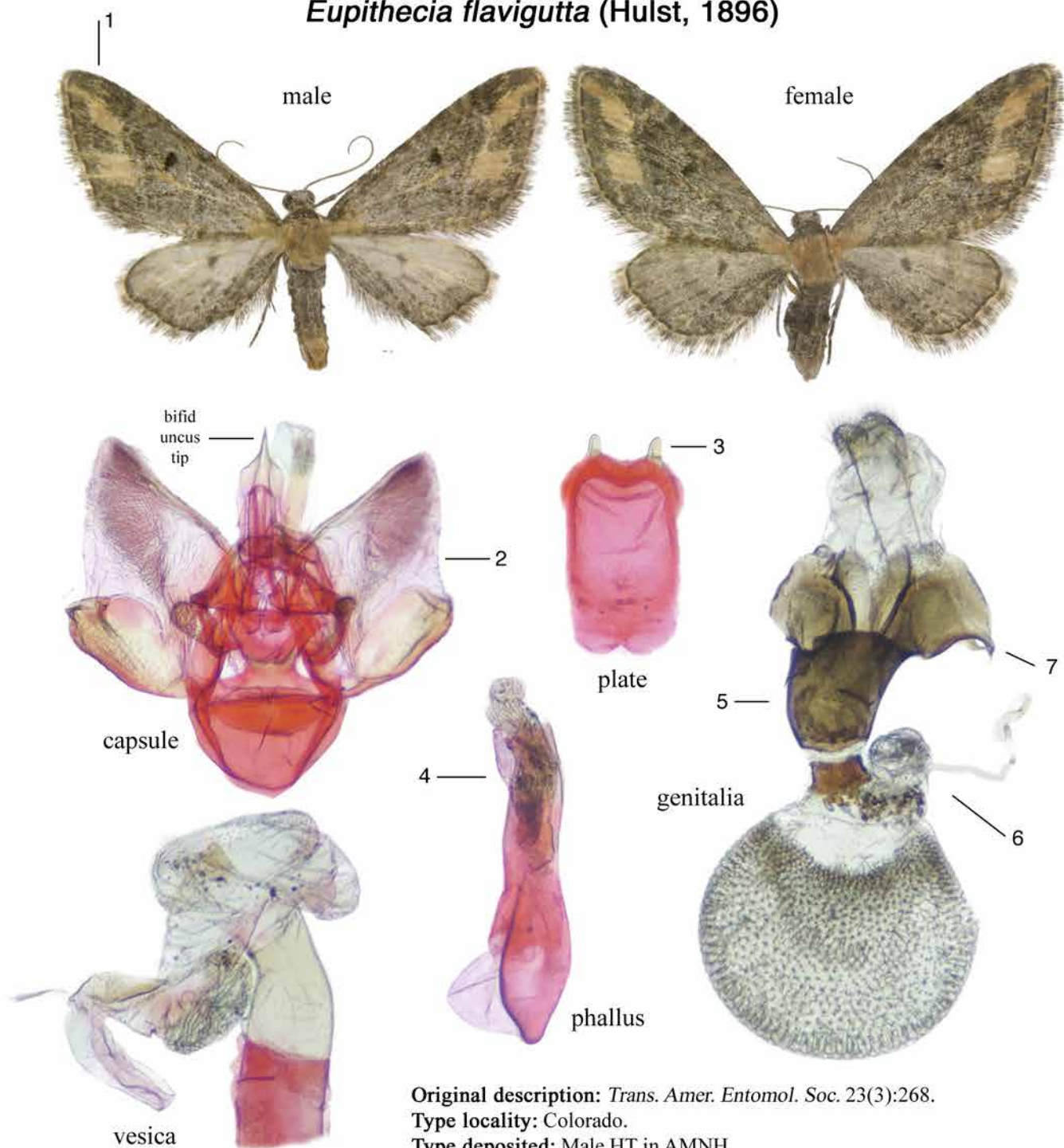
**Type deposited:** Female holotype in MCZ.

**Biology:** Unknown. Adults in late August in Arizona.

**Distribution:** Apparently uncommon. California, San Diego Co.; Arizona, Cochise Co. (Huachuca Mts.), Santa Cruz Co.; Mexico, Sonora. See accompanying text for discussion.

**Diagnostic characters:** 1. phallus long, very slender with tip bent dorsad, without apparent cornuti; 2. origin of ductus seminalis; 3. narrow colliculum; 4. ring of long spines, larger area of corpus bursae covered in diffuse small spines.

**Reference:** McDunnough, J. H., 1949: p. 654; p. 722 fig. 14C; pl. 30 fig. 32.

*Eupithecia flavigutta* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):268.

**Type locality:** Colorado.

**Type deposited:** Male HT in AMNH.

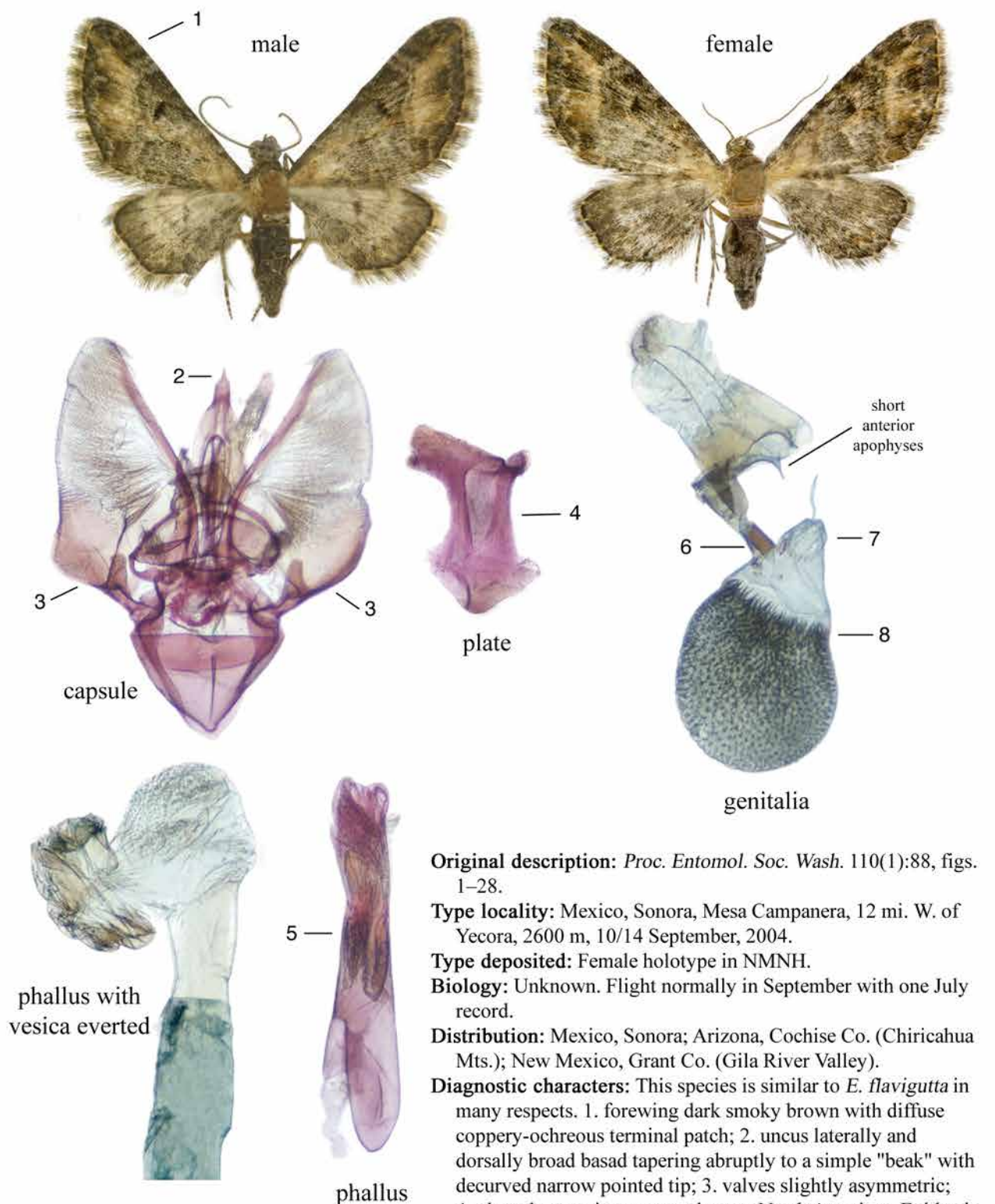
**Biology:** Unknown.

**Distribution:** Arizona, Cochise Co.; Colorado, Jefferson Co.; New Mexico, Catron and Grant cos.

**Diagnostic characters:** 1. two ochreous patches, smoky wing color with violaceous aspect in fresh specimens; 2. valve broad and "chunky" with the basal ventral margin chitinized; 3. two rounded projections from plate; 4. phallus of irregular shape and vesica with several indistinct cornuti and multiple dark spots; 5. large heavily sclerotized ostium; 6. membranous projection from which ductus seminalis originates; 7. nearly obsolete anterior apophyses.

**Reference:** McDunnough, J. H., 1949: p. 655; p. 722 fig. 14D; pl. 30 fig. 33. Genital plate is shown upside down in fig. 14D.



*Eupithecia sonora* Ferris & Opler, 2008

**Original description:** *Proc. Entomol. Soc. Wash.* 110(1):88, figs. 1–28.

**Type locality:** Mexico, Sonora, Mesa Campanera, 12 mi. W. of Yecora, 2600 m, 10/14 September, 2004.

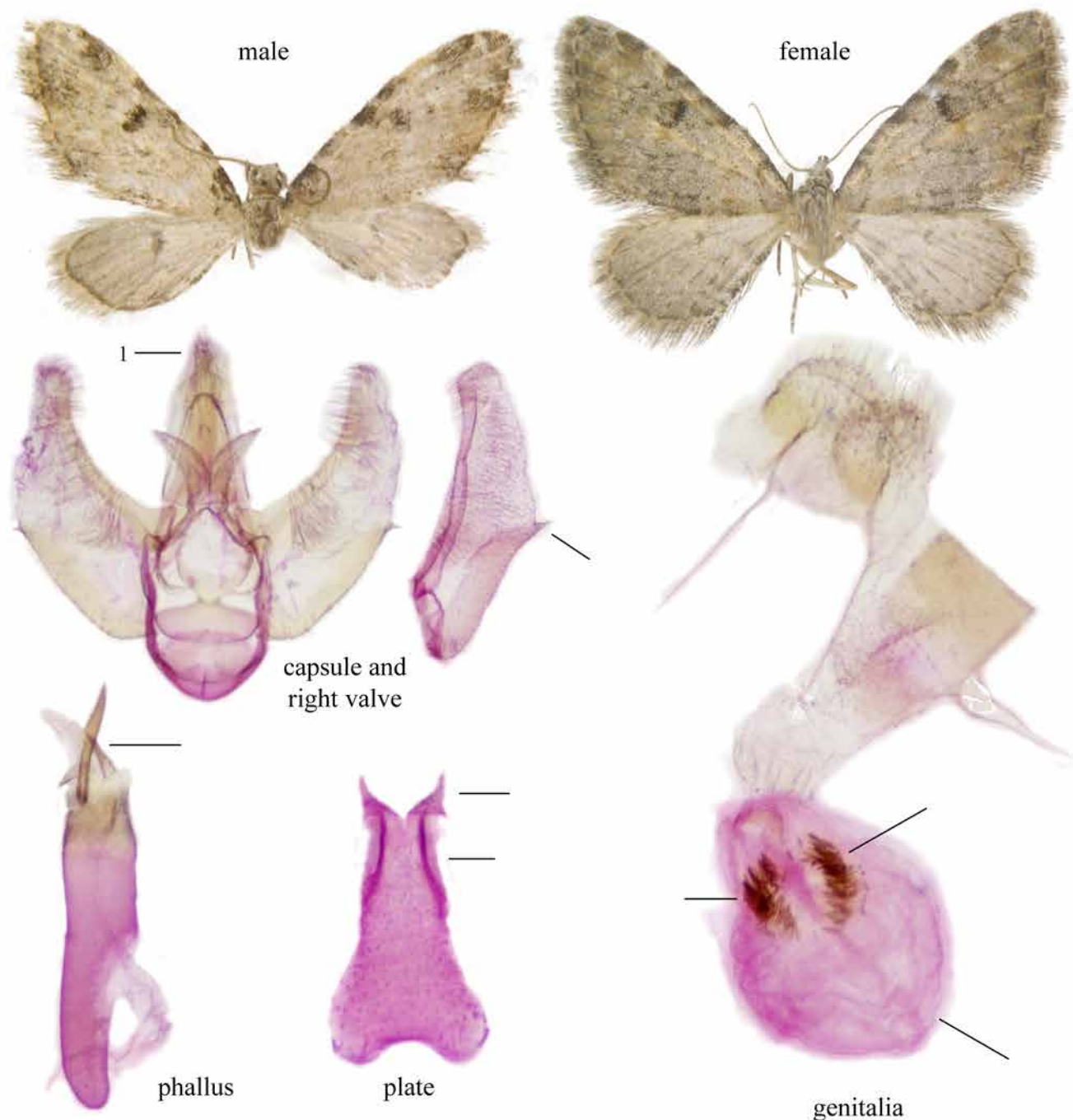
**Type deposited:** Female holotype in NMNH.

**Biology:** Unknown. Flight normally in September with one July record.

**Distribution:** Mexico, Sonora; Arizona, Cochise Co. (Chiricahua Mts.); New Mexico, Grant Co. (Gila River Valley).

**Diagnostic characters:** This species is similar to *E. flavigutta* in many respects. 1. forewing dark smoky brown with diffuse coppery-ochreous terminal patch; 2. uncus laterally and dorsally broad basad tapering abruptly to a simple "beak" with decurved narrow pointed tip; 3. valves slightly asymmetric; 4. plate shape unique among known North American *Epithecia*. 5. phallus narrow, vesica without well-defined cornuti. 6. narrow colliculum; 7. ductus seminalis arises from membranous projection; 8. ring of long spines, remainder of corpus bursae densely spinose with small spines.



*Eupithecia sperryi* McDunnough, 1939

**Original description:** *Can. Ent.* 71(12):250.

**Type locality:** Greer, Arizona.

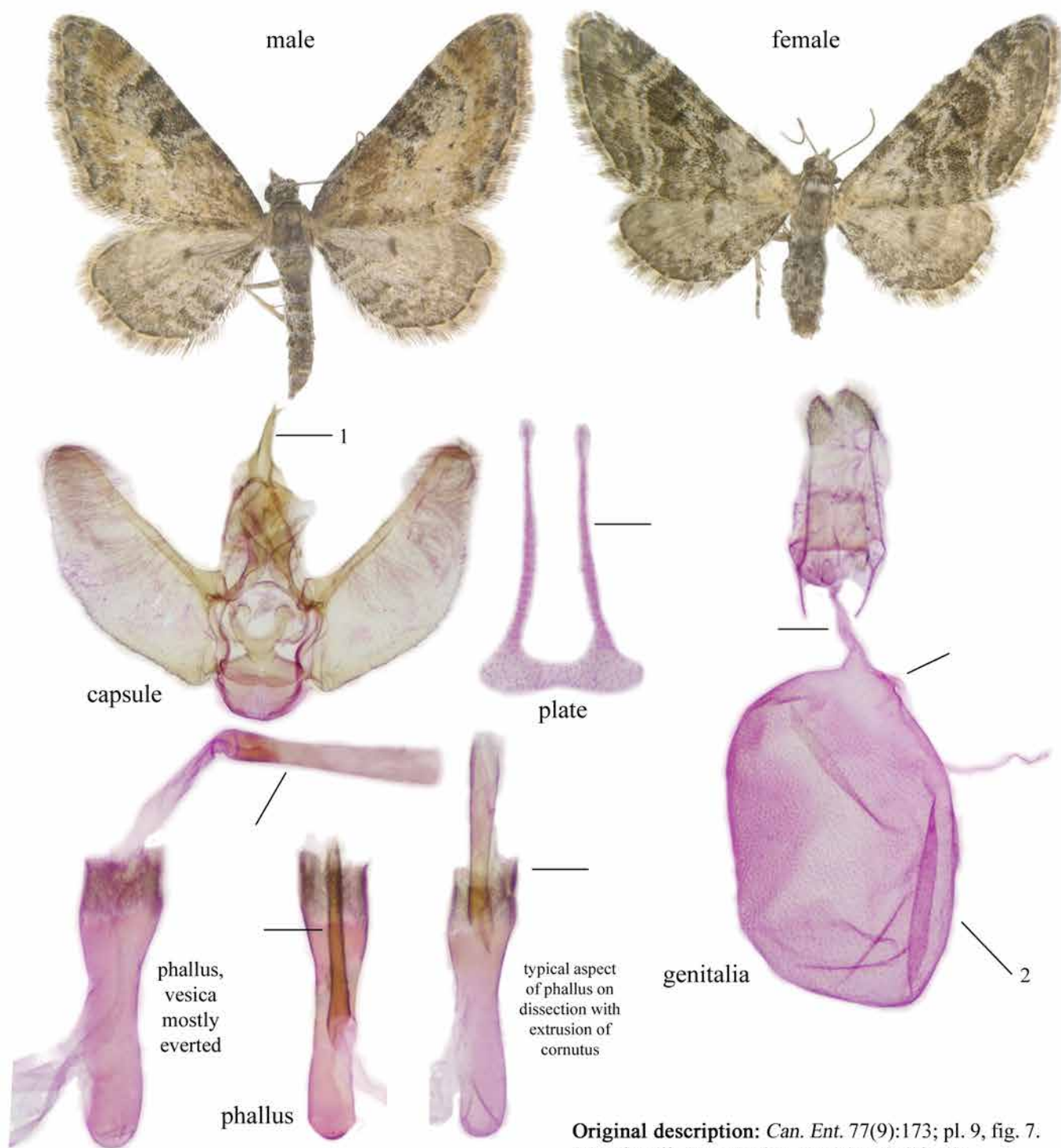
**Type deposited:** Male holotype in CNC.

**Biology:** Unknown. Adult records are for June and September.

**Distribution:** Records include Arizona (Apache Co., White Mtns.; Cochise Co., Huachuca Mtns.) and New Mexico (Grant Co., Black Range).

**Diagnostic characters:** 1. short uncus with bifid tip; other features as indicated. Adults are the smallest in size of the North American *Eupithecia*.

**Reference:** McDunnough, J. H., 1949: p. 656; p. 722 fig. 14E (male only); pl. 30 fig. 34.

*Eupithecia johnstoni* McDunnough, 1945

**Original description:** *Can. Ent.* 77(9):173; pl. 9, fig. 7.

**Type locality:** Lone Pine, Inyo Co., California.

**Type deposited:** Male holotype in CNC.

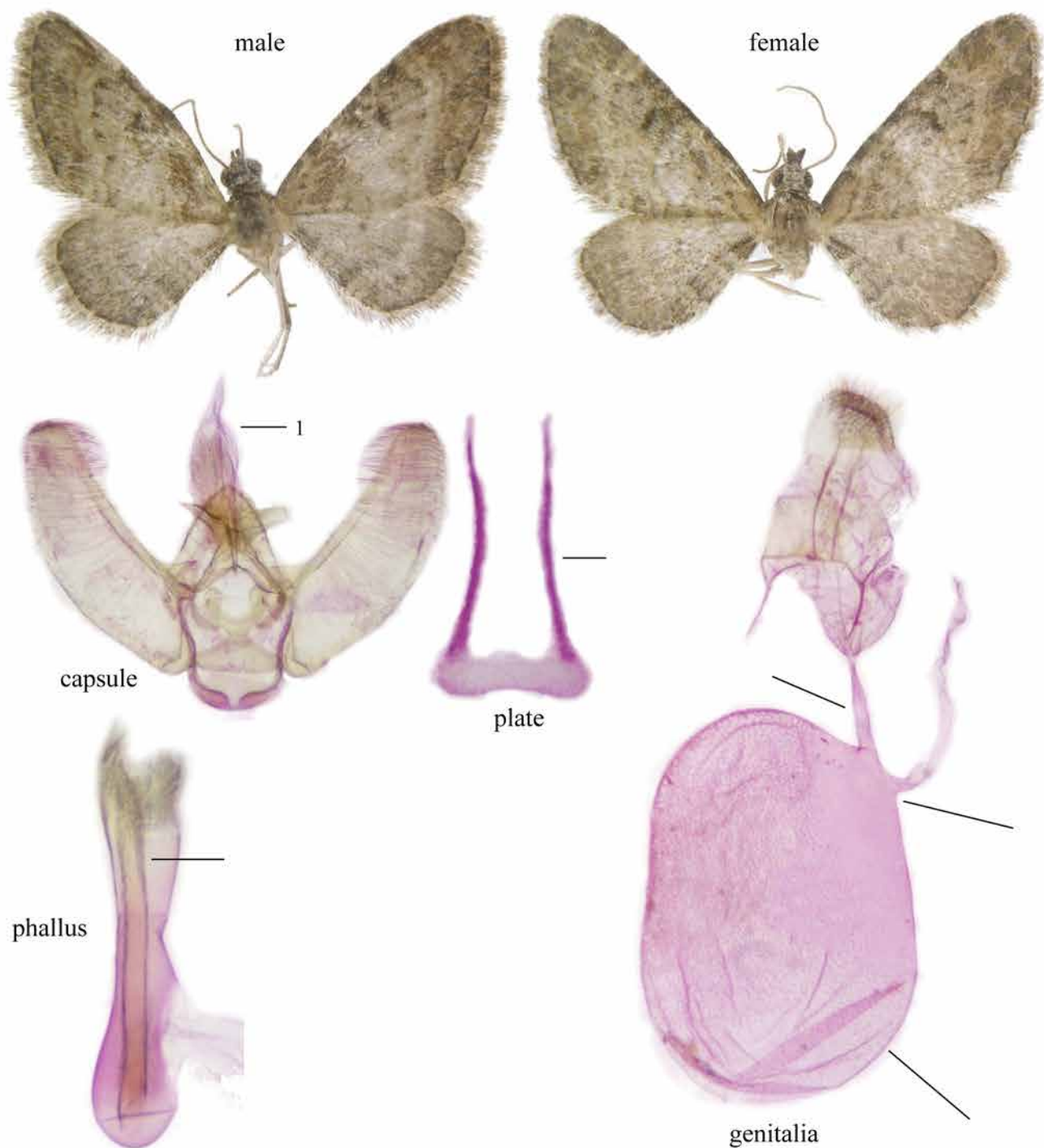
**Biology:** Unknown. Adults May–July, depending on locality.

**Distribution:** Eastern Ontario; southern British Columbia; California (Inyo, Sierra cos.); Colorado (Larimer Co.); Michigan (Montcalm Co.); Oregon (Grant Co.); Utah (San Juan, Washington cos.); Wyoming (Albany Co.).

**Diagnostic characters:** 1. curved uncus with bifid tip; 2. bursa without spines; other features as indicated by pointers.

**References:** Bolte, K. B., 1990: p. 31; p. 205; figs. 87–88. McDunnough, J. H., 1949: p. 656; p. 722 fig. 14F; pl. 30 fig. 35 (holotype).



*Eupithecia rindgei* McDunnough, 1949

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):656; pl. 30, fig. 36; text fig. 14H.

**Type locality:** Keddie, Plumas Co., California, June 18, 1941.

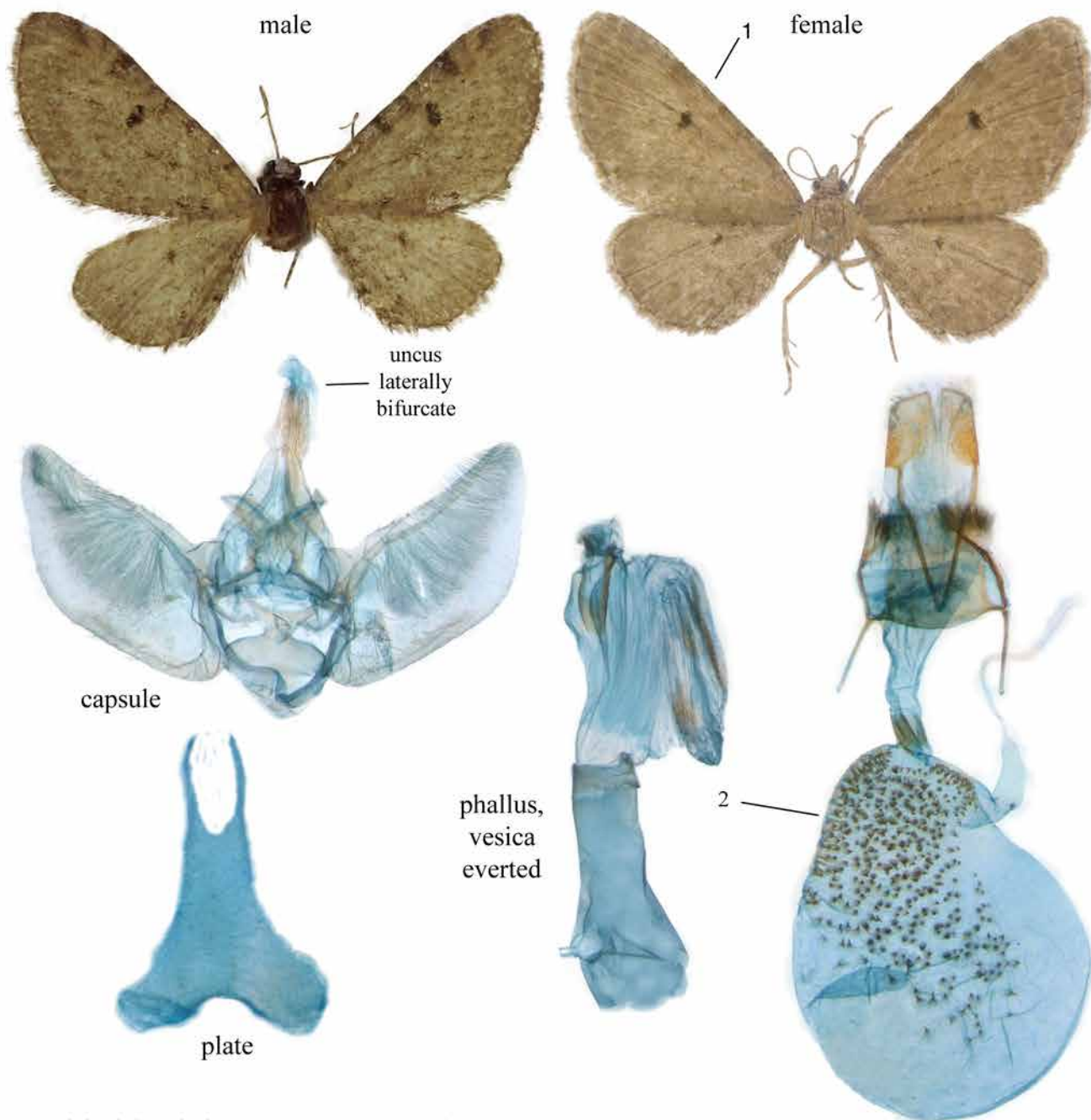
**Type deposited:** Male HT in AMNH.

**Biology:** Unknown. Adults May–June.

**Distribution:** Plumas and Solano cos., California.

**Diagnostic characters:** 1. long uncus with bifid tip; other characters as indicated. This species is very similar to *E. johnstoni*, but the adults are much smaller in size.



*Eupithecia cocoata* Pearsall, 1908

**Original description:** *J. N. Y. Ent. Soc.* 16(2):103.

**Type locality:** Maryland, Plummer's Island.

**Type deposited:** Female holotype in NMNH.

**Biology:** Unknown. Adults May–June.

**Distribution:** Arkansas, Washington Co.; Maryland, Plummer's Island; Missouri, Barry, Jasper and Wayne cos.\*

**Diagnostic characters:** 1. wings chocolate brown and indistinctly maculated, but with prominent black discal spot on forewing. 2. corpus bursae mostly membranous with patch of spines tapering from top to above fundus.

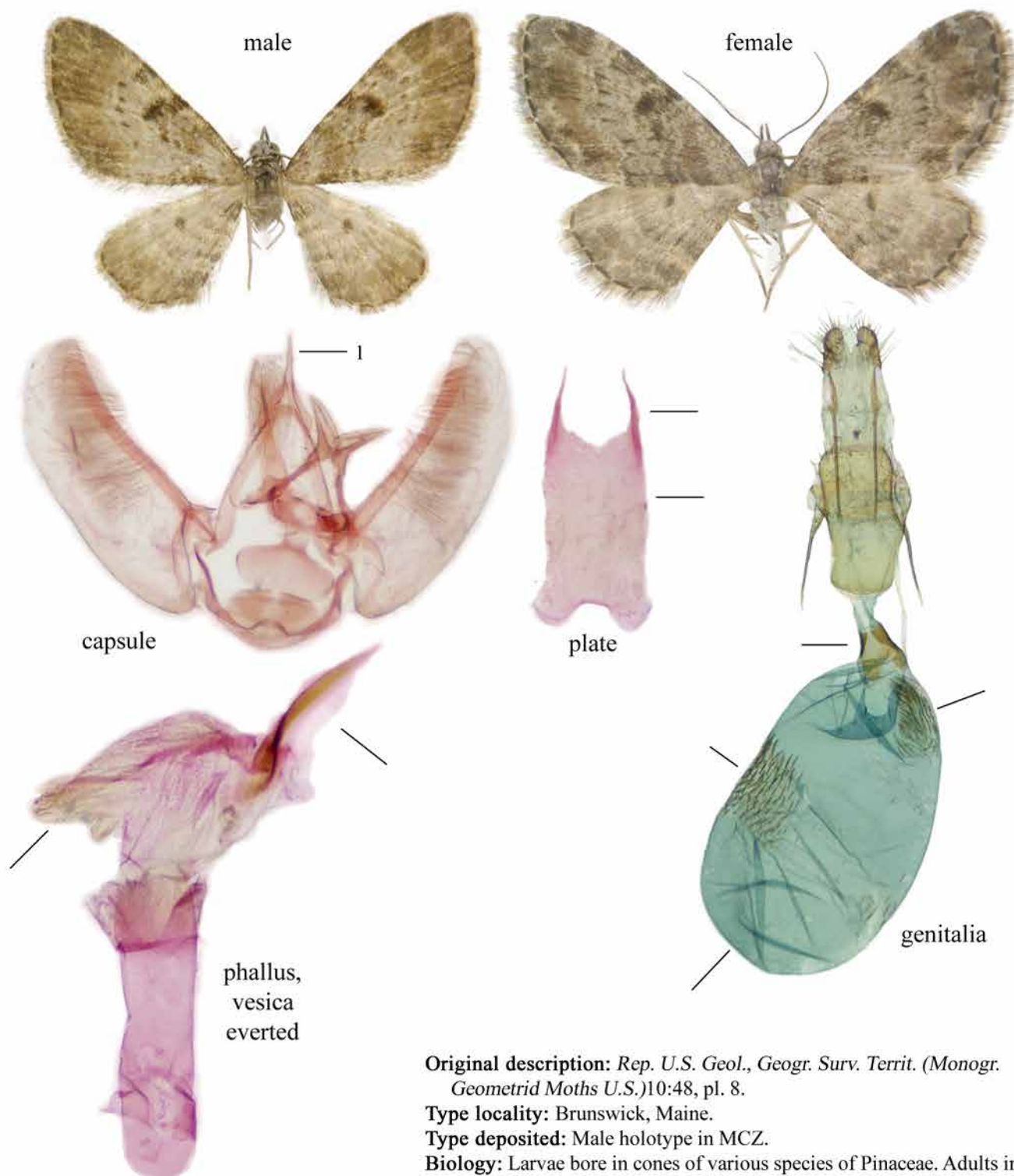
\*Grandfather Mtn., 4400', Avery Co., North Carolina, 22–23 July, 2001.

**References:**

McDunnough, J. H., 1949: p. 657; p. 722 fig. 14I; pl. 31 fig. 1 (female holotype).

Heitzman, R. L. & Enns, W. R., 1977. *J. Res. Lepid.* 16(2): p. 75; pl. I figs. 4–6; pl. II fig 8 (description of male).

Male adult and genitalia photos courtesy of J. Boling Sullivan, Beaufort, NC.

*Eupithecia albicapitata* Packard, 1876

**Original description:** *Rep. U.S. Geol., Geogr. Surv. Territ. (Monogr. Geometrid Moths U.S.)* 10:48, pl. 8.

**Type locality:** Brunswick, Maine.

**Type deposited:** Male holotype in MCZ.

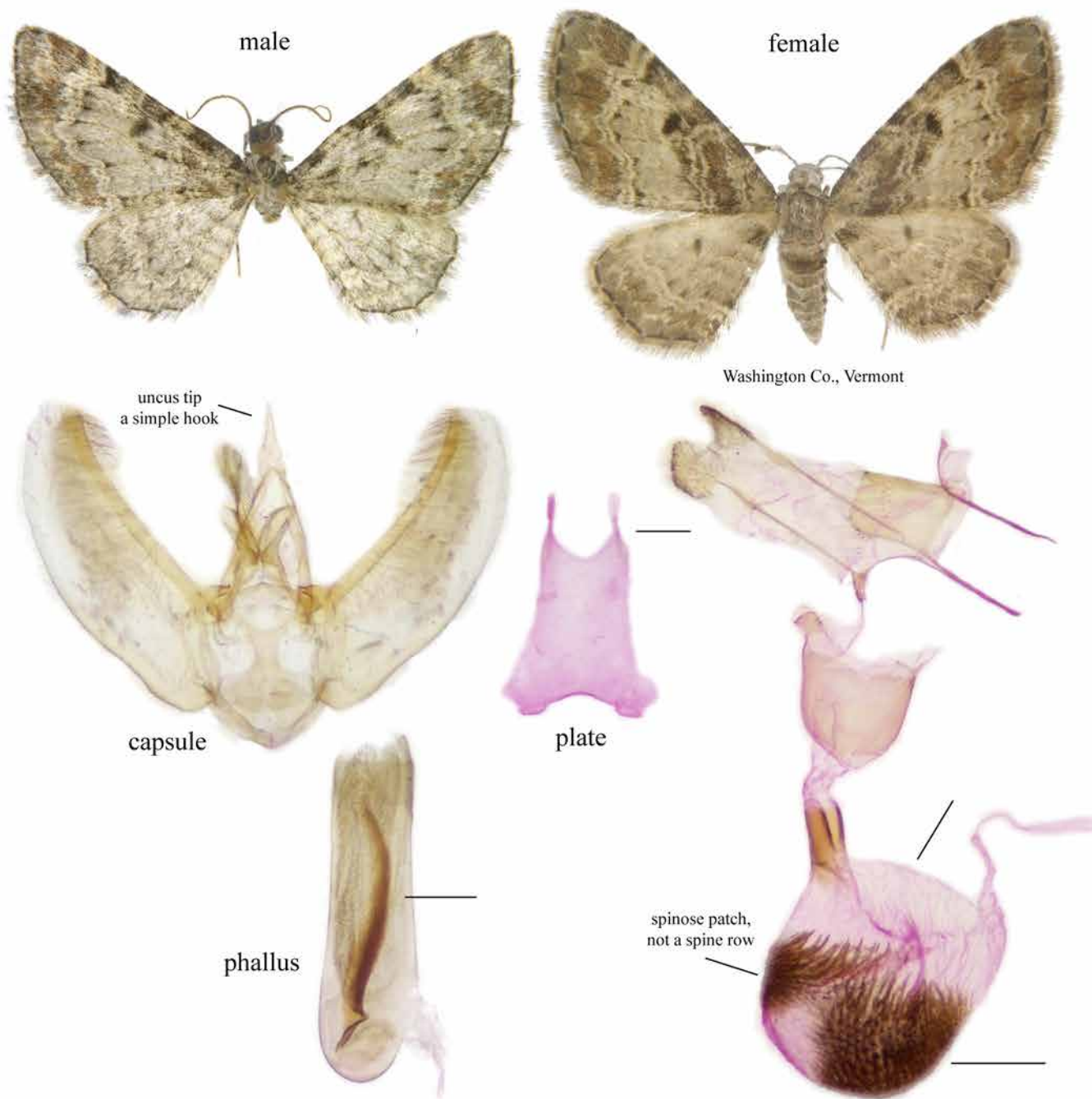
**Biology:** Larvae bore in cones of various species of Pinaceae. Adults in June and July.

**Distribution:** Western Newfoundland to western British Columbia and north to Alaska; south in the East into the New England States and the Catskill Mts. in New York; in the West south to California (Kern, Sierra cos.), Wyoming (Albany Co.) and Colorado (Grand, Larimer cos.).

**Diagnostic characters:** 1. slender uncus with hooked tip; other features as pointers indicate.

**References:** Bolte, K. B., 1990: p. 45; p. 215; figs. 107–108. McDunnough, J. H., 1949: p. 658; p. 722 fig. 14J; pl. 31 fig. 2.



*Eupithecia mutata* Pearsall, 1908

**Original description:** *J. N. Y. Entomol. Soc.* 16(2):98.

**Type locality:** Big Indian Valley, Catskill Mts., New York.

**Type deposited:** Male lectotype in AMNH.

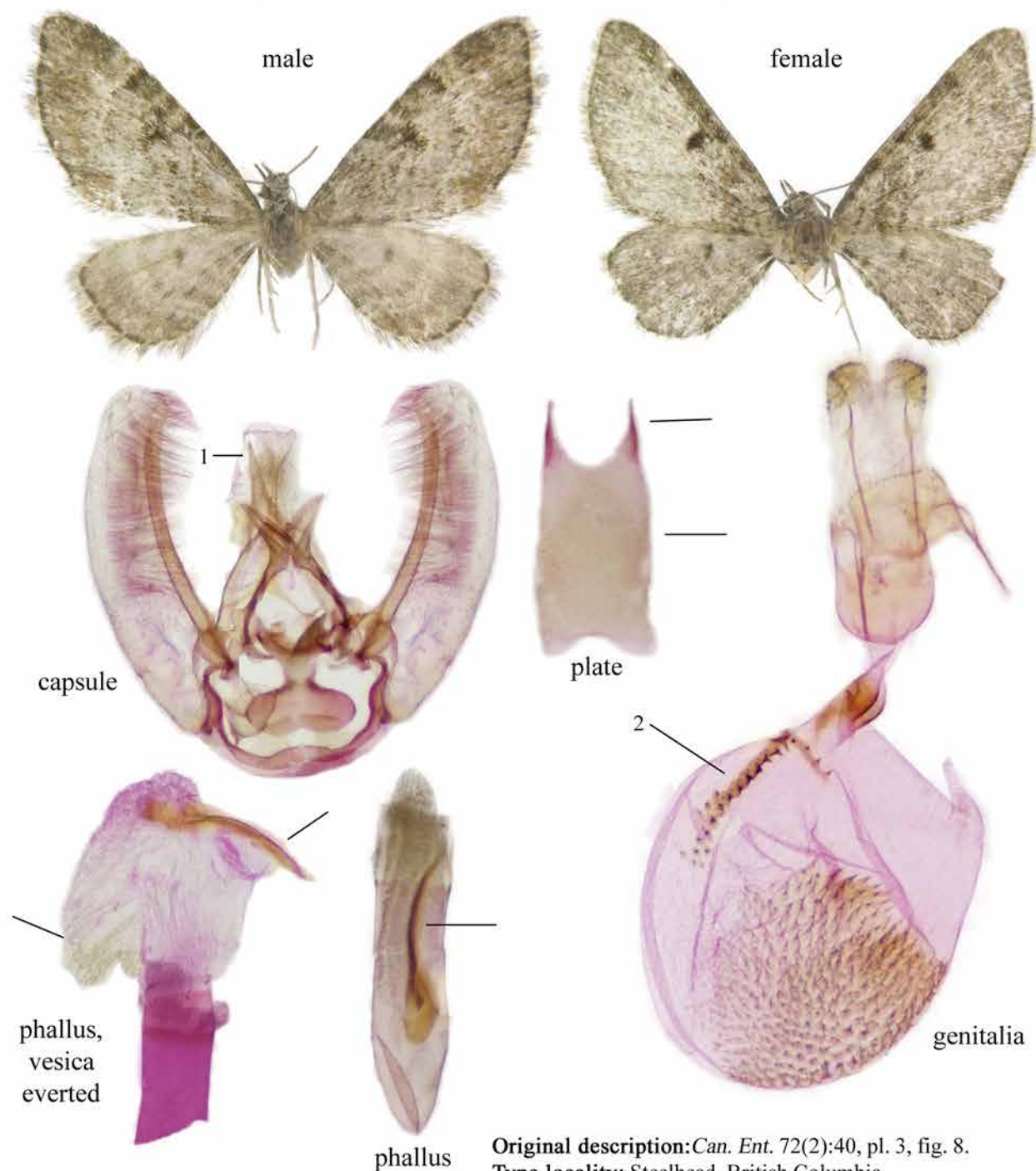
**Biology:** Larvae usually in cones of *Picea glauca* (Moench); also in several other *Picea* sp. and *Abies balsamea* (L.) Mill. Adults in June–July.

**Distribution:** Central Newfoundland to central Alberta; south into the New England states and New York. This is primarily an eastern species.

**Diagnostic characters:** Male very similar to *E. columbrata*; females separated by the arrangement of spines on the bursa. The spinose patch in *E. mutata* is replaced by a row of spines in *E. columbrata*.

**References:** Bolte, K. B., 1990: p. 46, p. 216. McDunnough, J. H., 1949: p. 659; p. 722 fig. 14K; pl. 31 fig. 3.



*Eupithecia columbrata* McDunnough, 1940

**Original description:** *Can. Ent.* 72(2):40, pl. 3, fig. 8.

**Type locality:** Steelhead, British Columbia.

**Type deposited:** Female holotype in CNC.

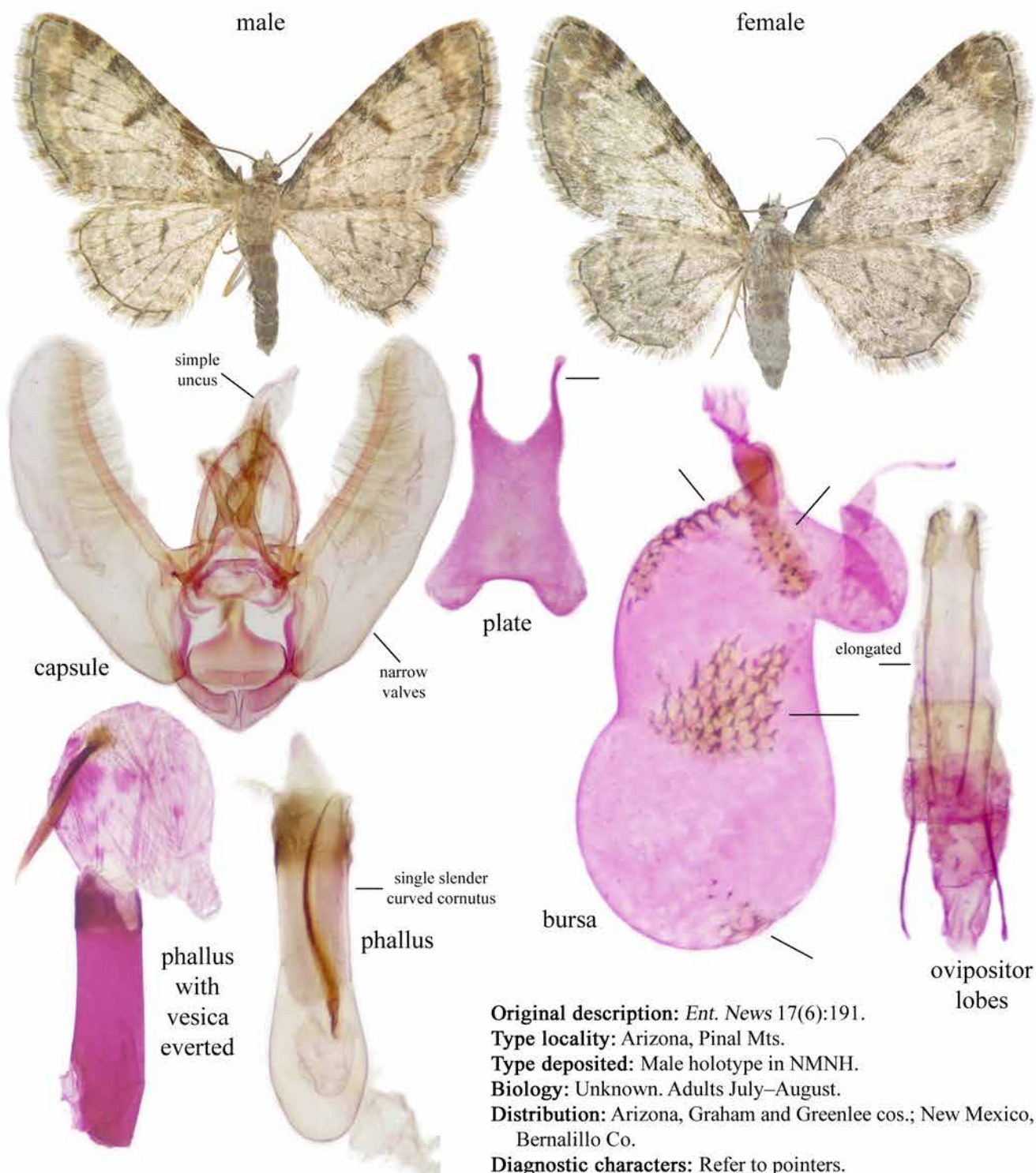
**Biology:** Larvae usually in cones of *Pseudotsuga menziesii* (Mirb.)

Franco; sometimes in cones of *Abies amabilis* (Dougl.) and *A. lasiocarpa* (Hook.) Nutt. Adults June–July.

**Distribution:** Western Alberta to western British Columbia and Vancouver Is.; south to Marin Co., California; Boundary Co., Idaho; Albany Co., Wyoming south to Colfax Co., and Jemez Mts. in New Mexico.

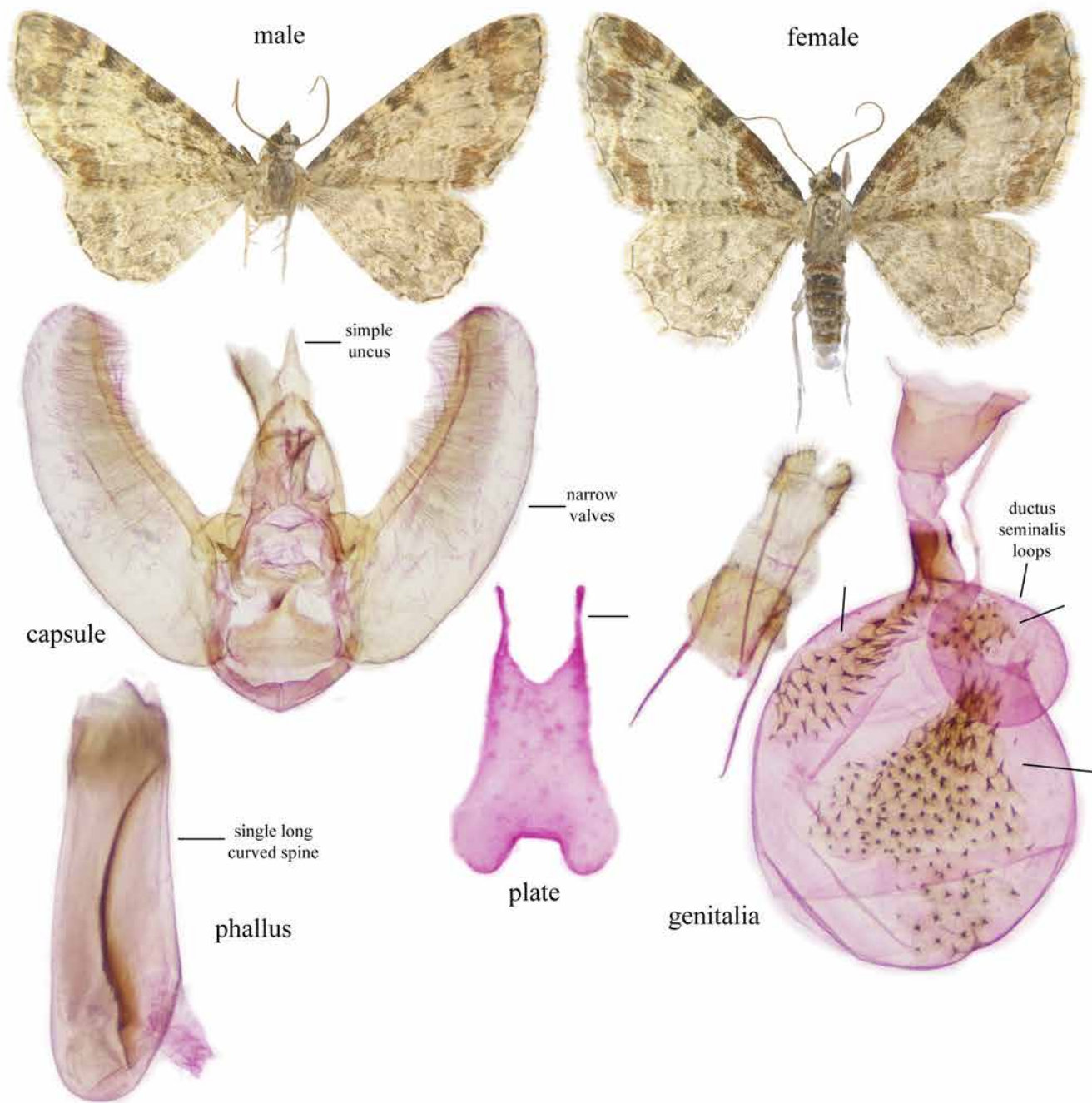
**Diagnostic characters:** 1. uncus slender with pointed apex; 2. spinose row (a patch of spines in *E. mutata*); other features as indicated by pointers. *E. columbrata* and *E. mutata* are very similar in both habitus and male genitalia. Species separation is best determined by the female genitalia.

**References:** Bolte, K. B., 1990: p. 47; pp. 216–217; figs. 109–110. McDunnough, J. H., 1949: p. 660; p. 723 fig. 15A; pl. 31 fig. 5.

*Eupithecia helena* Taylor, 1906

**Note:** McDunnough (1949) knew this species from the holotype only, which he illustrated in plate 31, fig. 4 without showing the genitalia. *E. helena* appears to be the southern-most representative of the *E. mutata* complex, in which *mutata* is the northern-most representative and *E. spermaphaga* occupies the middle of the geographic range of the group. The shape of the fully inflated vesica and the orientation of the large spine, as alluded to by Bolte (1990:46–48) for *mutata* and *spermaphaga*, serve to separate these three entities.



*Eupithecia spermaphaga* (Dyar, 1917)

**Original description:** *Insecutor Inscitiae Menstruus* 5(4–6):68.

**Type locality:** Oregon, Kaolin Beds.

**Type deposited:** Male holotype in NMNH.

**Biology:** Larvae in cones of Pinaceae: *Abies concolor* (Gordon & Glendauer) Lindley, *A. magnifica* var. *shastensis* (Bong.) Carr. Adults June–August.

**Distribution:** Southwestern British Columbia south to Mariposa Co., California and east to Sanpete Co., Utah.

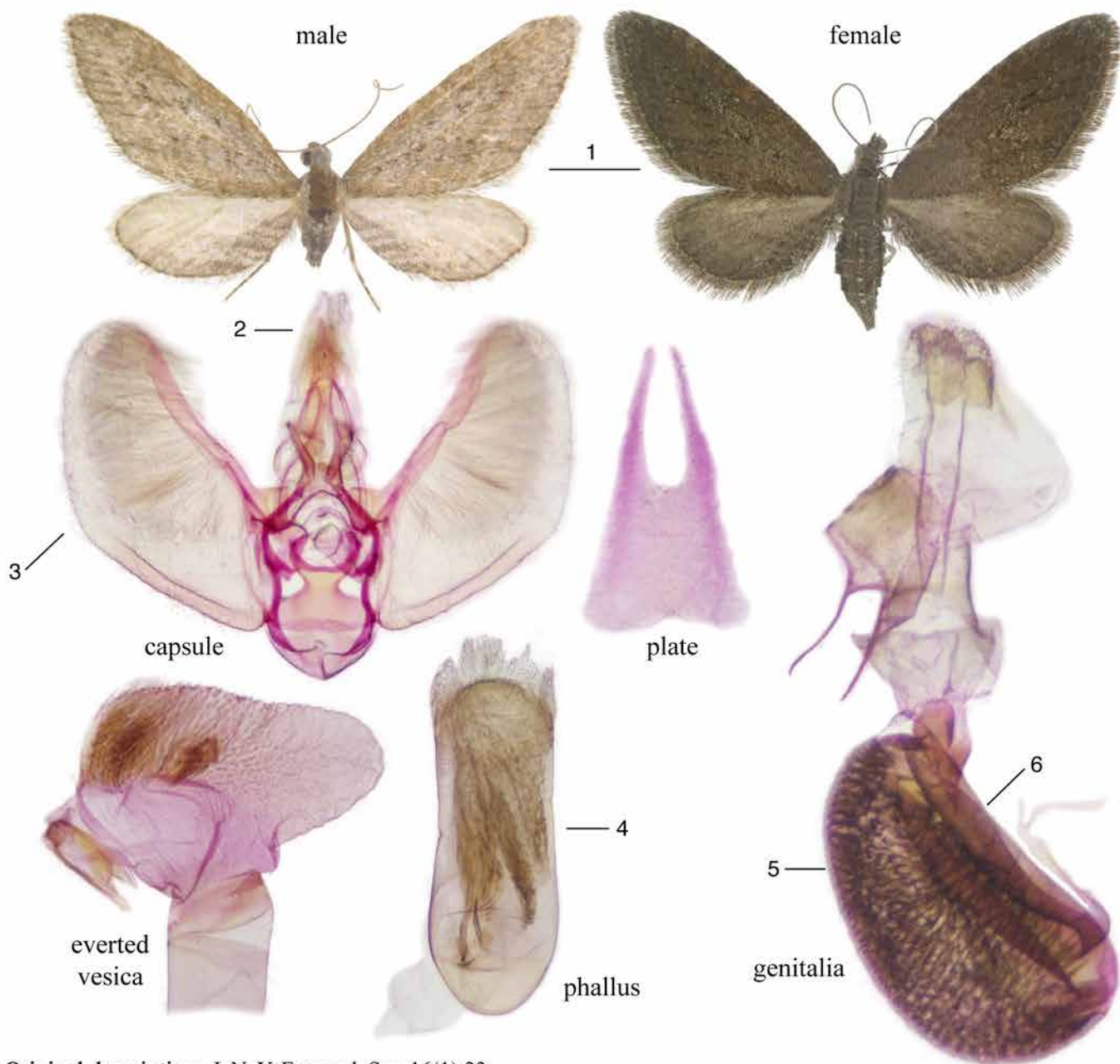
**Diagnostic characters:** Refer to pointers.

**References:**

Bolte, K. B., 1990: pp. 47–48; p. 217; figs. 163–164.

McDunnough, J. H., 1949: p. 660; p. 723 fig. 15B; adults not illustrated.



*Eupithecia purpurissata* Grossbeck, 1908

**Original description:** *J. N. Y. Entomol. Soc.* 16(1):23.

**Type locality:** California, Monterey Co.

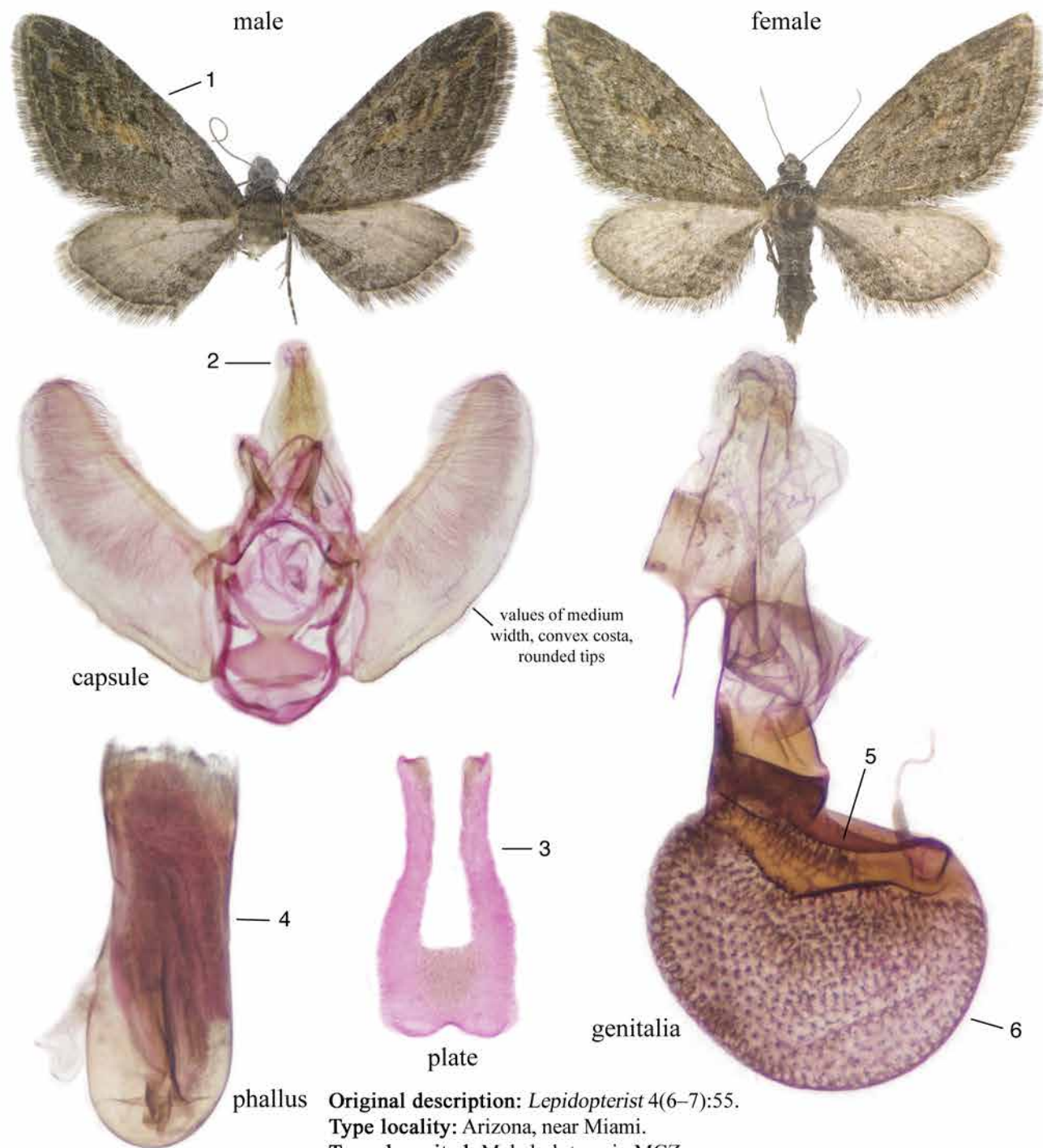
**Type deposited:** Male lectotype in AMNH.

**Biology:** Reared from larvae on *Arctostaphylos virgata* Eastw. in Marin Co., California. Adults April–June.

**Distribution:** Coastal California from Humboldt Co. to Santa Barbara Co., with paler and smaller subspecies *valariata* Pearsall, 1910 in San Diego Co. [*Ent. News* 21(1):404, lectotype male in AMNH].

**Diagnostic characters:** 1. wings pale brown to dark purplish-brown; 2. uncus narrowly triangular modified bifid with upper hook obsolete and lower hook apically rounded; 3. valves broadly rounded; 4. vesica armed with lightly chitinized irregular cornuti; 5. corpus bursae oblong with most of it covered in long spines; 6. ventrally chitinized trough extends from colliculum almost to the fundus, the thin ductus seminalis emerges from the proximal end.

**Reference:** McDunnough, J. H., 1949: pp. 661–662; p. 723 fig. 15C; pl. 31 figs. 6–7.

*Eupithecia mystiata* Cassino, 1925

**Original description:** *Lepidopterist* 4(6-7):55.

**Type locality:** Arizona, near Miami.

**Type deposited:** Male holotype in MCZ.

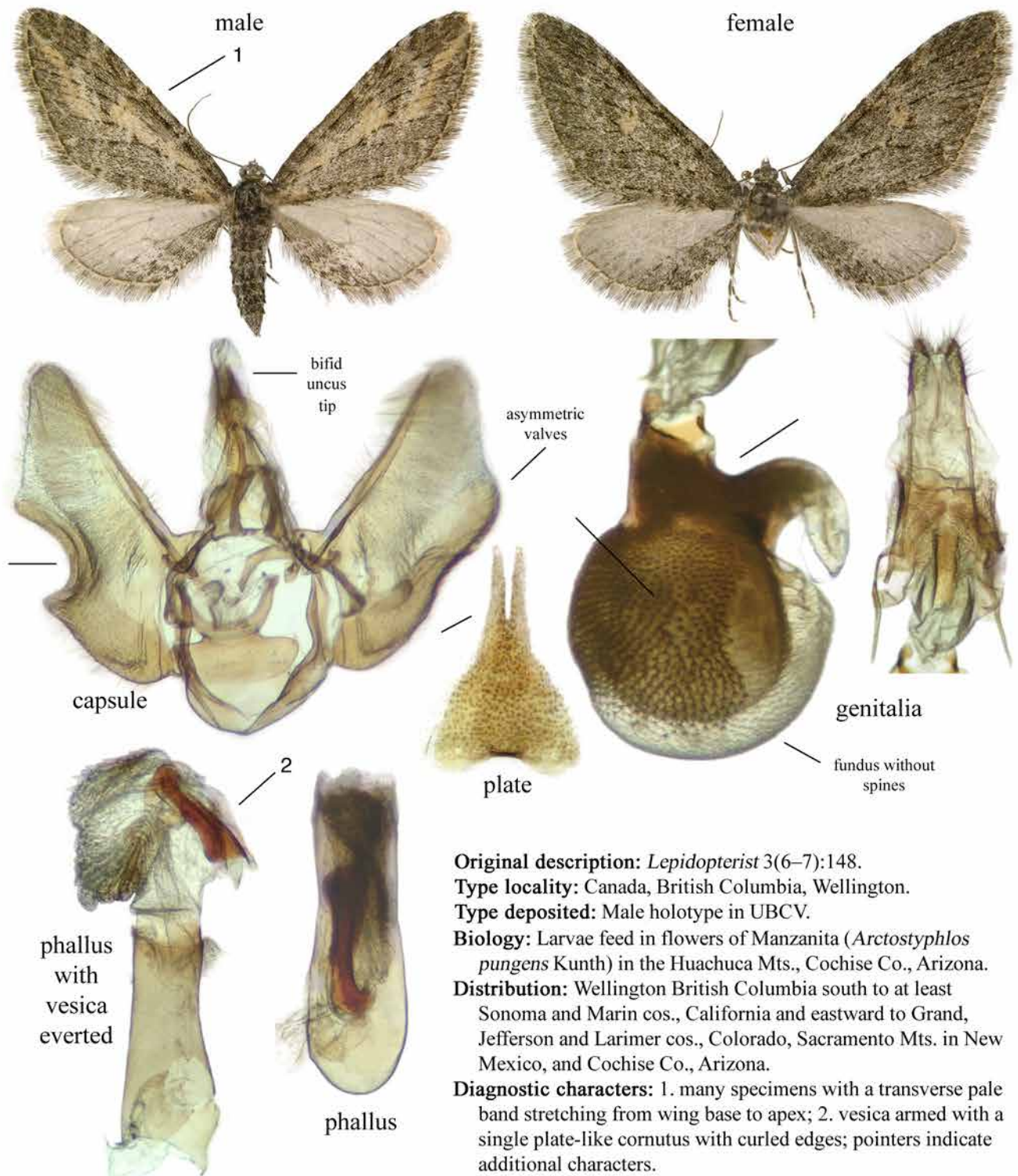
**Biology:** Larvae reared from *Arctostyphalos hooveri* P. V. Wells. Adults May-June.

**Distribution:** Arizona (type locality); California, Marin, Monterey, Riverside, Santa Barbara, Sonoma cos.; New Mexico, Bernalillo Co.; Oregon, Curry Co.

**Diagnostic characters:** 1. indistinct orange-brown patch below cell spot; 2. uncus terminal section short, broad, with rounded apex; 3. plate is diagnostic with concave parallel bars; 4. vesica armed with multiple lightly chitinized bands, and irregular pieces. 5. broad chitinous trough at top of corpus bursae, ductus seminalis emerges from end; 6. remainder of corpus bursae covered by spines.

**Reference:** McDunnough, J. H., 1949; p. 662; p. 723 fig. 15D; pl. 31 fig. 8.



*Eupithecia gilvipennata* Cassino & Swett, 1922

**Original description:** *Lepidopterist* 3(6–7):148.

**Type locality:** Canada, British Columbia, Wellington.

**Type deposited:** Male holotype in UBCV.

**Biology:** Larvae feed in flowers of Manzanita (*Arctostaphylos pungens* Kunth) in the Huachuca Mts., Cochise Co., Arizona.

**Distribution:** Wellington British Columbia south to at least Sonoma and Marin cos., California and eastward to Grand, Jefferson and Larimer cos., Colorado, Sacramento Mts. in New Mexico, and Cochise Co., Arizona.

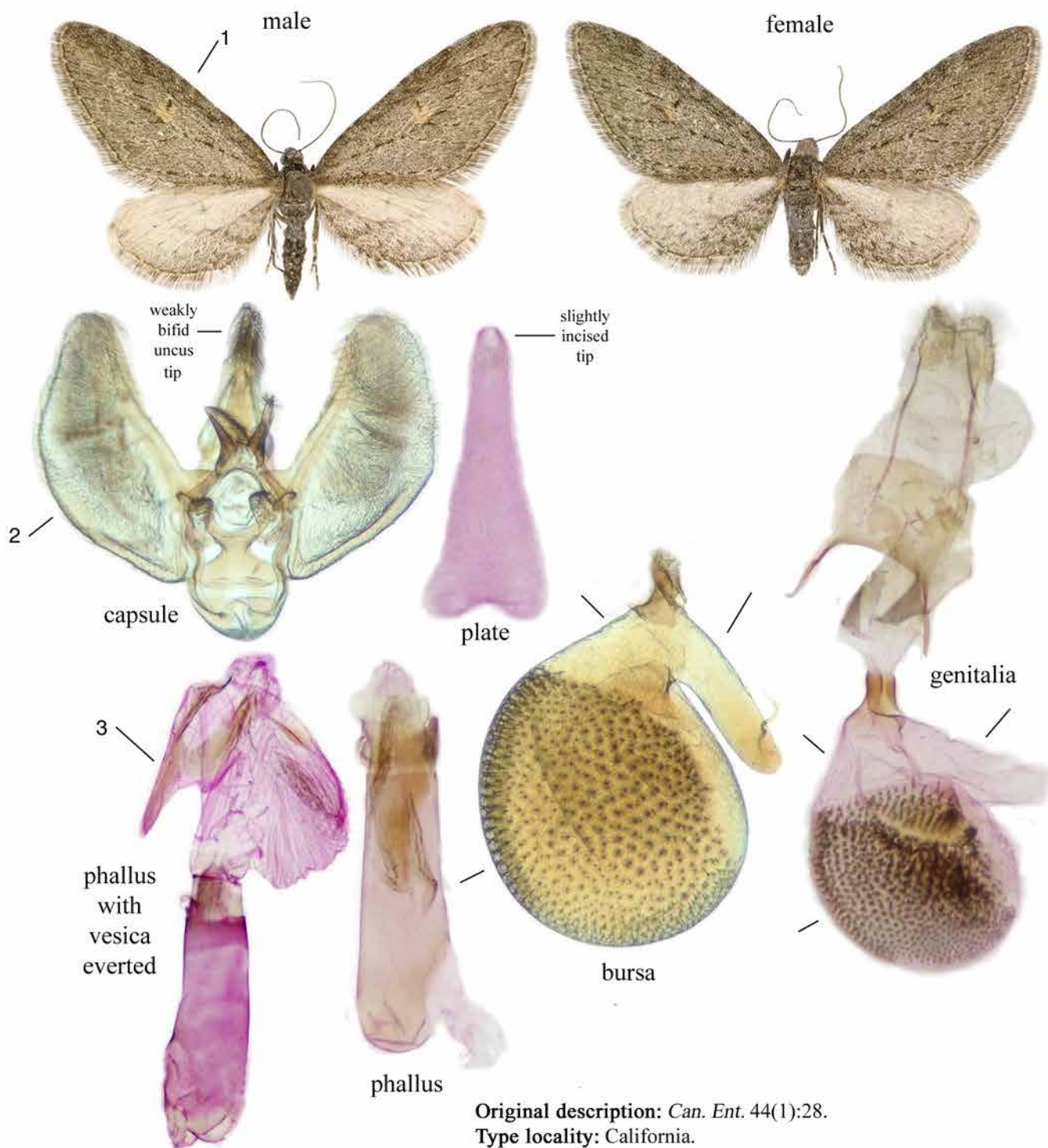
**Diagnostic characters:** 1. many specimens with a transverse pale band stretching from wing base to apex; 2. vesica armed with a single plate-like cornutus with curled edges; pointers indicate additional characters.

**References:**

Bolte, K. B., 1990: p. 92; p. 251; figs. 183–184. **Note:** the genital plate illustrated on p. 251 appears to be that of *E. scabrogata* and not *E. gilvipennata*.

McDunnough, J. H., 1949: p. 663; p. 723 fig. 15E; pl. 31 figs. 9–10.



*Eupithecia scabrogata* Pearsall, 1912

**Original description:** *Can. Ent.* 44(1):28.

**Type locality:** California.

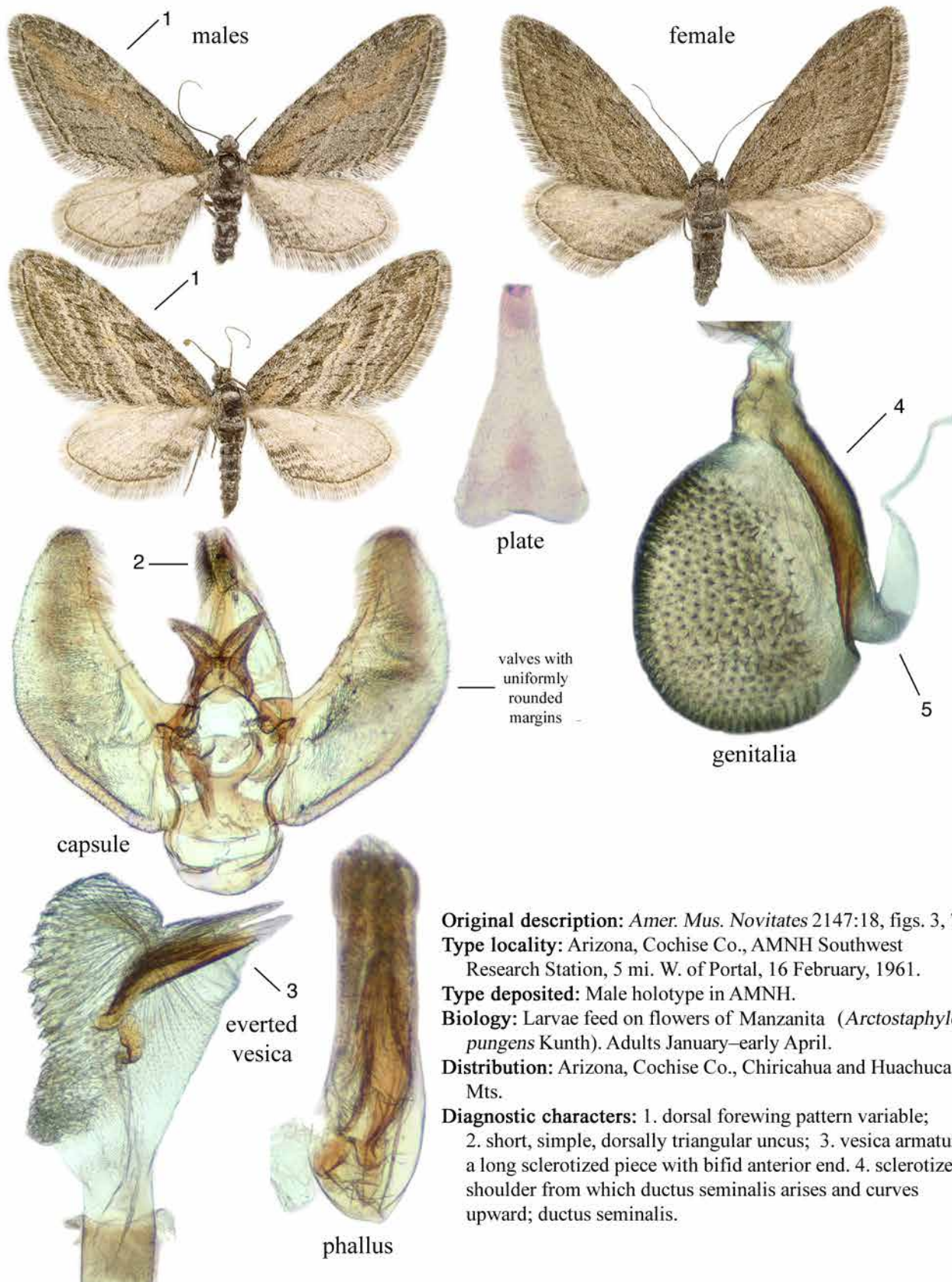
**Type deposited:** Female holotype in AMNH.

**Biology:** Larvae feed in flowers of Manzanita (*Arctostaphylos pungens* Kunth) in southeastern Arizona. Adults December–April.

**Distribution:** Southern California to Cochise Co., Arizona.

**Diagnostic characters:** 1. wings rather delicate with dorsal forewing weak cell spot surrounded by a small orangish patch; 2. vesica with very weakly chitinized roughly Y-shaped piece; pointers indicate other features.

**Reference:** McDunnough, J. H., 1949: p. 665; p. 724 fig. 16B; pl. 31, fig. 12.

*Eupithecia hohokamae* Rindge, 1963

**Original description:** *Amer. Mus. Novitates* 2147:18, figs. 3, 7.

**Type locality:** Arizona, Cochise Co., AMNH Southwest Research Station, 5 mi. W. of Portal, 16 February, 1961.

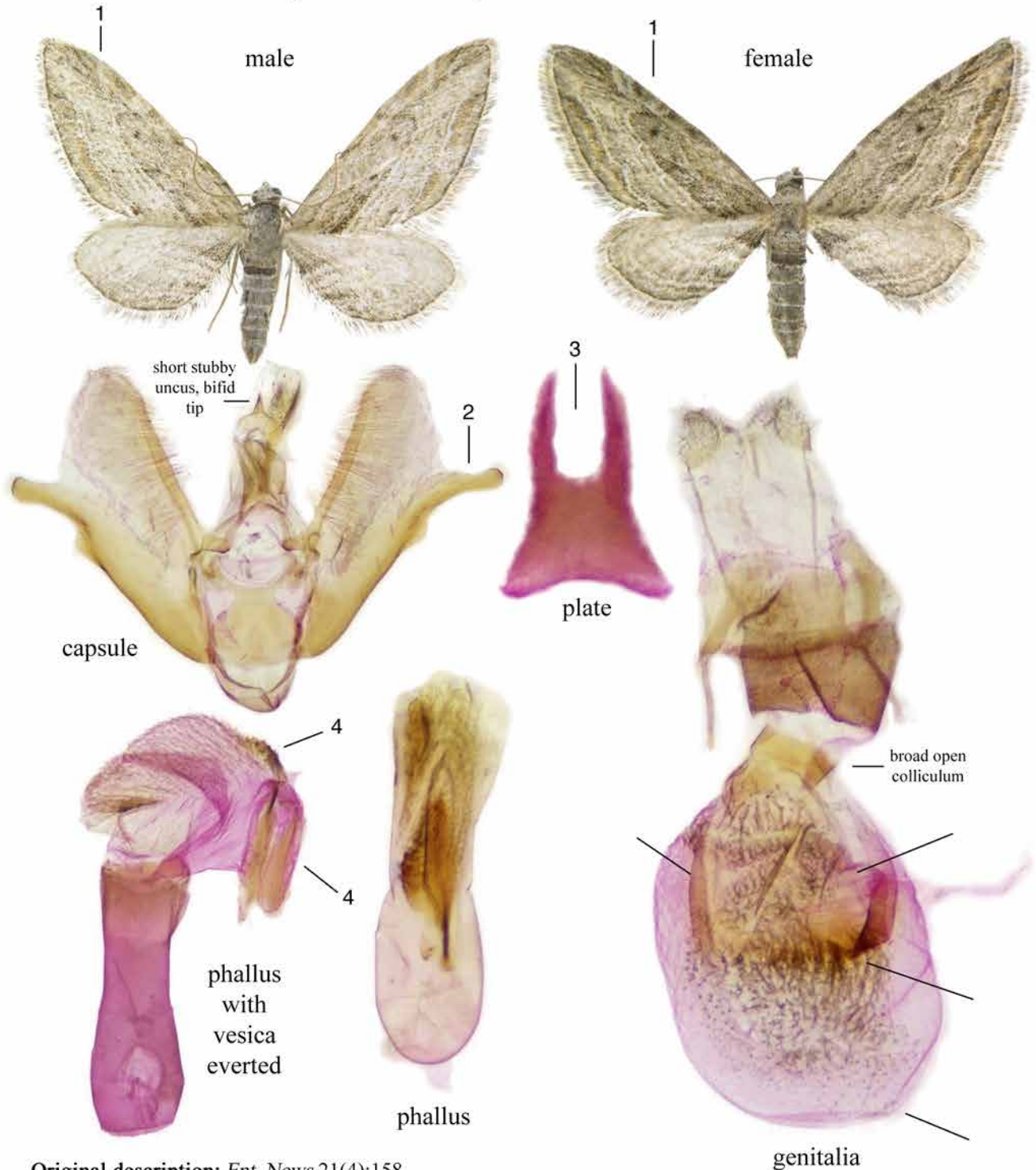
**Type deposited:** Male holotype in AMNH.

**Biology:** Larvae feed on flowers of Manzanita (*Arctostaphylos pungens* Kunth). Adults January–early April.

**Distribution:** Arizona, Cochise Co., Chiricahua and Huachuca Mts.

**Diagnostic characters:** 1. dorsal forewing pattern variable; 2. short, simple, dorsally triangular uncus; 3. vesica armature a long sclerotized piece with bifid anterior end. 4. sclerotized shoulder from which ductus seminalis arises and curves upward; ductus seminalis.



*Eupithecia adequata* Pearsall, 1910

**Original description:** *Ent. News* 21(4):158.

**Type locality:** Utah, [Juab Co.], Eureka.

**Type deposited:** Male lectotype in AMNH.

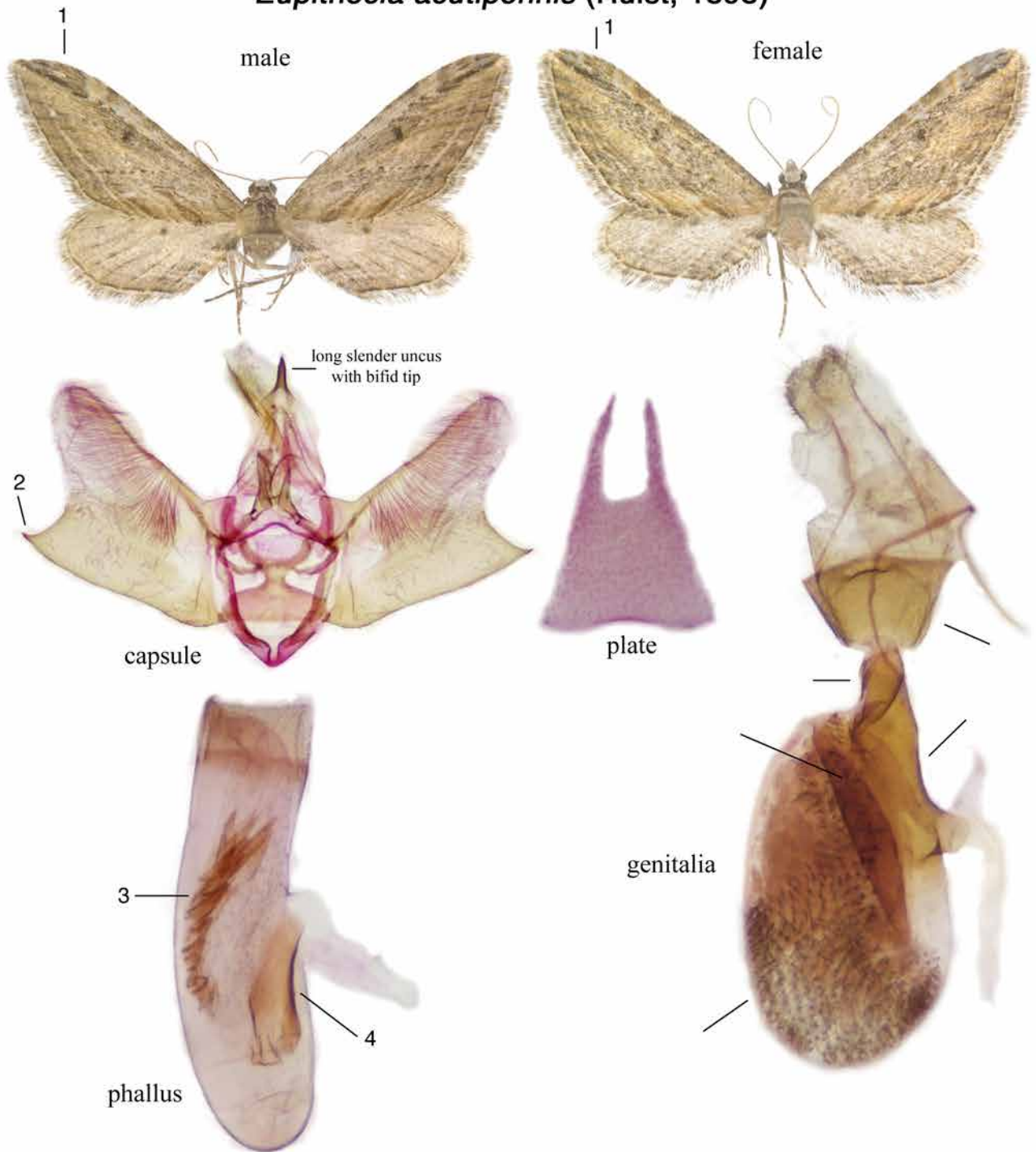
**Biology:** Unknown. Adults April–May.

**Distribution:** Colorado, Mesa Co., west through Utah and Nevada to California.

**Diagnostic characters:** 1. wings pale with paler post-median band; 2. prominent protuberance from valve costa; 3. stubby plate with wide bifurcation; 4. vesica armed with 2 moderately long slender plates and a spiculate band; other characters as denoted by pointers.

**Reference:** McDunnough, J. H., 1949: p. 666; p. 724 fig. 16C; pl. 31 fig. 14.



*Eupithecia acutipennis* (Hulst, 1898)

**Original description:** *Can. Ent.* 30(5):115.

**Type locality:** California, Los Angeles Co.

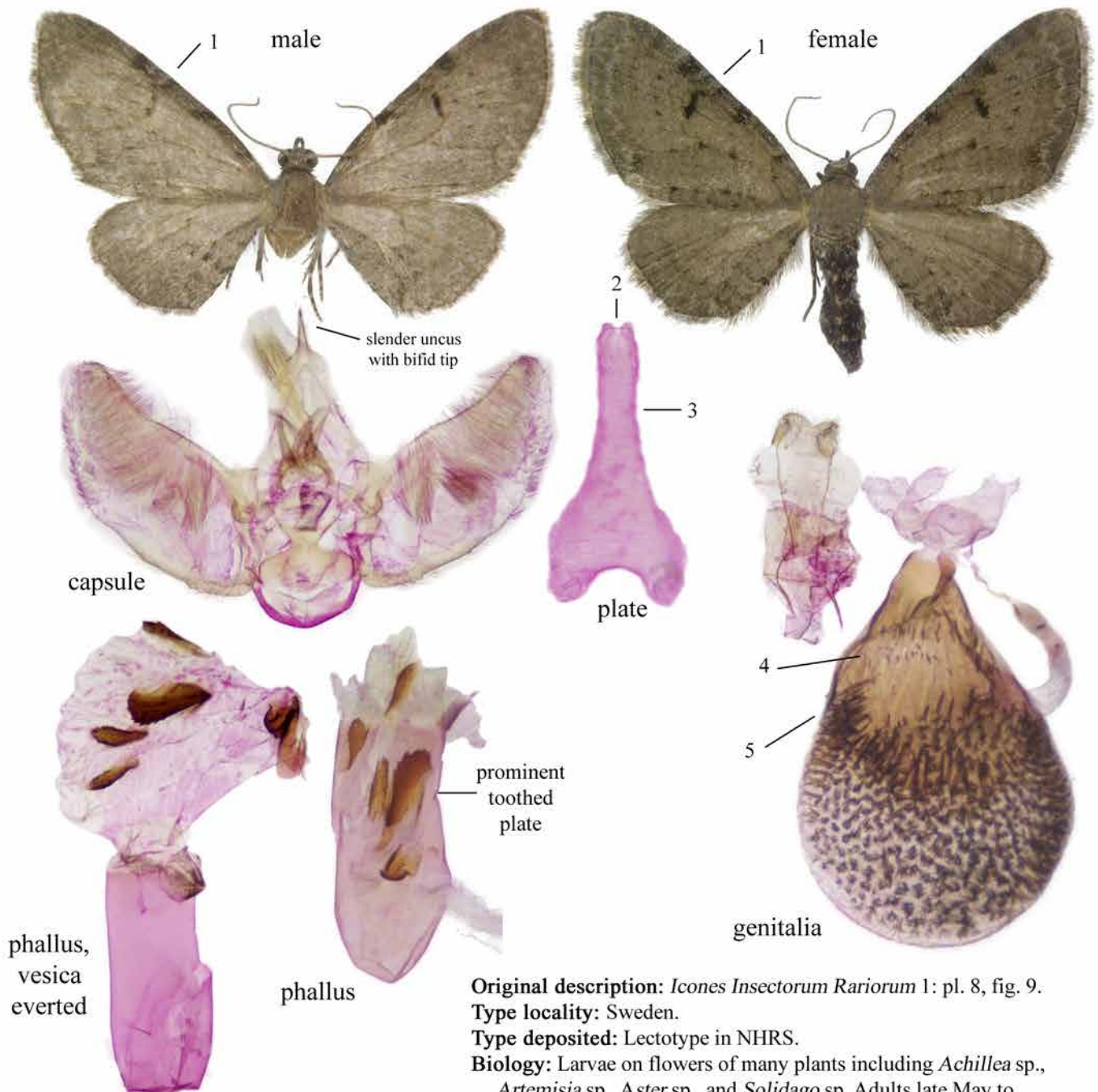
**Type deposited:** Holotype male in NMNH.

**Biology:** Unknown, Adults December–January.

**Distribution:** California, Los Angeles Co.

**Diagnostic characters:** 1. wings light smoky ochreous colored, wide post-median band, black apical dash; 2. sharply pointed projection from valve; 3. spinose band; 4. curved plate; additional characters indicated by pointers.

**Reference:** McDunnough, J. H., 1949: p. 666; p. 724 fig. 16D; pl. 31 fig. 14.

*Eupithecia absinthiata* (Clerck, 1759)

**Original description:** *Icones Insectorum Rariorum* 1: pl. 8, fig. 9.

**Type locality:** Sweden.

**Type deposited:** Lectotype in NHRS.

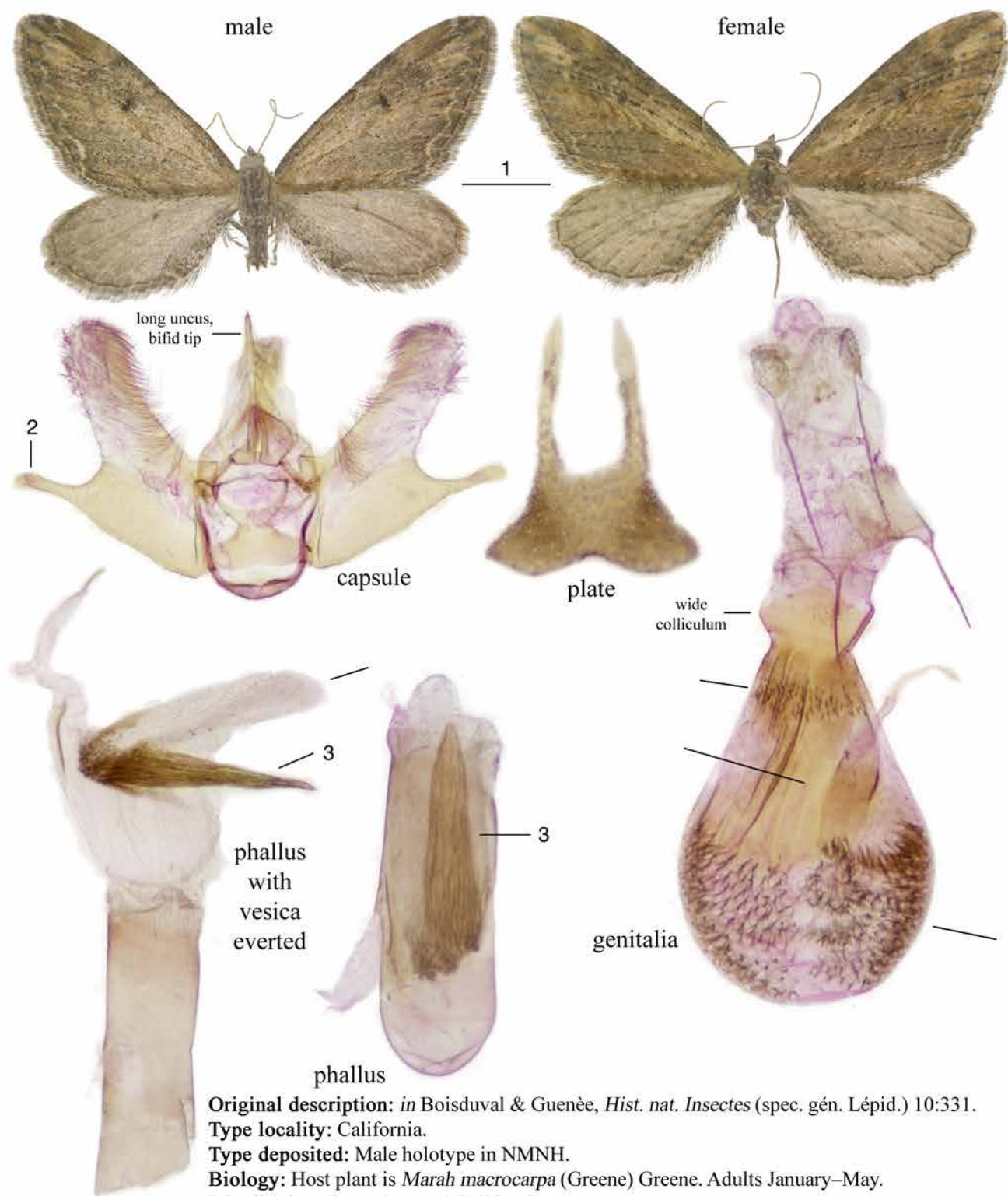
**Biology:** Larvae on flowers of many plants including *Achillea* sp., *Artemisia* sp., *Aster* sp., and *Solidago* sp. Adults late May to late August.

**Distribution:** Newfoundland to British Columbia; north to Rampart House, Yukon Terr. and Fort Rupert, Quebec; south to Pennsylvania, Wyoming, Colorado, southwestern New Mexico and Marin Co., California.

**Diagnostic characters:** 1. prominent black cell spot; 2. tip of plate bifurcated; 3. plate with narrow neck and expanding at base. 4. row of small spines; 5. curved row of large spines.

**Reference:** Bolte, K. B., 1990: p. 75; p. 237; figs. 155–156.



*Eupithecia subapicata* Guenée, [1858]

**Original description:** in Boisduval & Guenée, *Hist. nat. Insectes* (spec. gén. Lépid.) 10:331.

**Type locality:** California.

**Type deposited:** Male holotype in NMNH.

**Biology:** Host plant is *Marah macrocarpa* (Greene) Greene. Adults January–May.

**Distribution:** Central coastal California.

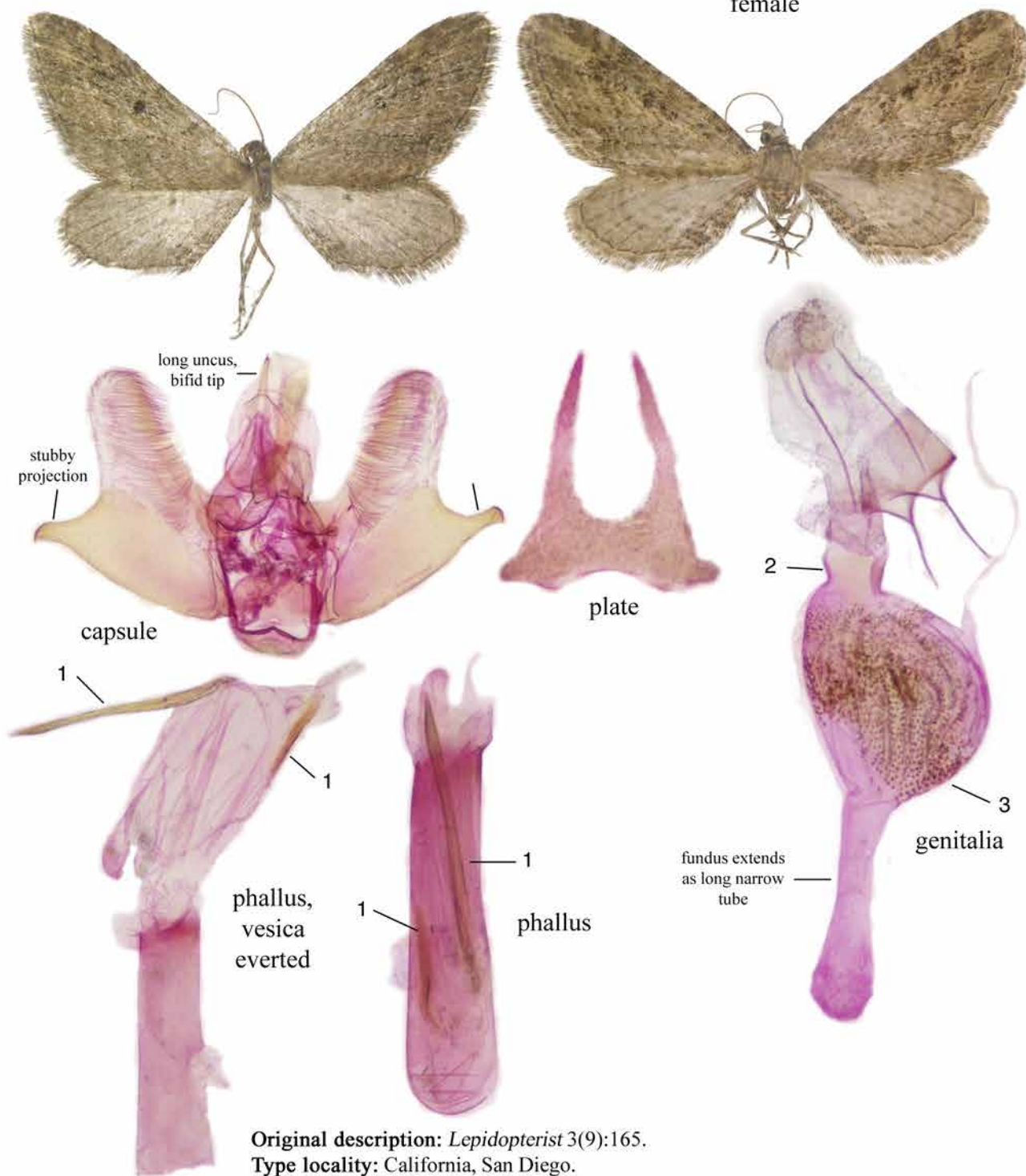
**Diagnostic characters:** 1. wings dark with forewing subapical orange-ochreous patch; 2. prominent narrow projection from valve costa; 3. vesica armed with long, broad and pointed rod; additional characters indicated by pointers.

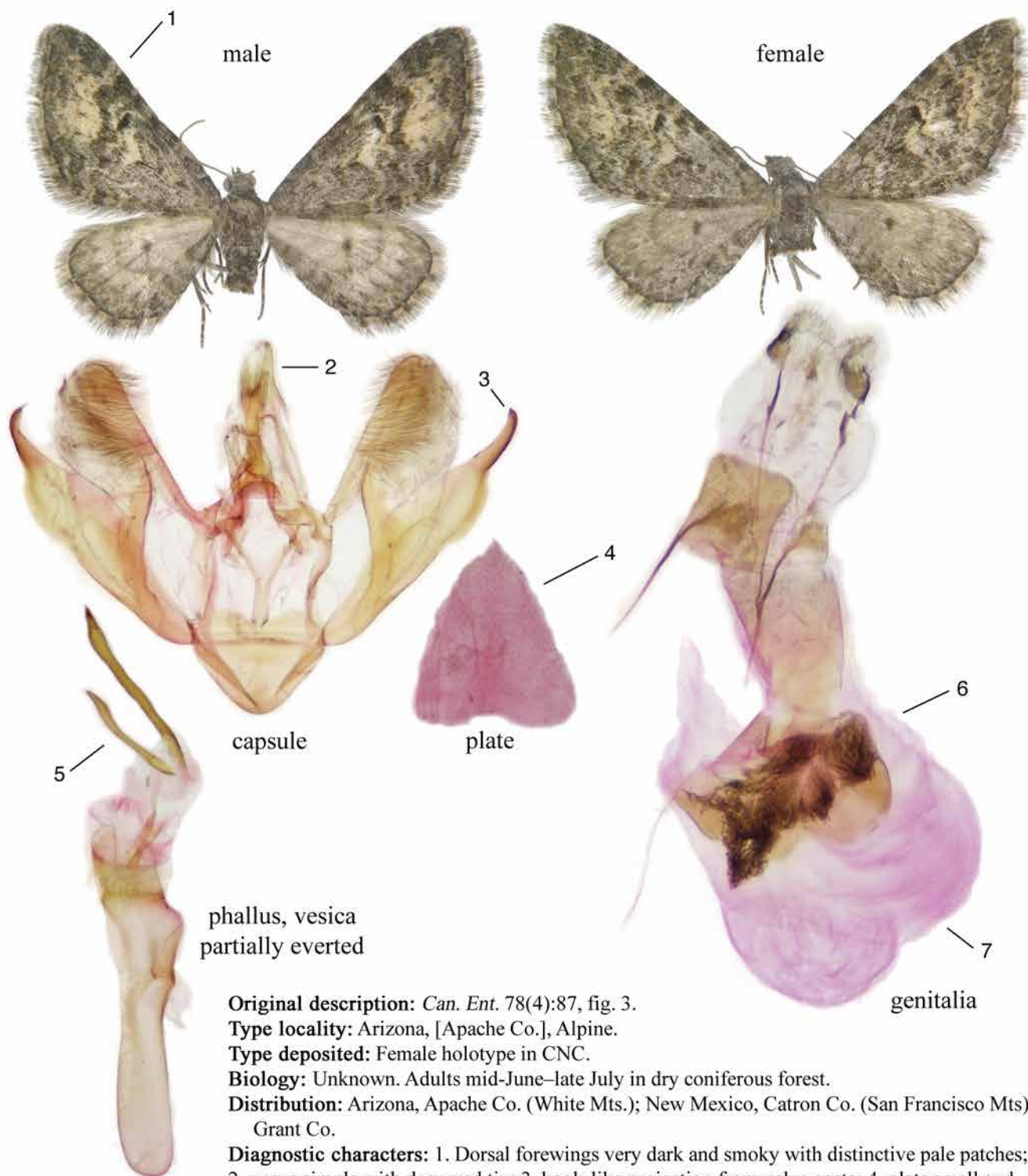
**Reference:** McDunnough, J. H., 1949: p. 667; p. 742 fig. 16E; pl. 31 fig. 15.



*Eupithecia shirleyata* Cassino & Swett, 1922

female

**Original description:** *Lepidopterist* 3(9):165.**Type locality:** California, San Diego.**Type deposited:** Holotype male in MCZ.**Biology:** Larval host is *Marah macrocarpa* (Greene) Greene. Adults in March.**Distribution:** California, Los Angeles and San Diego cos.; Santa Catalina Island.**Diagnostic characters:** Adults very similar to *E. subapicata*, but easily separated by the genitalia. 1. vesica armed with one long thin spine and one shorter thin spine; 2. broad open colliculum; 3. numerous narrow ridges with very short spines.**Reference:** McDunnough, J. H., 1949: p. 668; p. 724 fig. 16F; pl. 31 fig. 16.

*Eupithecia sinuata* McDunnough, 1946

**Original description:** *Can. Ent.* 78(4):87, fig. 3.

**Type locality:** Arizona, [Apache Co.], Alpine.

**Type deposited:** Female holotype in CNC.

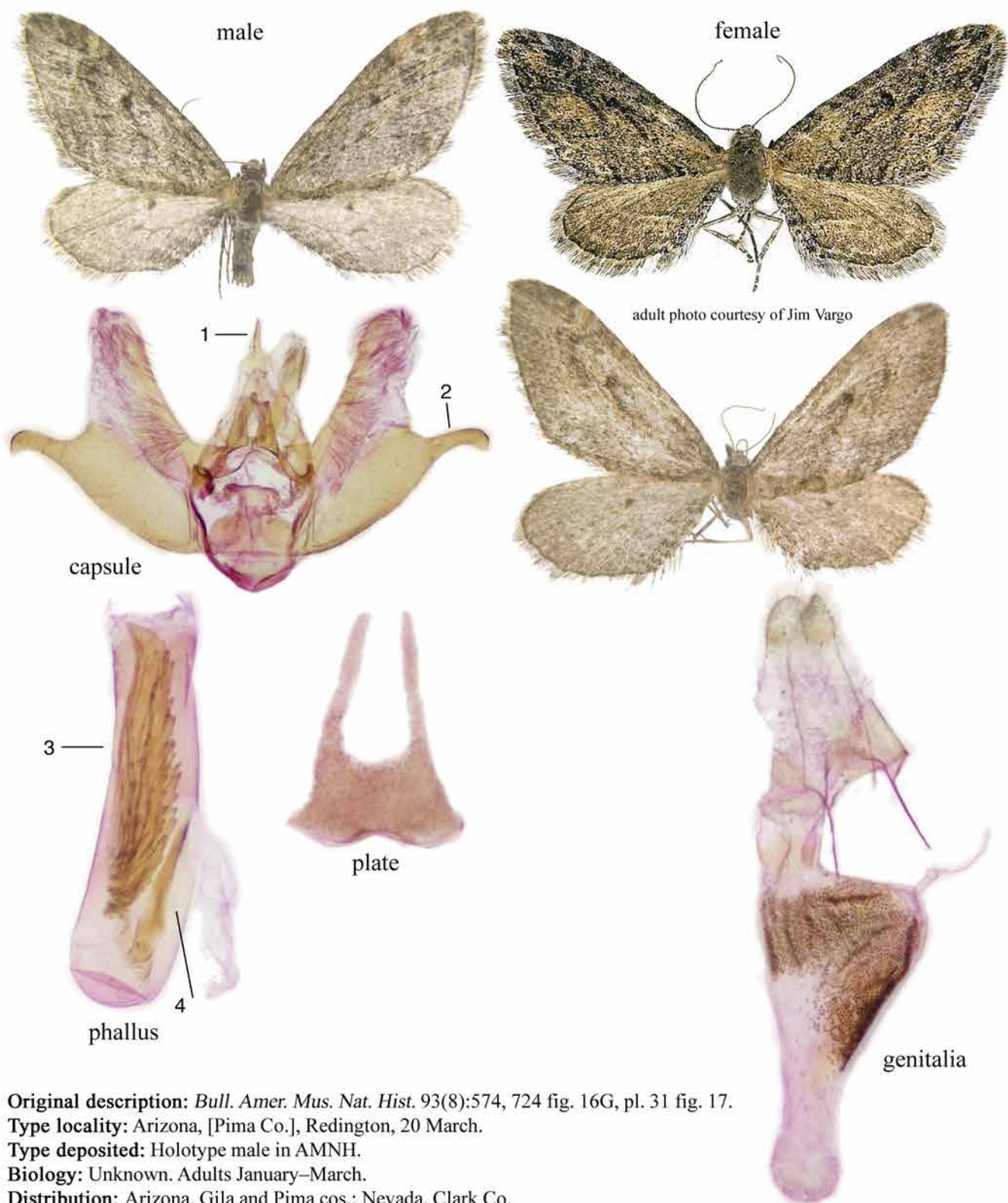
**Biology:** Unknown. Adults mid-June–late July in dry coniferous forest.

**Distribution:** Arizona, Apache Co. (White Mts.); New Mexico, Catron Co. (San Francisco Mts), Grant Co.

**Diagnostic characters:** 1. Dorsal forewings very dark and smoky with distinctive pale patches; 2. uncus simple with decurved tip; 3. hook-like projection from valve costa; 4. plate small and triangular; 5. vesica armed with two slender spines of unequal lengths; 6. spinose patches with spines oriented in different directions; 7. corpus bursae with peculiar bulbous shape.

**Reference:** McDunnough, J. H., 1949: p. 591; p. 714 fig. 6G (female bursa only); pl. 28 fig. 6. **Note:** McDunnough illustrated just the female bursa in the original description, and again in his 1949 monograph along with a poor quality photograph of an adult female; the male was unknown to him.



*Eupithecia redingtonia* McDunnough, 1949

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):574, 724 fig. 16G, pl. 31 fig. 17.

**Type locality:** Arizona, [Pima Co.], Redington, 20 March.

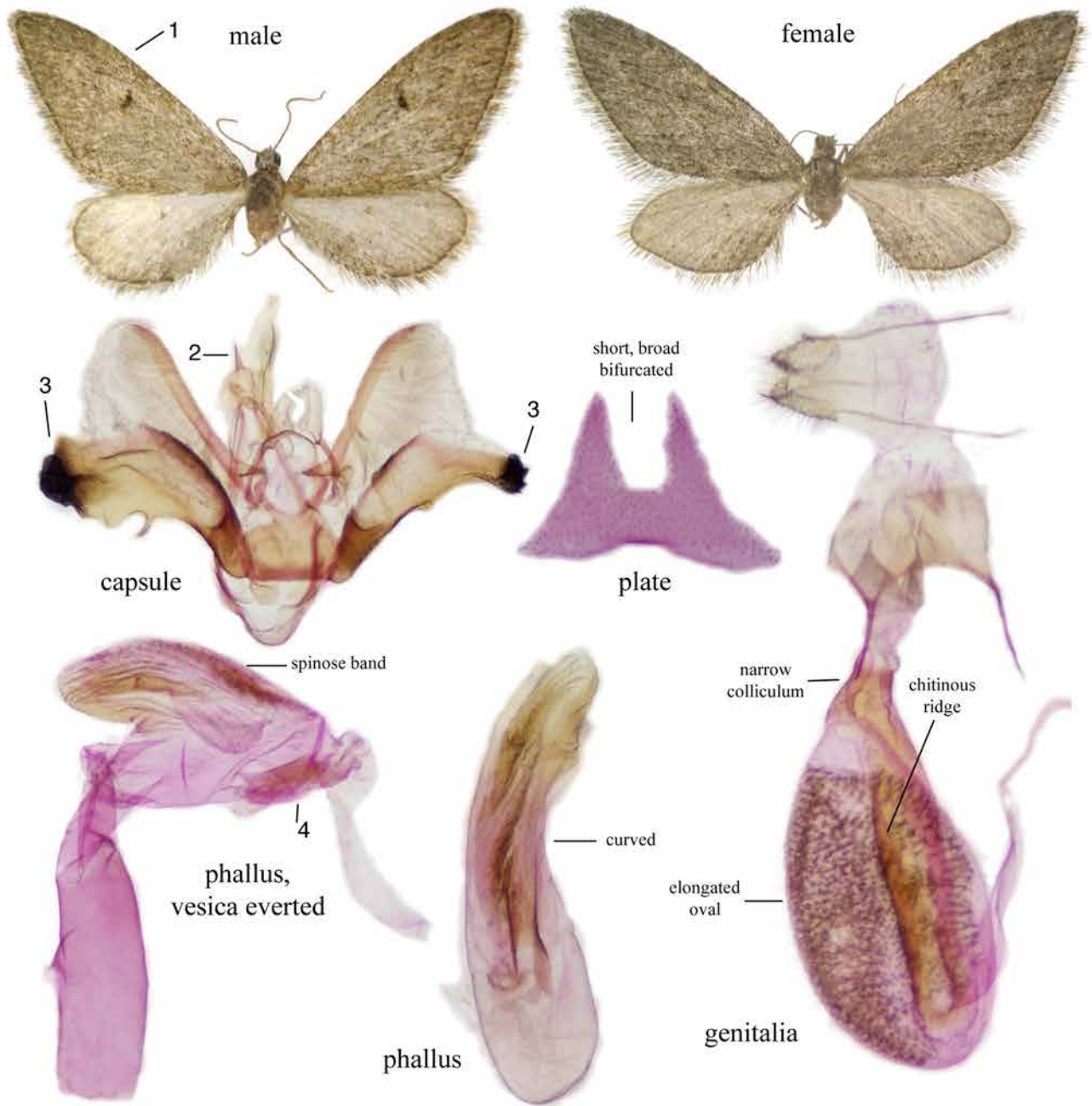
**Type deposited:** Holotype male in AMNH.

**Biology:** Unknown. Adults January–March.

**Distribution:** Arizona, Gila and Pima cos.; Nevada, Clark Co.

**Diagnostic characters:** 1. uncus long and bifid; 2. projection decurved; 3. broad, toothed chitinous rod; 4. slender semicylindrical cornutus.



*Eupithecia gilata* Cassino, 1925

**Original description:** *Lepidopterist* 4(6-7):50.

**Type locality:** Arizona, Gila-Pinal Co. line near Miami.

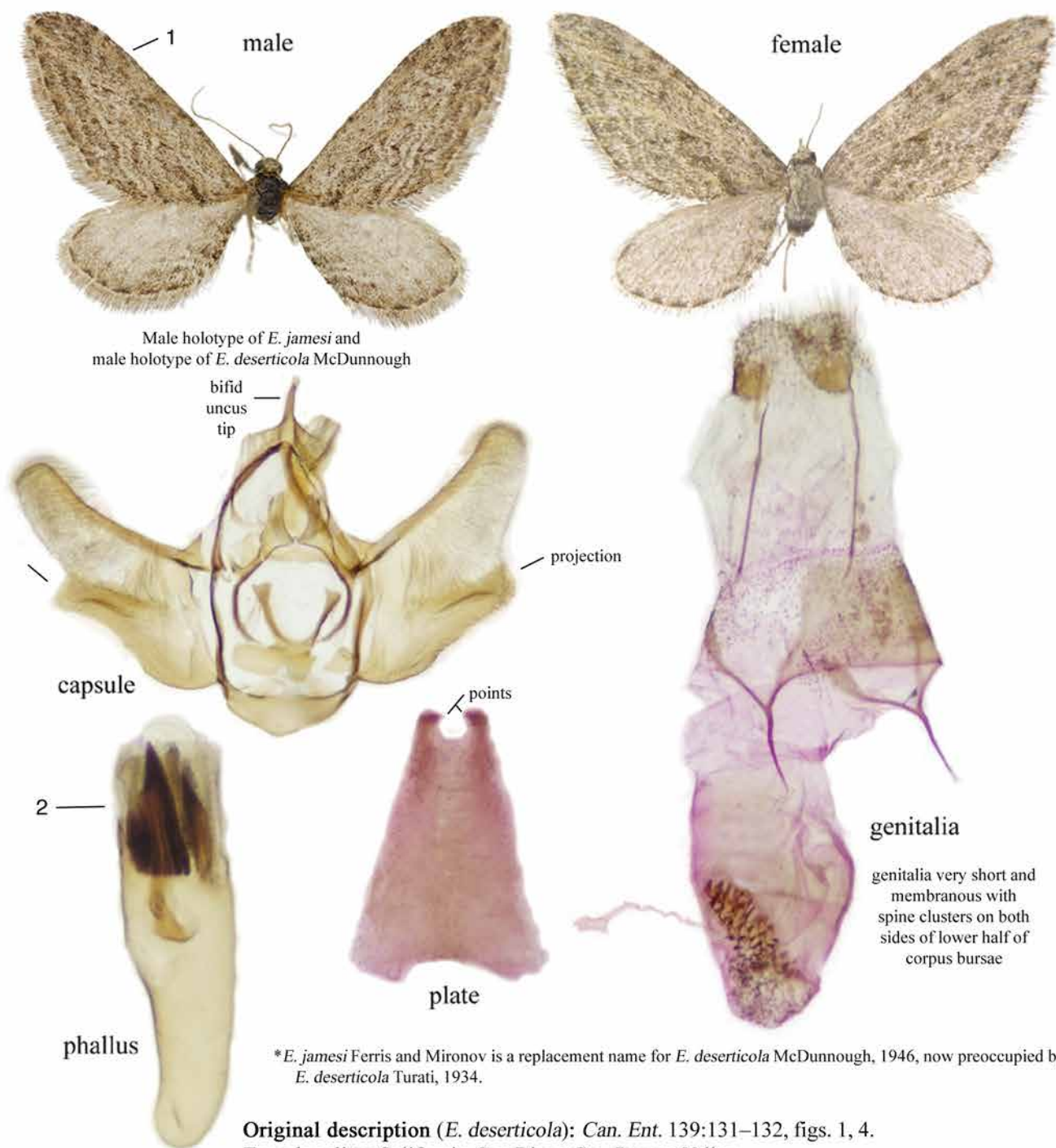
**Type deposited:** Male holotype in MCZ.

**Biology:** Unknown. Adults February-May.

**Distribution:** Arizona, Coconino, Gila-Pinal and Mohave cos.; California, Los Angeles, Napa and Solano cos.

**Diagnostic characters:** 1. forewing uniformly dark gray-brown with acute apex; 2. uncus with bulbous base and sharply pointed bifid apex; 3. valves asymmetric and ends of costal projections thickly covered with black scales, left valve shape variable; 4. small chitinous terminally bifid plate.

**Reference:** McDunnough, J. H., 1949: p. 669; p. 725 fig. 17A; pl. 31 figs. 1-2.

*Eupithecia jamesi* Ferris & Mironov, 2007\*

**Original description** (*E. deserticola*): *Can. Ent.* 139:131–132, figs. 1, 4.

**Type locality:** California, San Diego Co., Borega Valley.

**Type deposited:** Male holotype in CNC.

**Biology:** Unknown. Adults January–April, depending on locality.

**Distribution:** Southern California, San Bernardino Co. to San Diego Co.

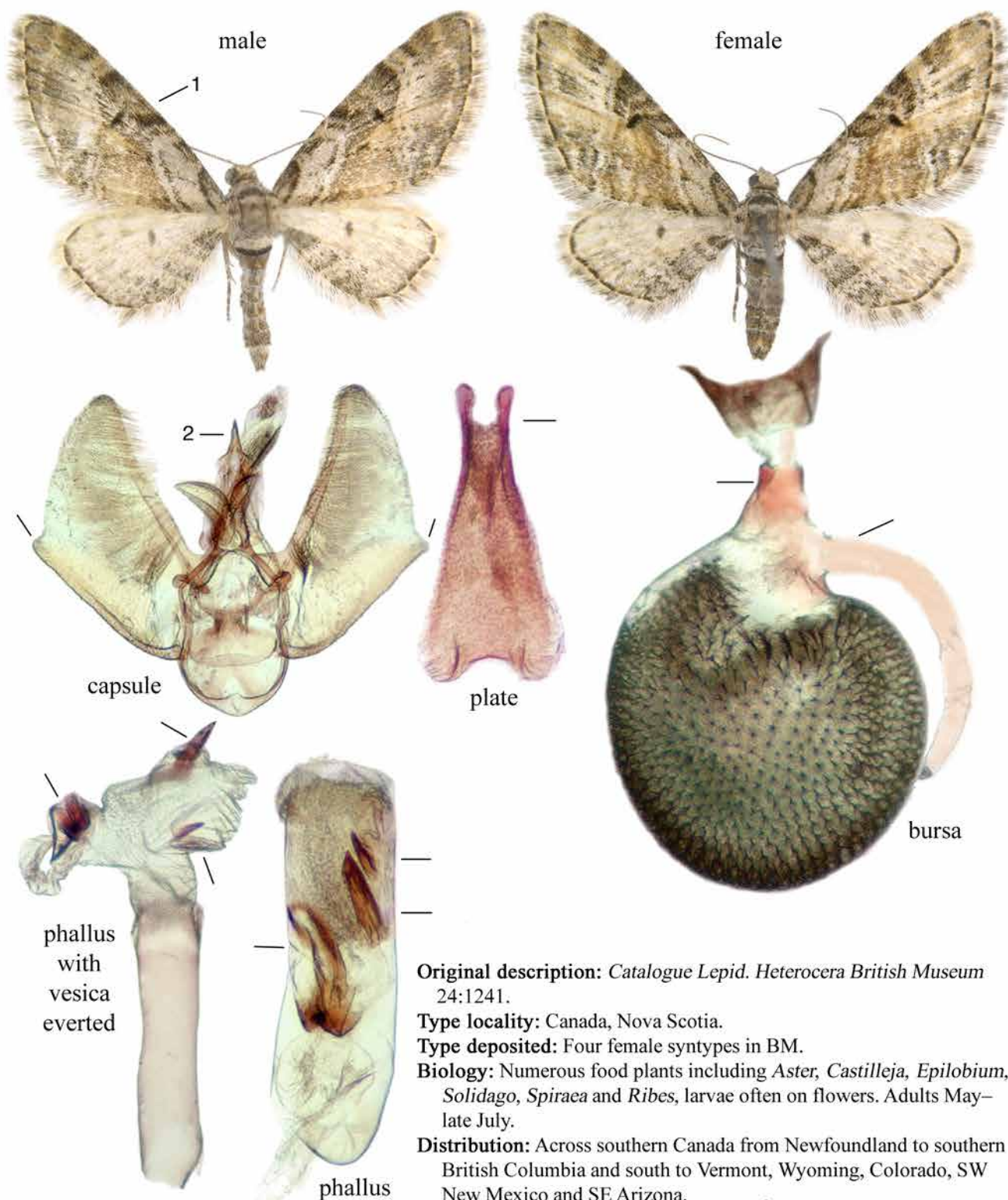
**Diagnostic characters:** 1. dorsal forewing rather dark with multiple thin parallel dark lines, cell spot absent;  
2. vesica armed with 2 large and pointed chitinous spines and several smaller cornuti.

**References:**

Ferris, C. D. & Mironov, V. G., 2007. *Can. Ent.* 139:131–132.

McDunnough, J. H., 1949: p. 671; p. 725 fig. 17C; pl. 31, fig. 22.



*Eupithecia anticaria* Walker, 1862

**Original description:** *Catalogue Lepid. Heterocera British Museum* 24:1241.

**Type locality:** Canada, Nova Scotia.

**Type deposited:** Four female syntypes in BM.

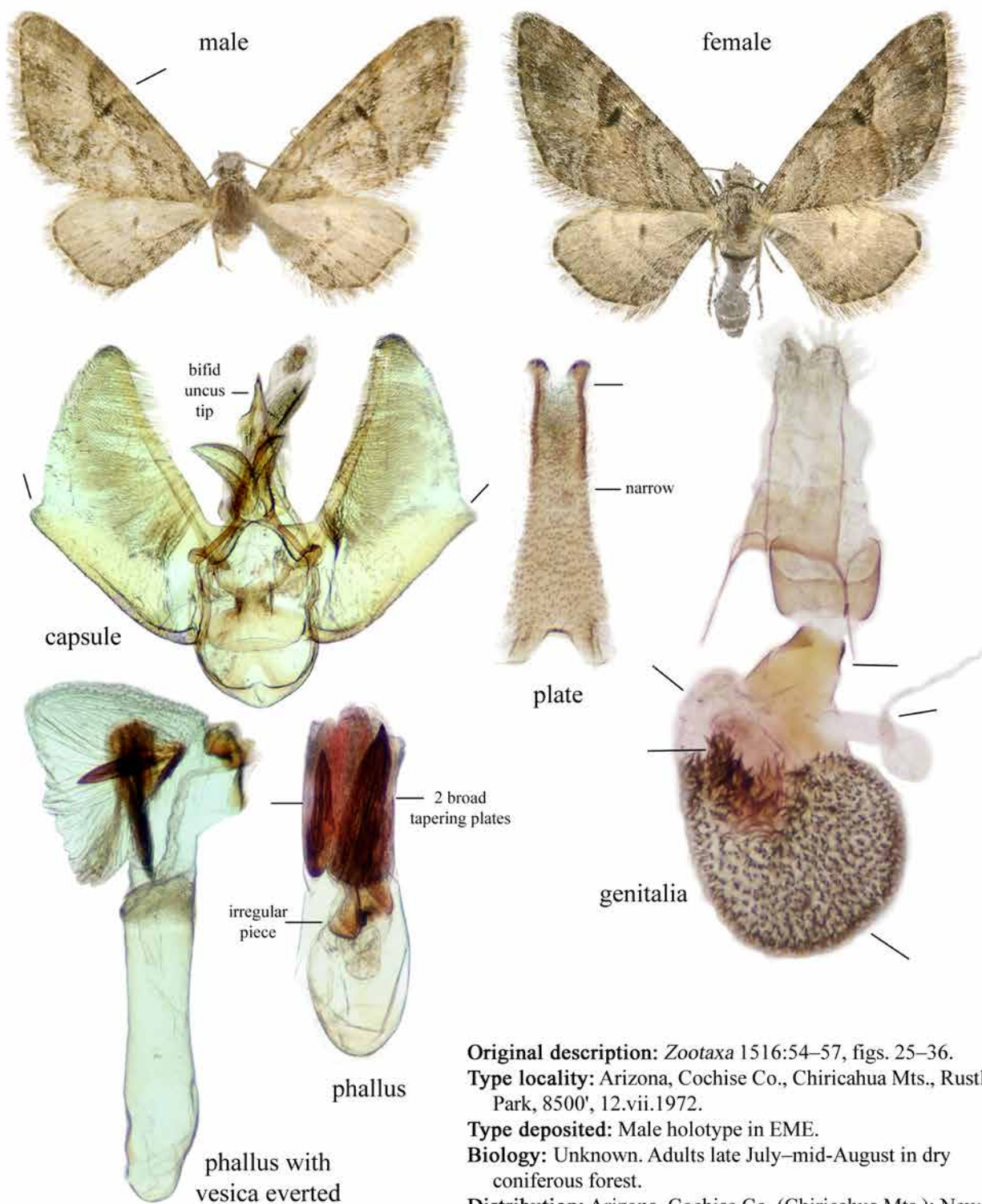
**Biology:** Numerous food plants including *Aster*, *Castilleja*, *Epilobium*, *Solidago*, *Spiraea* and *Ribes*, larvae often on flowers. Adults May–late July.

**Distribution:** Across southern Canada from Newfoundland to southern British Columbia and south to Vermont, Wyoming, Colorado, SW New Mexico and SE Arizona.

**Diagnostic characters:** 1. easily recognized by well marked pale dorsal forewings with distinctive orange flush; 2. uncus dorso-ventrally broad and bifid with lower terminal projection blunted; pointers indicate additional characters.

**References:** McDunnough, J. H., 1949: p. 672; p. 725 fig. 17D; pl. 31 figs. 23–24. Bolte, K. B., 1990: p. 53; p. 239; figs. 123–124. Ferris, C. D., 2007: p. 52; figs. 14–24.



*Eupithecia nonanticaria* Ferris, 2007

**Original description:** *Zootaxa* 1516:54–57, figs. 25–36.

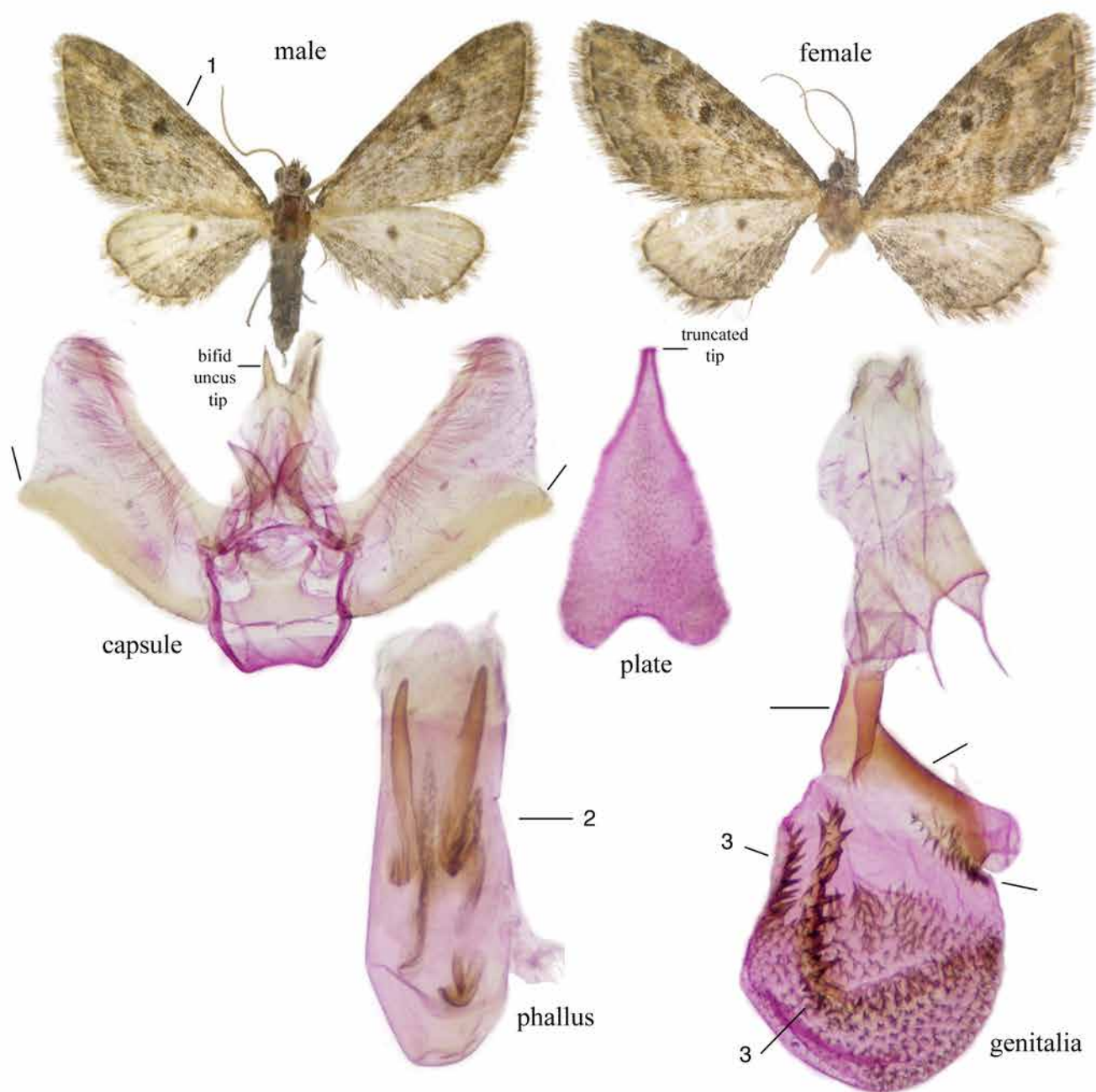
**Type locality:** Arizona, Cochise Co., Chiricahua Mts., Rustler Park, 8500', 12.vii.1972.

**Type deposited:** Male holotype in EME.

**Biology:** Unknown. Adults late July–mid-August in dry coniferous forest.

**Distribution:** Arizona, Cochise Co. (Chiricahua Mts.); New Mexico, Grant Co. (Pinos Altos Mts. and Black Range); Mexico, Chihuahua.

**Diagnostic characters:** 1. dorsal forewings dusky with muted maculation compared to *E. anticaria*, ruddy suffusion overlay faint; other characters as indicated by pointers.

*Eupithecia pertusata* McDunnough, 1938

**Original description:** *Can. Ent.* 70(11):236, pl. 20 figs. 1a–d.

**Type locality:** Texas, [Jeff Davis Co.], Davis Mts.

**Type deposited:** Holotype male and allotype female in CNC.

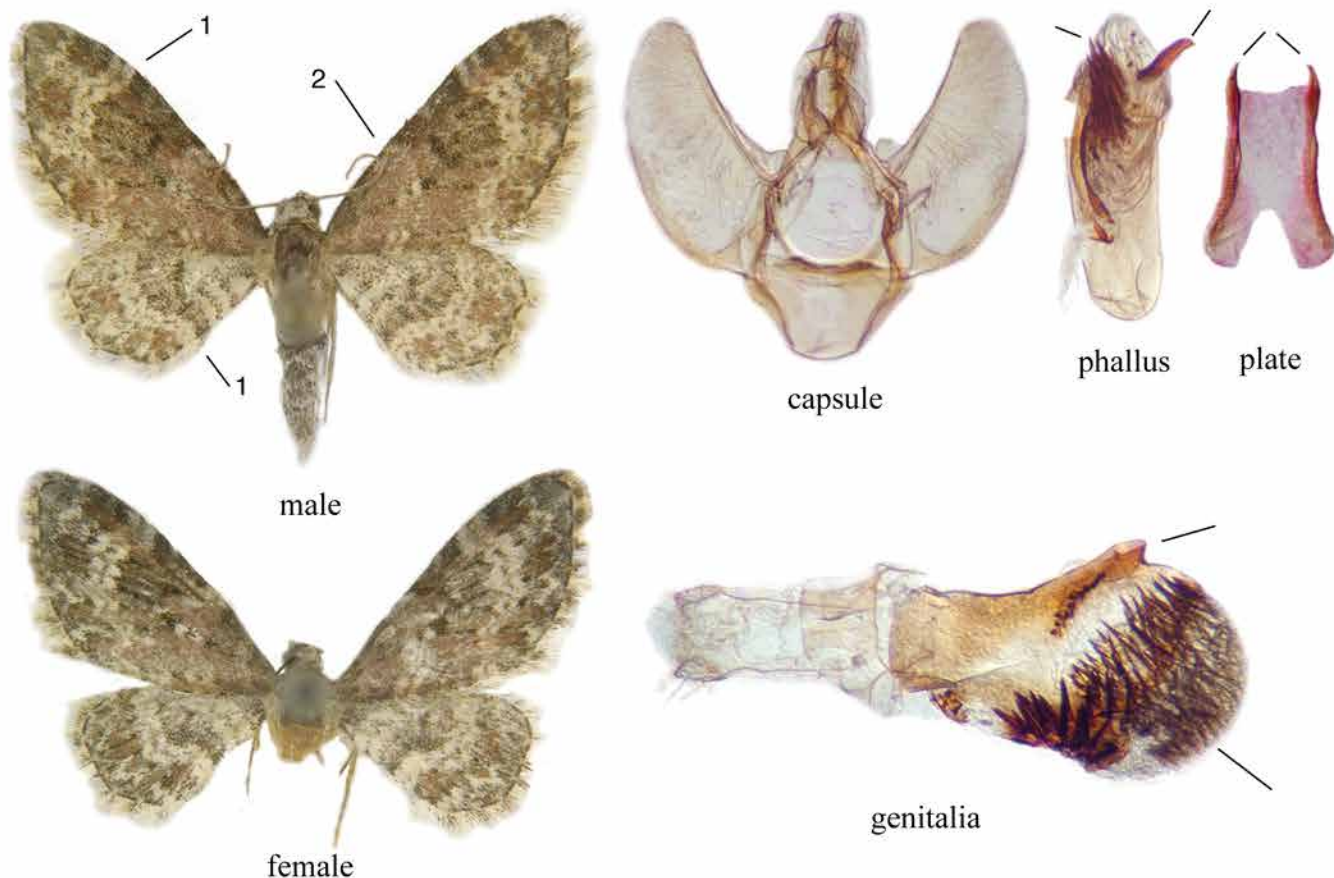
**Biology:** Unknown. Adults April–July, September–October, depending on locality.

**Distribution:** New Mexico, Lincoln Co.; Texas, Brewster and Jeff Davis cos.; Mexico, Sonora.

**Diagnostic characters:** 1. prominent black cell spot; 2. vesica armed with 2 long apically pointed rods, a slender finely spiculate strip, and irregular fragment; 3. two heavily chitinized spined bars; pointers indicate additional features.

**Reference:** McDunnough, J. H., 1949: p. 673, p. 725 fig. 17E, pl. 31, fig. 25.



*Eupithecia tricolorata* Cassino, 1927

**Original description:** *Lepidopterist* 4(11):85.

**Type locality:** Arizona.

**Type deposited:** Female holotype in MCZ.

**Biology:** Unknown. Adults late August–early September. Known only from the single type specimen until rediscovered by Ferris in Grant Co., New Mexico in 2014.

**Current distribution:** Arizona, Cochise Co. (Chiricahua Mts., Cave Creek Cyn.; Huachuca Mts., Carr Cyn.; Mule Mts., NW of Bisbee); New Mexico, Grant Co. (Pinos Altos Mts. and Black Range); Harding Co., Mills Canyon.

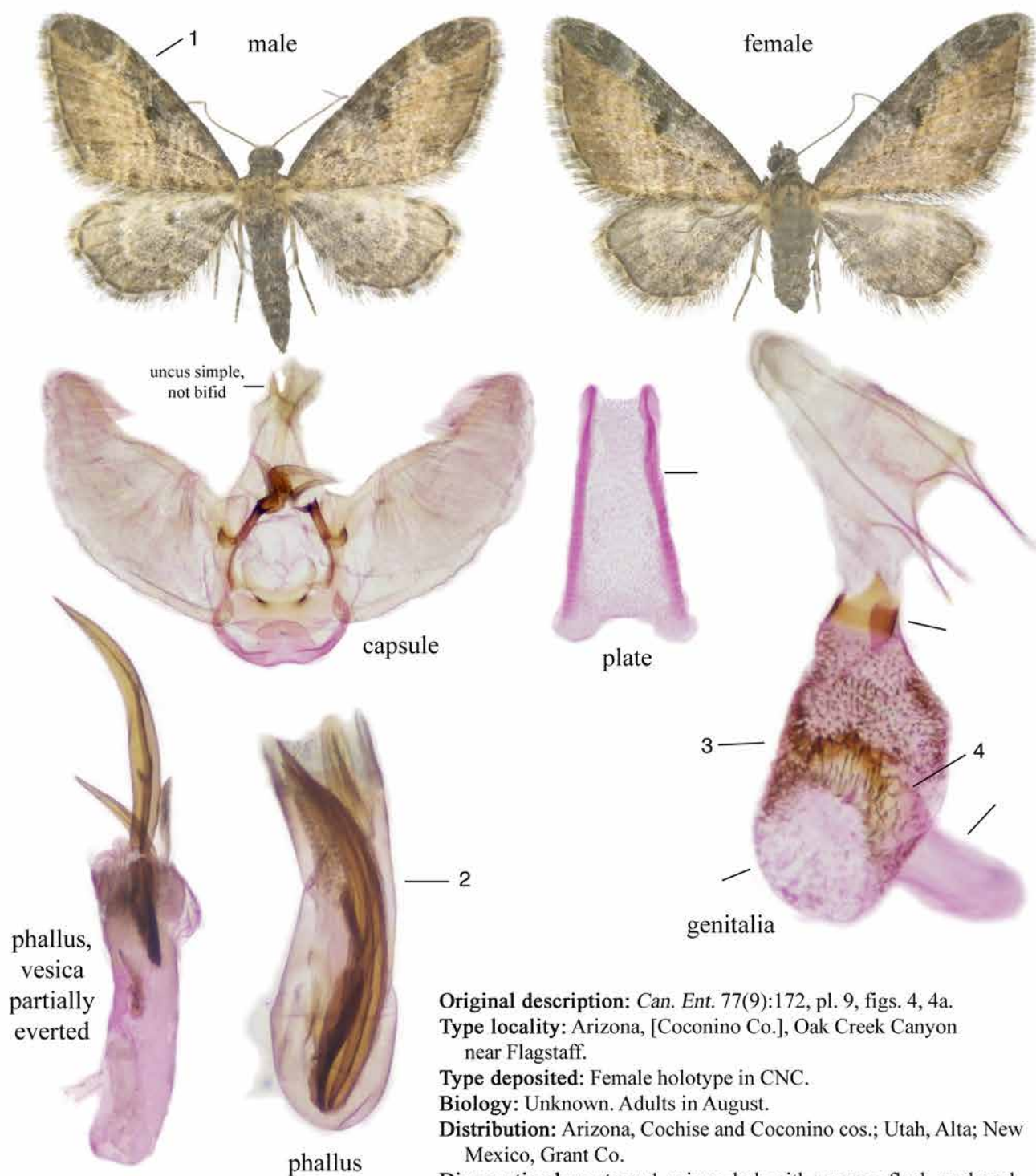
**Diagnostic characters:** 1. prominent whitish band with central dark spots; 2. rosy flush in fresh examples; pointers indicate additional characters.

**References:**

Ferris, C. D., 2015. *News Lepid. Soc.* 57(1):15.

McDunnough, J. H., 1949: p. 674; p. 725 fig. 17F; adult not illustrated.



*Eupithecia carneata* McDunnough, 1945

**Original description:** *Can. Ent.* 77(9):172, pl. 9, figs. 4, 4a.

**Type locality:** Arizona, [Coconino Co.], Oak Creek Canyon near Flagstaff.

**Type deposited:** Female holotype in CNC.

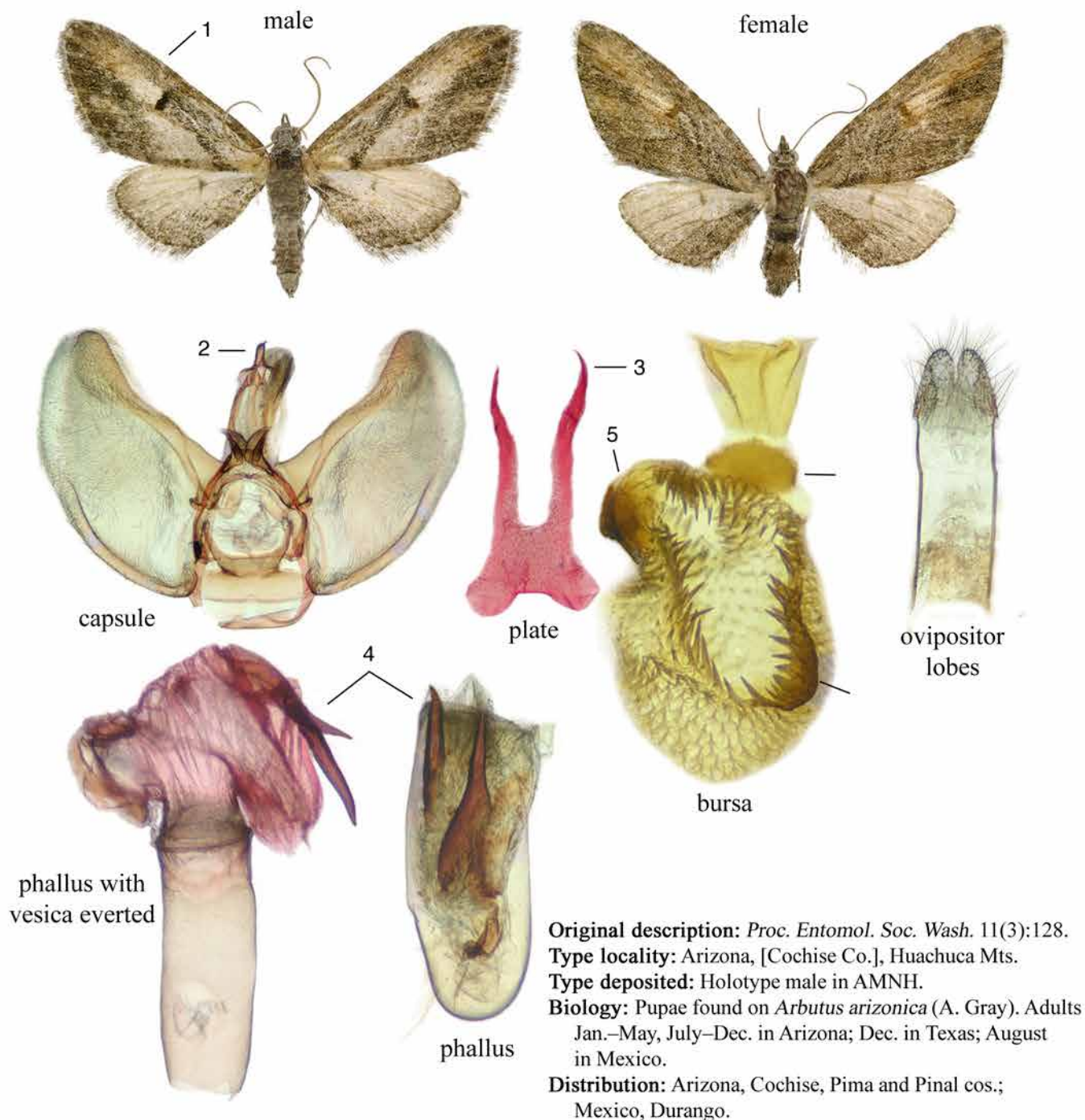
**Biology:** Unknown. Adults in August.

**Distribution:** Arizona, Cochise and Coconino cos.; Utah, Alta; New Mexico, Grant Co.

**Diagnostic characters:** 1. wings dark with coppery flush on dorsal forewing; 2. vesica armed with one long robust curved spine and a smaller slender curved spine; 3. corpus bursae with mid-region band of strongly chitinized spines; 4. slender ductus seminalis arises here (not visible in photo); pointers indicate other features.

**Reference:** McDunnough, J. H., 1949: p.674; p. 725 fig. 17G; l. 31, fig. 26.

***Eupithecia classicata* Pearsall, 1909**  
 Junior syn. *Eupithecia penumbrata* (Pearsall, 1912)



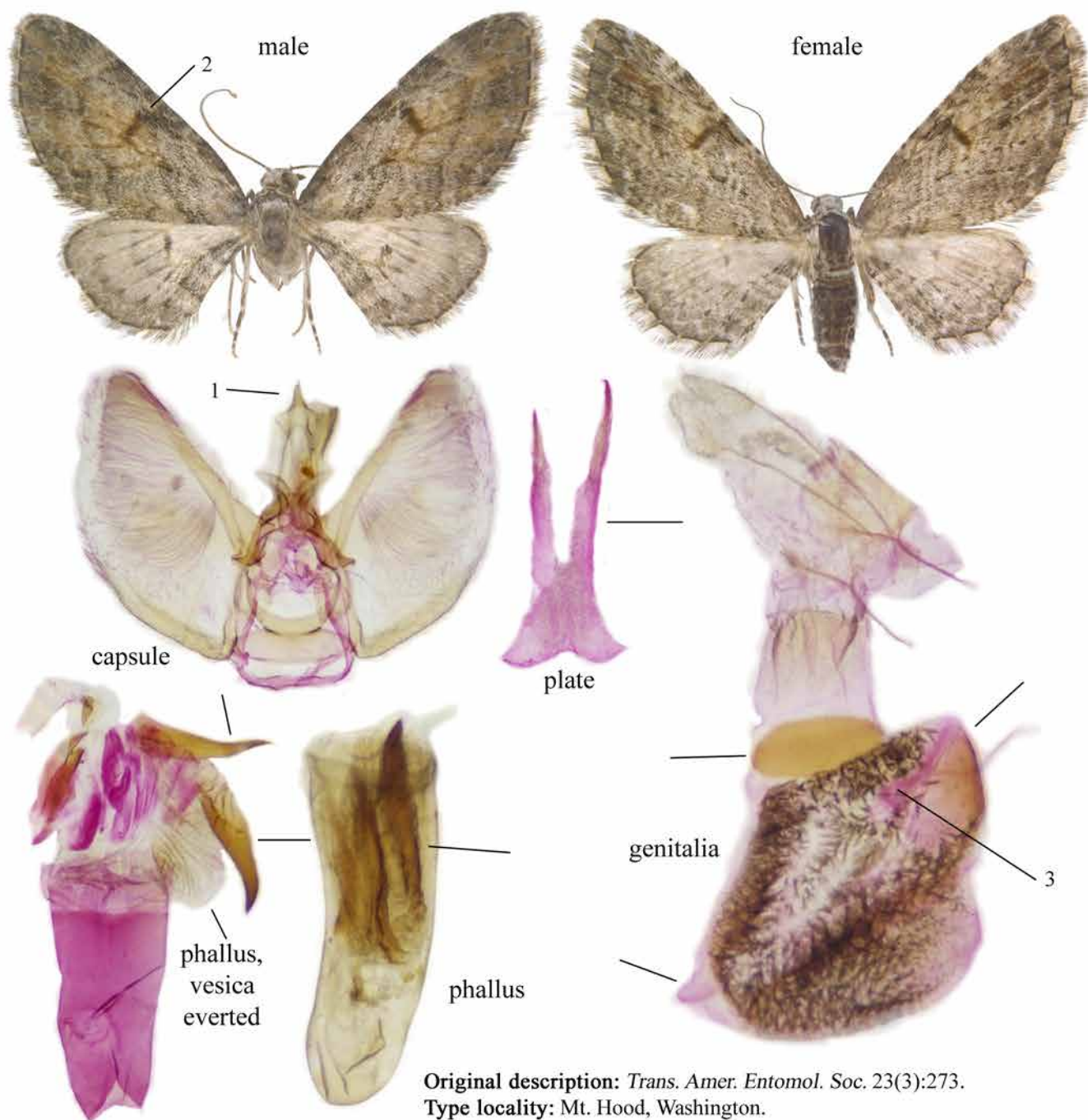
**Diagnostic characters:** 1. dorsal forewing dark with pale median patches and a dark transverse line extending from the cell spot to the inner margin (both features less visible in the darker females); 2. uncus dorso-ventrally broad terminating in a single point; 3. plate deeply incised with unequal curved-tipped rods; 4. vesica armed with 2 robust cornuti and an irregular basal sclerite; 5. barely visible ductus seminalis arises from the back side of this heavily chitinized shoulder; pointers indicate additional features.

**References:**

Ferris, C. D., 2004. *Zootaxa* 738:1–19.

McDunnough, J. H., 1949: pp. 674–676; figs. 18A–B; pl. 31 figs. 27–28. Females were unknown to McDunnough.



*Eupithecia graefii* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):273.

**Type locality:** Mt. Hood, Washington.

**Type deposited:** Male lectotype in NMNH.

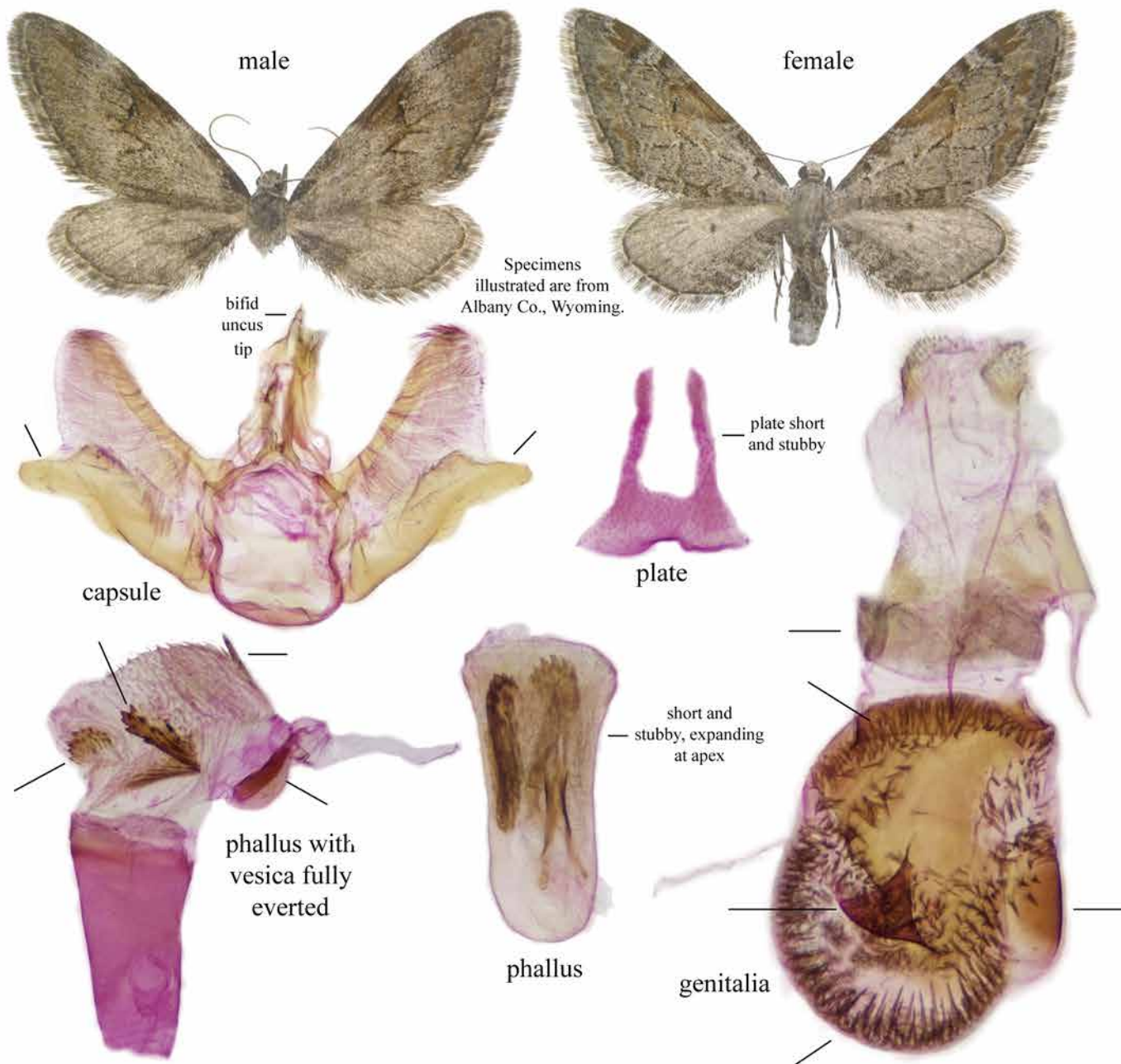
**Biology:** Usual host is *Arbutus menziesii* Pursh; also used *Thuja plicata* Donn. and *Arctostaphylos* sp. Adults mid-May to late August.

**Distribution:** Central British Columbia north to Alaska and south to California and eastward to Colorado and Wyoming.

**Diagnostic characters:** 1. uncus broad vertically with a single terminal hook; 2. cell spot with red-orange scales, even in worn specimens, which immediately identifies this species; 3. origin of ductus seminalis; other features as indicated.

**References:** Bolte, K. B, 1990: p. 48; p. 218; figs. 113–114. McDunnough, J. H., 1949: p. 677; p. 726 fig. 18C; pl. 31 figs. 29–32.



*Eupithecia nevadata nevadata* Packard, 1871

**Original description:** *Proc. Boston Soc. Nat. Hist.* 13:395.

**Type locality:** Gold Hill.

**Type deposited:** Female holotype in MCZ.

**Biology:** Reported larval hosts include: *Lotus scoparius* (Nutt.) Ottley; *Ceanothus* sp.; *Purshia* sp. Adults March–June, depending on locality.

**Distribution:** Southern British Columbia to southern California, eastward to Idaho and Wyoming and south to southern New Mexico and Arizona.

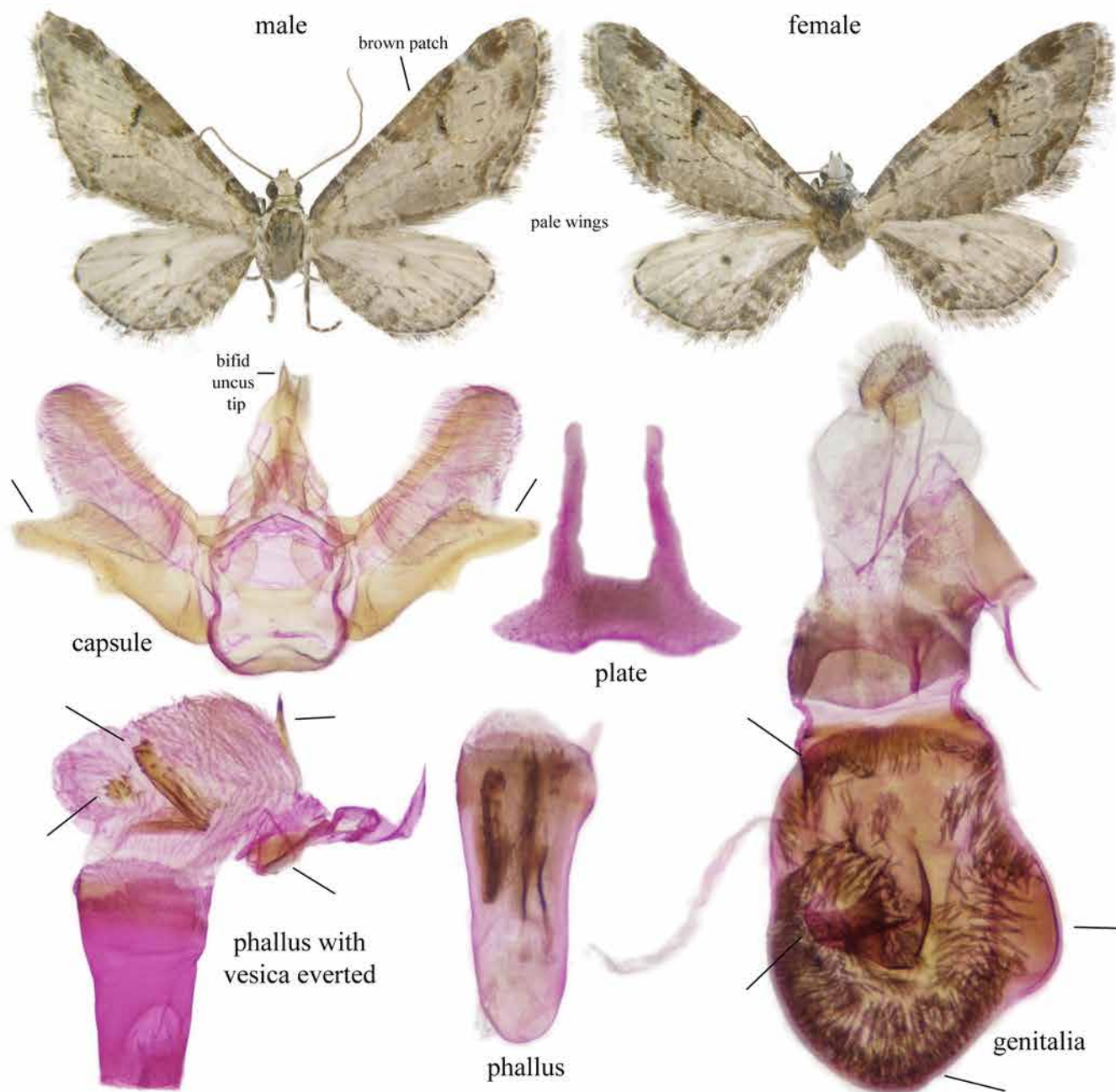
**Diagnostic characters:** Pointers indicate diagnostic features not identified by text.

**Comment:** Multiple geographic subspecies of questionable validity have been described. In any given locality there is considerable variation in coloring and maculation among adults.

**References:**

Bolte, K. B., 1990: p. 55; p. 224; figs. 125–126.

McDunnough, J. H., 1949: pp. 679–684; p. 726 fig. 18D; pl. 31 figs. 32–36; pl. 32 figs. 1–3.

***Eupithecia nevadata morensata* Cassino & Swett, 1922**

**Original description:** *Lepidopterist* 3(11):178.

**Type locality:** California, San Diego.

**Type deposited:** Holotype male in MCZ.

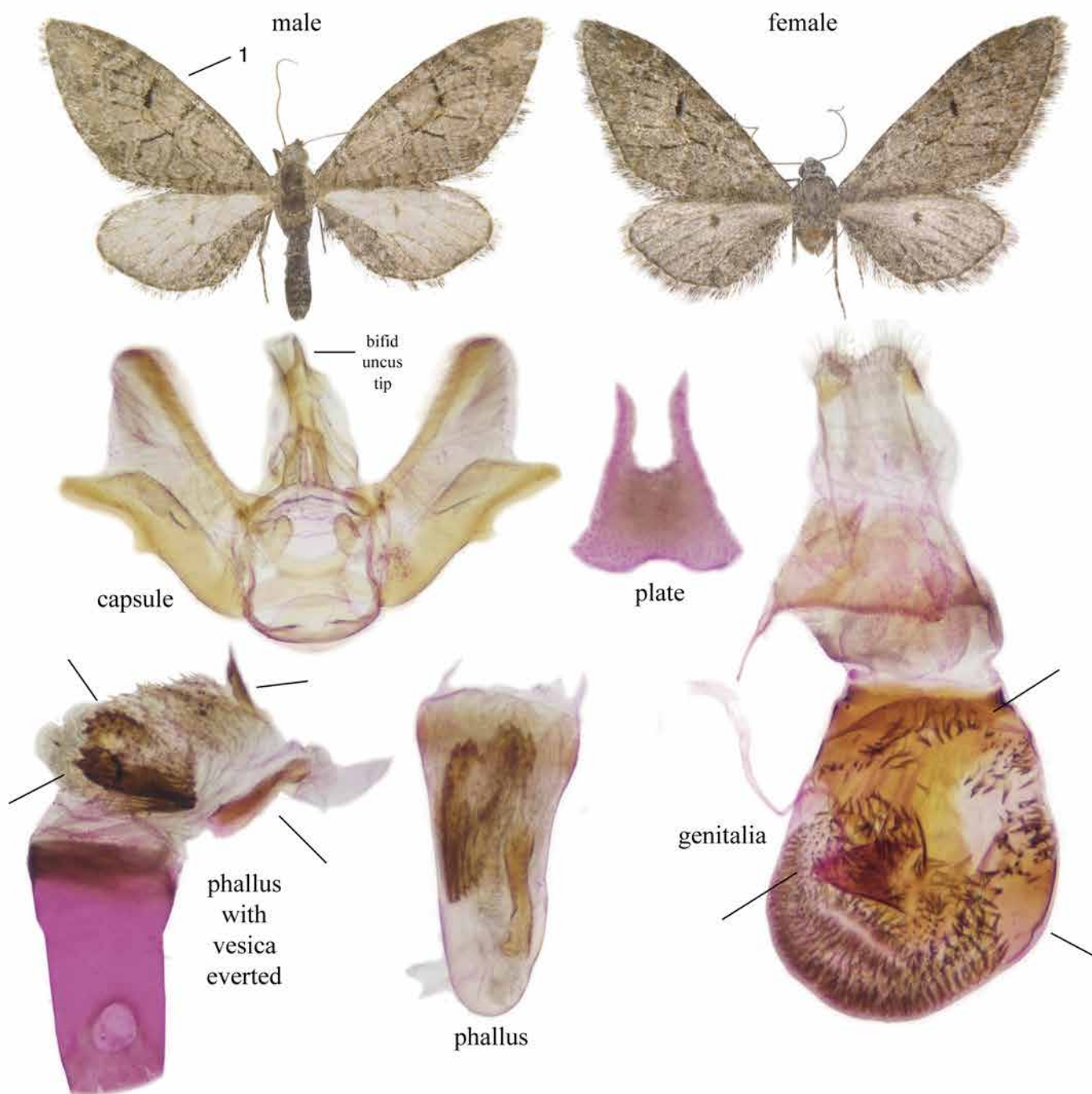
**Biology:** Unknown. Adults January–March.

**Distribution:** Southernmost California.

**Diagnostic characters:** With the exception of the pale wing color, this moth is virtually identical to *E. n. nevadata*.  
Pointers indicate pertinent characters.

**Reference:** McDunnough, J. H., 1949: p. 682; pl. 32 fig. 1.



*Eupithecia implorata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):272.

**Type locality:** California, [Kern Co.], Havilah.

**Type deposited:** Female holotype in AMNH.

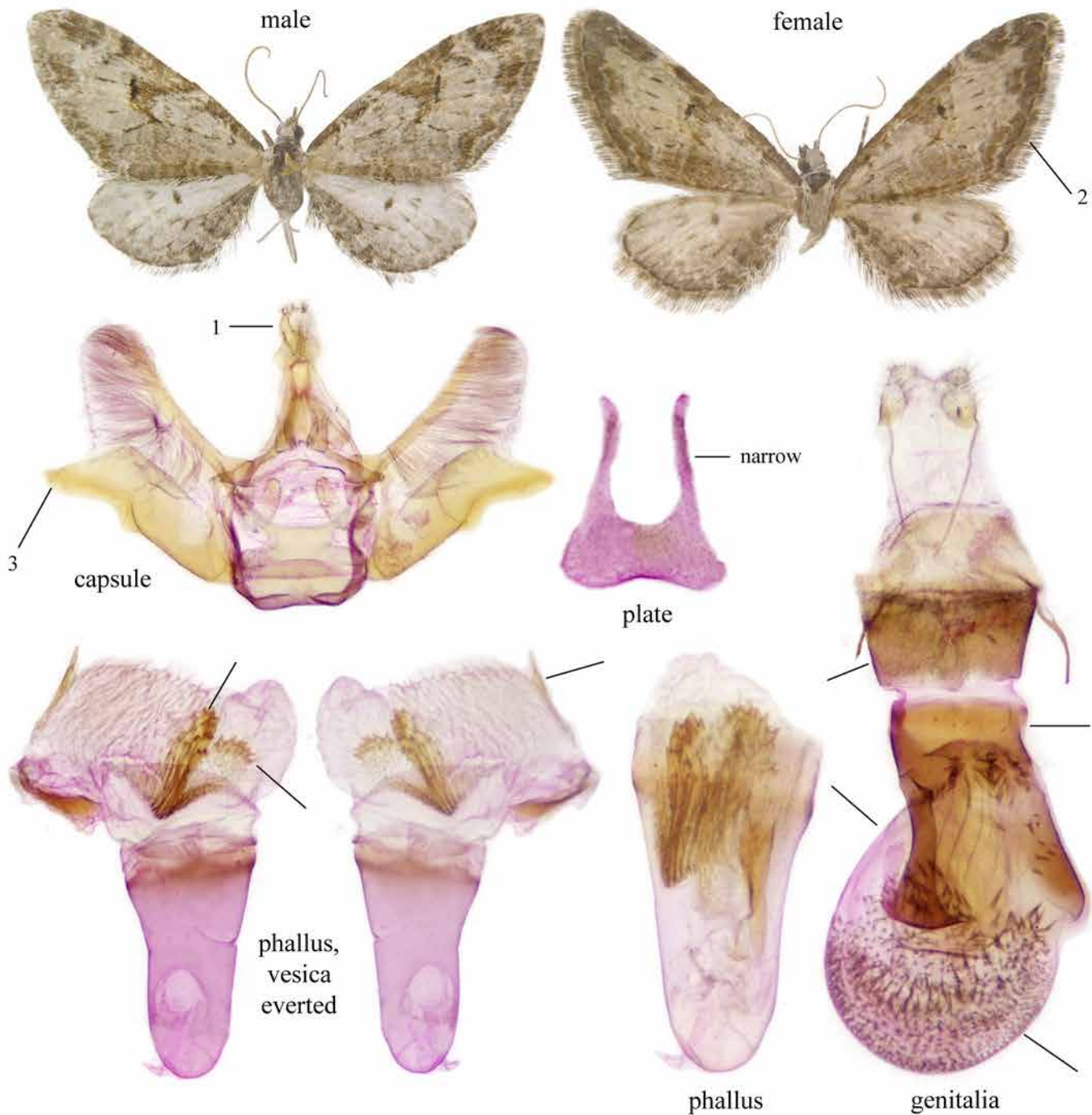
**Biology:** Unknown. Adults March–April.

**Distribution:** California, Contra Costa, Kern, Marin, Napa, San Bernardino, San Diego, Sierra and Sonoma cos.; New Mexico, Catron and Grant cos.

**Diagnostic characters:** 1. gray forewings with black spider-web-like maculation; genitalia similar to *E. nevadata*; pointers indicate pertinent features.

**Reference:** McDunnough, J. H., 1949: p. 684; p. 726 fig. 18E; pl. 32, figs. 4–6.



*Eupithecia cestata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):271.

**Type locality:** California.

**Type deposited:** Female holotype in AMNH.

**Biology:** Unknown. Adult records in May.

**Distribution:** California (Marin, Napa, Plumas, Sonoma cos.).

**Diagnostic characters:** 1. bifid uncus tip; 2. prominent dark border; 3. projection ends in blunt point; other features as indicated.

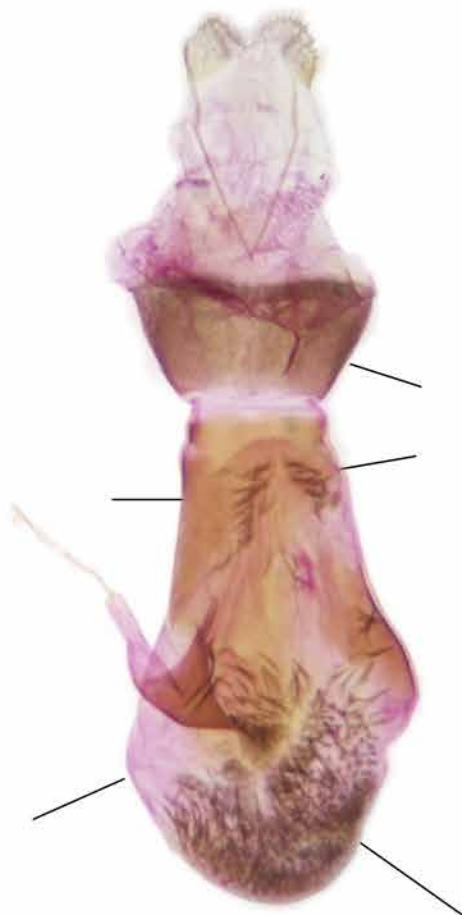
**Reference:** McDunnough, J. H., 1949: p. 685; p. 726 fig. 18F; pl. 32 figs. 7 (holotype), 8.

*Eupithecia cestatoides* McDunnough, 1949

male  
not available



female



genitalia

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):686; pl. 32, fig. 9, text fig. 18G.

**Type locality:** Half Moon Bay, San Mateo Co., California, 19 February, 1939.

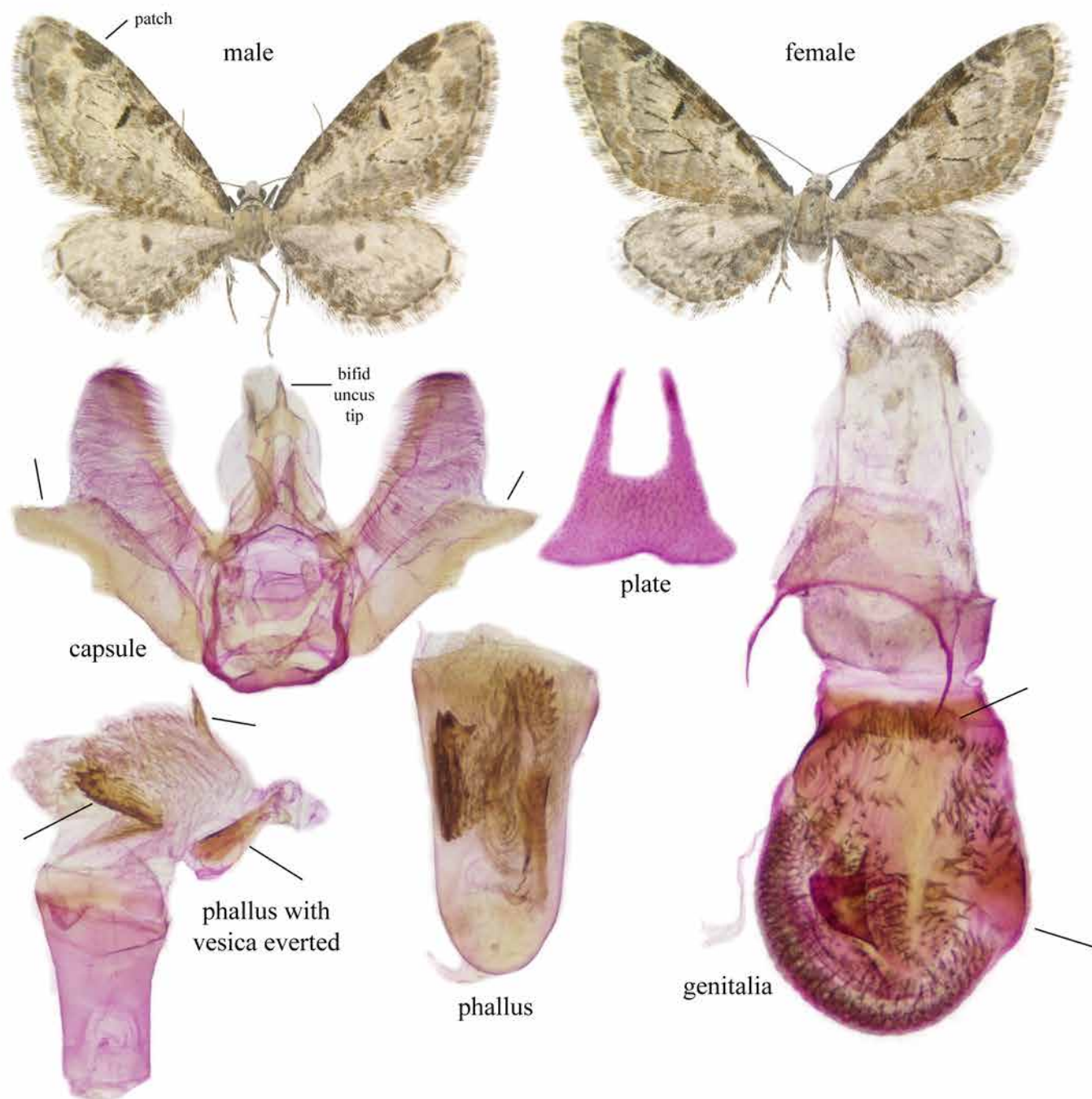
**Type deposited:** Female holotype in AMNH.

**Biology:** Unknown. Adults February–April.

**Distribution:** Central coastal California.

**Diagnostic characters:** As indicated by pointers.



*Eupithecia ravocostaliata* Packard, 1876

**Original description:** *Rept. U.S. geol. geog. Surv. Territ. (Monogr. Geometrid Moths U.S.)* 10:60, pl. 8, fig. 9.

**Type locality:** Maine, [Oxford Co.], Norway.

**Type deposited:** Female holotype in MCZ.

**Biology:** Multiple larval hosts reported in the families: Betulaceae; Caprifoliaceae; Rosaceae; Salicaceae. Adults March–June, depending on locality.

**Distribution:** Widely distributed across southern Canada from Nova Scotia to Vancouver, British Columbia, southward to northern New York, Indiana, southern Wyoming to Sonoma Co., California.

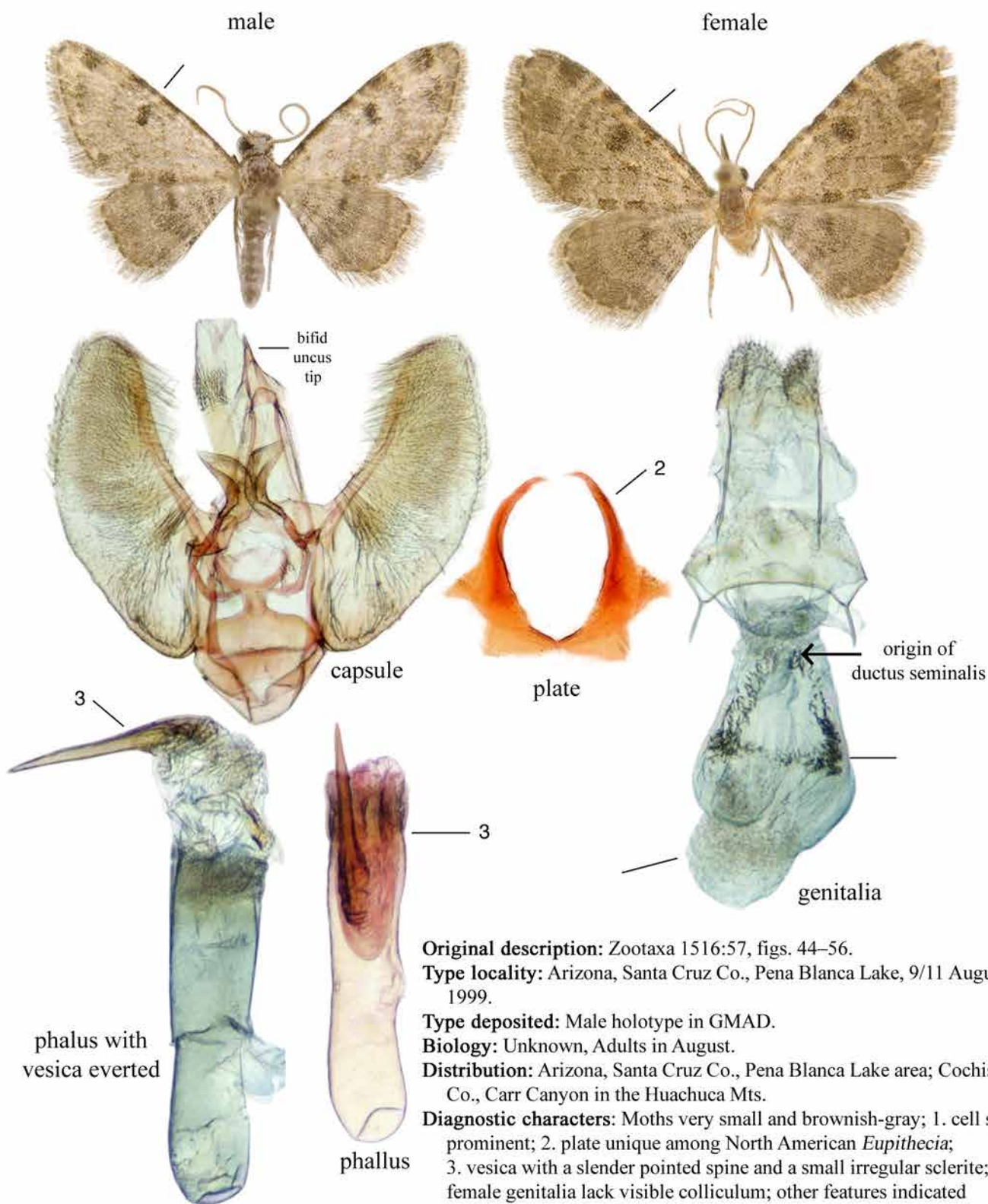
**Diagnostic characters:** Adults paler and more contrastingly maculated than *E. nevada*, but otherwise almost identical; slight differences in the male and female genitalia.

**References:**

Bolte, K. B., 1990: p. 56; figs. 127–128.

McDunnough, J. H., 1949: p. 686; p. 726 fig. 18H; pl. 32 figs. 10–11.



*Eupithecia penablanca* Ferris, 2007

**Original description:** Zootaxa 1516:57, figs. 44–56.

**Type locality:** Arizona, Santa Cruz Co., Pena Blanca Lake, 9/11 August, 1999.

**Type deposited:** Male holotype in GMAD.

**Biology:** Unknown, Adults in August.

**Distribution:** Arizona, Santa Cruz Co., Pena Blanca Lake area; Cochise Co., Carr Canyon in the Huachuca Mts.

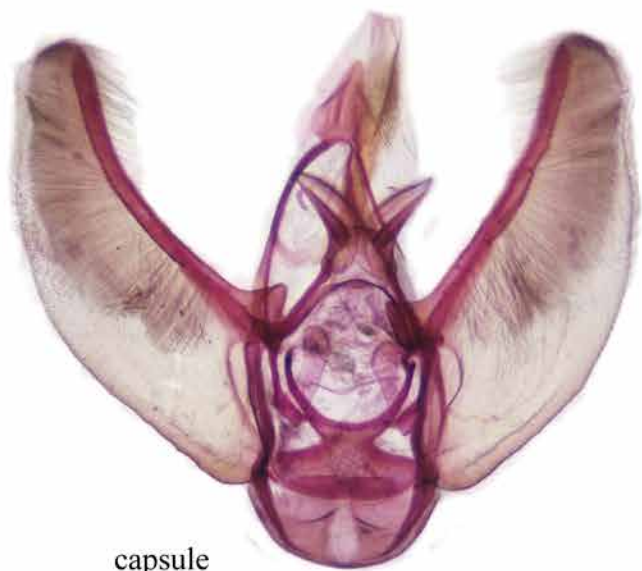
**Diagnostic characters:** Moths very small and brownish-gray; 1. cell spots prominent; 2. plate unique among North American *Eupithecia*; 3. vesica with a slender pointed spine and a small irregular sclerite; female genitalia lack visible colliculum; other features indicated by pointers.

*Eupithecia* species 1 — undescribed?

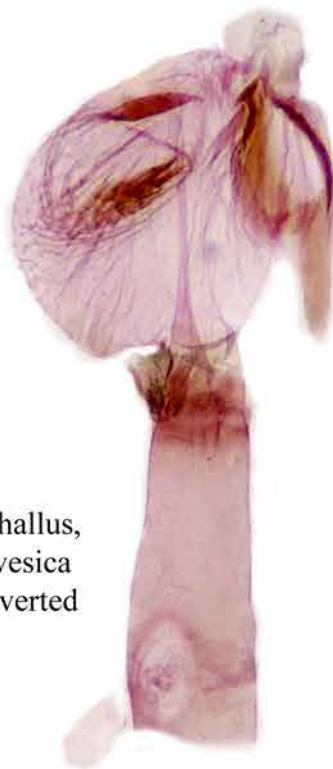
This moth is known from a single specimen collected in Hueco Tanks State Park, El Paso Co., Texas  
18 September, 1993 and it is deposited in MGCL.

*Eupithecia* species 2 — undescribed?

male



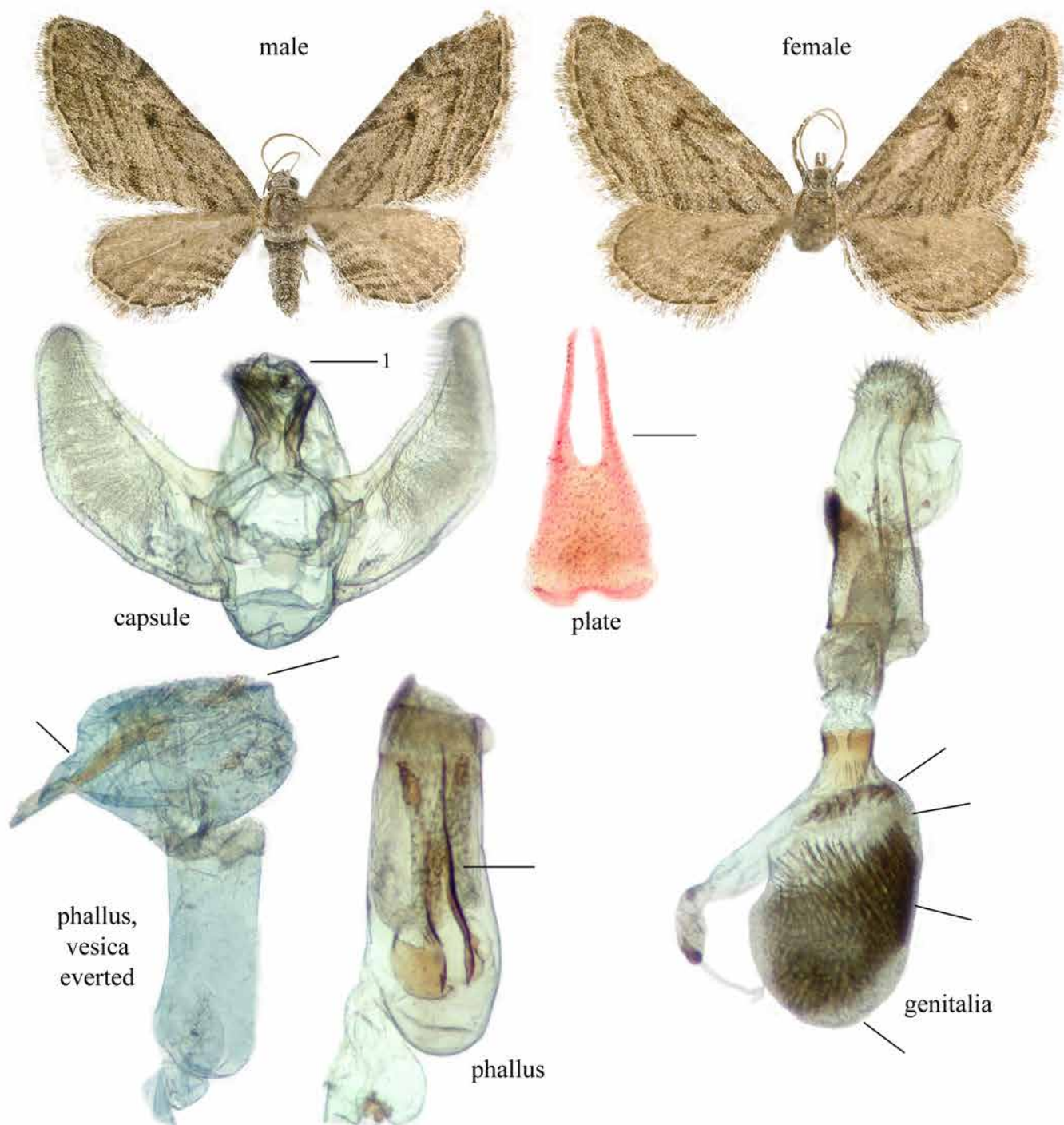
capsule

phallus,  
vesica  
everted

plate

This moth is known from a single specimen taken in a UV light trap in San Pete Co., Utah in the Wasatch Mts. at 8380' on 20 July, 2006, leg. C. D. Ferris.



*Nasusina inferior* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):264.

**Type locality:** California.

**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adults March–May.

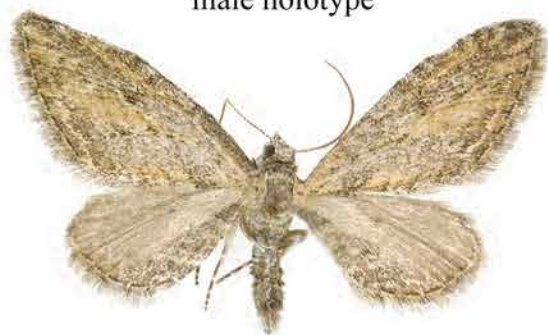
**Distribution:** Southern California; Utah (Garfield Co.); New Mexico (Bernalillo Co., Sandia Mts.); Texas.

**Diagnostic characters:** 1. short thin uncus with bifid tip; other features as indicated by pointers.

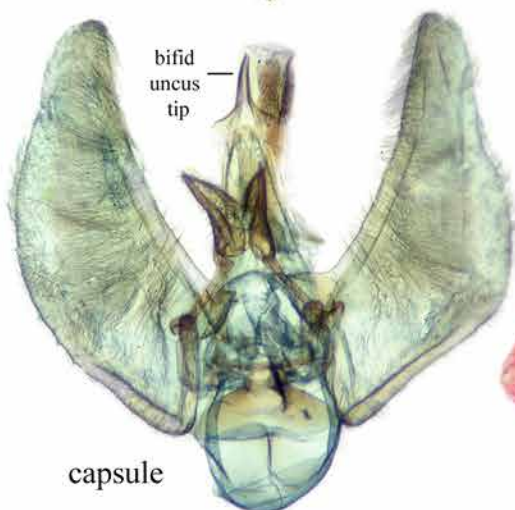
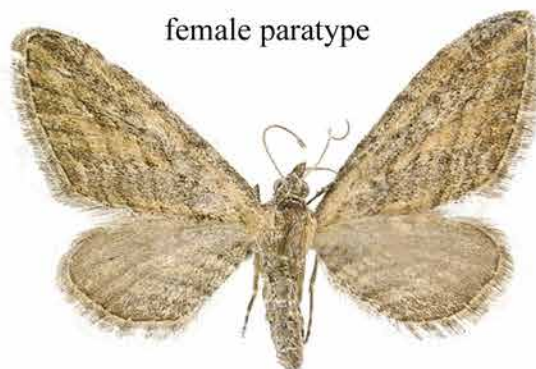
**Reference:** McDunnough, J. H., 1949: p. 688; p. 727 fig. 19A; pl. 32 fig. 12.

*Nasusina vallis* Ferris, 2004

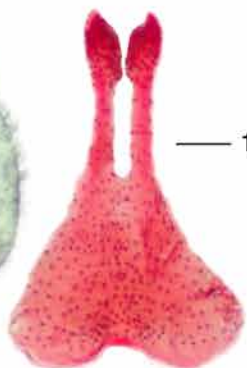
male holotype



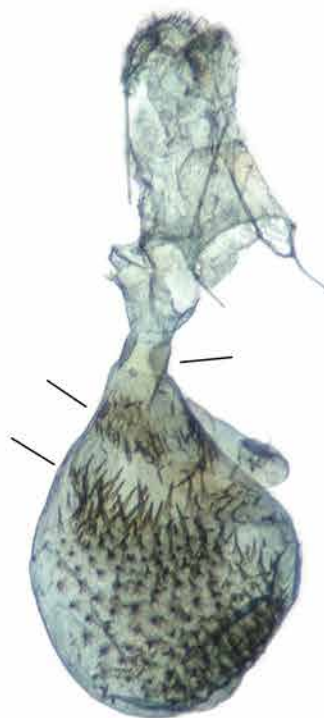
female paratype



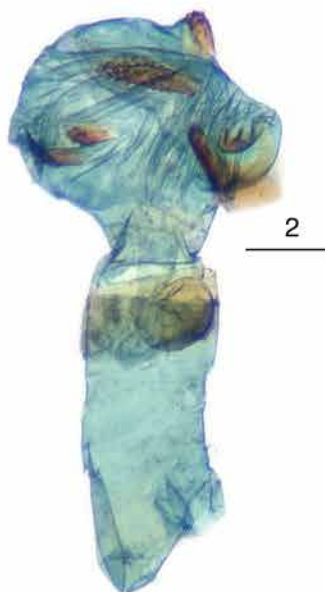
capsule



plate



genitalia

phallus with  
vesica everted

phallus

**Original description:** *Zootaxa* 467:4, figs. 3–9, 14–21.

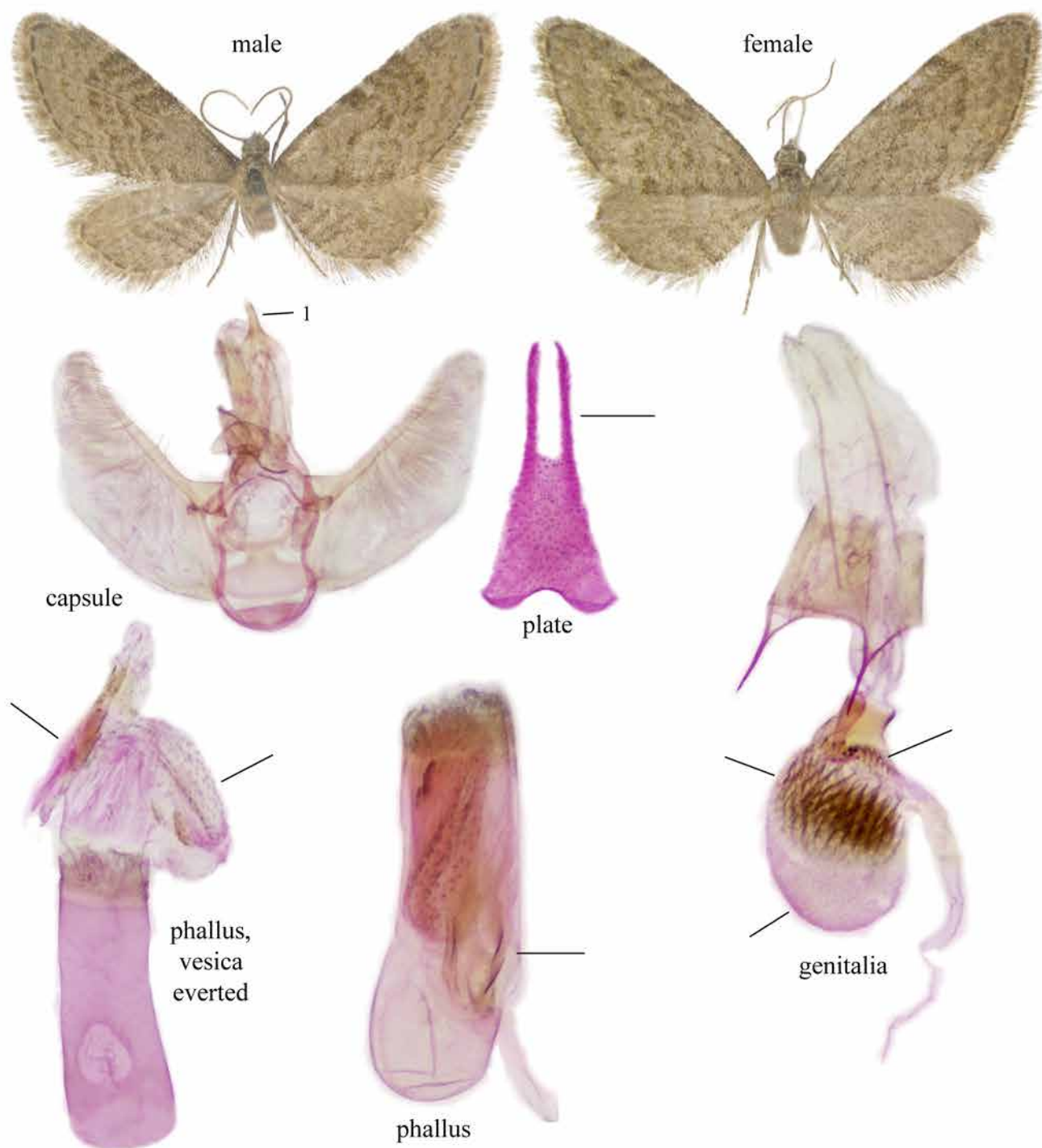
**Type locality:** Colorado, Mesa Co., John Brown Canyon, south of Gateway, 38°39.16'N, 108°58.99'W, 1515m, 23 May, 2003.

**Type deposited:** Male holotype in NMNH.

**Distribution:** Known only from type locality.

**Diagnostic characters:** 1. plate shape unique; 2. vesica with 7 sclerites: 3 roughly oval dentate pieces, 1 larger ovoid dentate piece, a small smooth curved sclerite, a smooth shovel-like plate and a smooth disc; additional features indicated by pointers.



*Nasusina vaporata* (Pearsall, 1912)

**Original description:** *Can. Ent.* 44(1):28.

**Type locality:** San Diego, California.

**Type deposited:** Male holotype in AMNH.

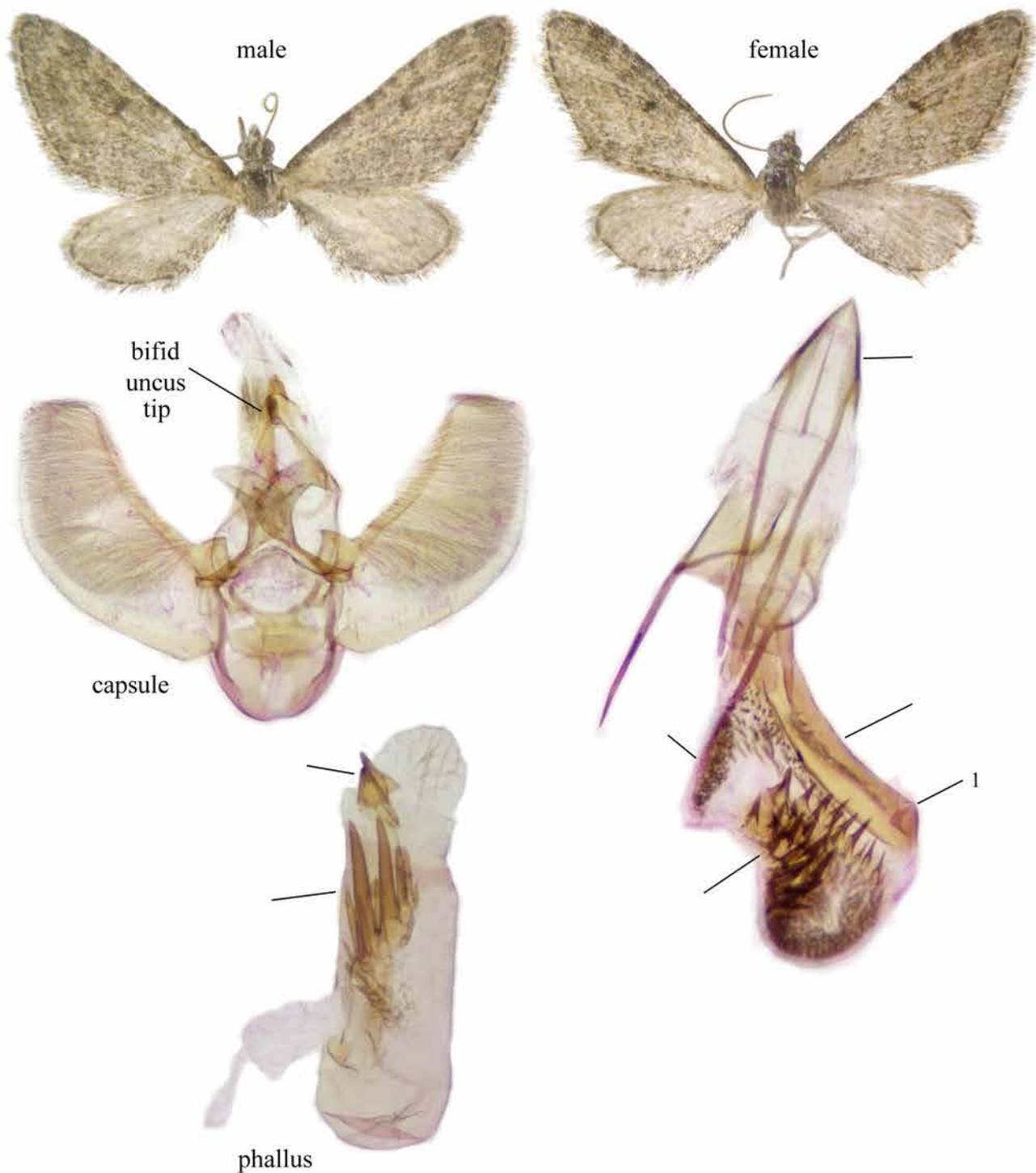
**Biology:** Larvae in flowers of *Adenostoma fasciculatum* Hook. & Arn. Adults March–early July, with peaks in March and May.

**Distribution:** Southern California; Verdi, Washoe Co., Nevada.

**Diagnostic characters:** 1. uncus short with bifid tip; other features as pointers indicate.

**Reference:** McDunnough, J. H., 1949: p. 689; p. 727 fig. 19B; pl. 32 fig. 13.



*Nasusina minuta* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):265.

**Type locality:** California, Inyo Co., Argus Mts.

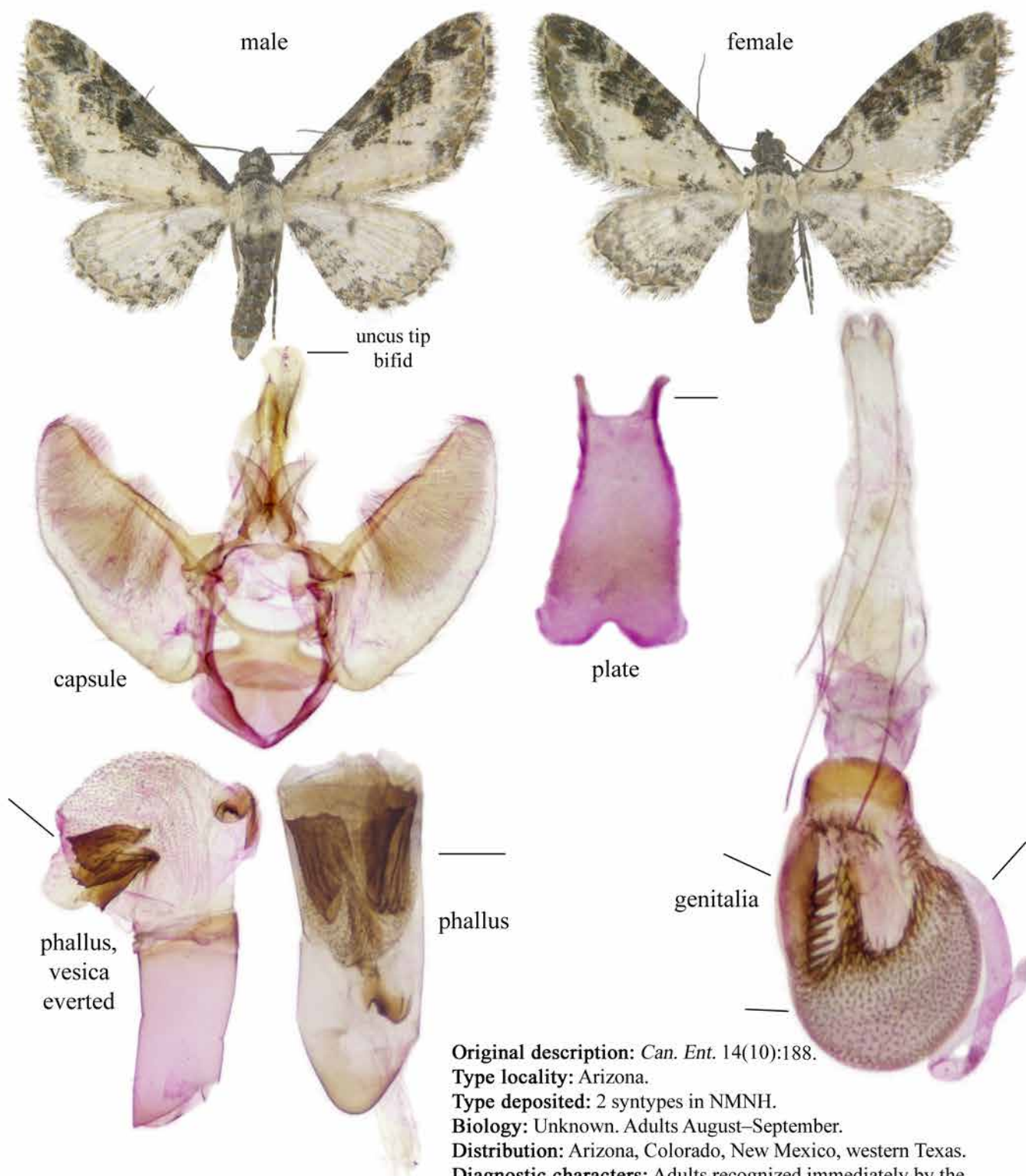
**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adults March–April; September (Riverside Co., California, 4200').

**Distribution:** Desert regions, southern California; western Arizona; Nevada (Clark Co.).

**Diagnostic characters:** 1. origin of ductus seminalis; other features as indicated by pointers.

**Reference:** McDunnough, J. H., 1949: p. 691; p. 727 fig, 19D; p. 32 fig. 15.

*Prorella gypsata* Grote, 1882

**Original description:** *Can. Ent.* 14(10):188.

**Type locality:** Arizona.

**Type deposited:** 2 syntypes in NMNH.

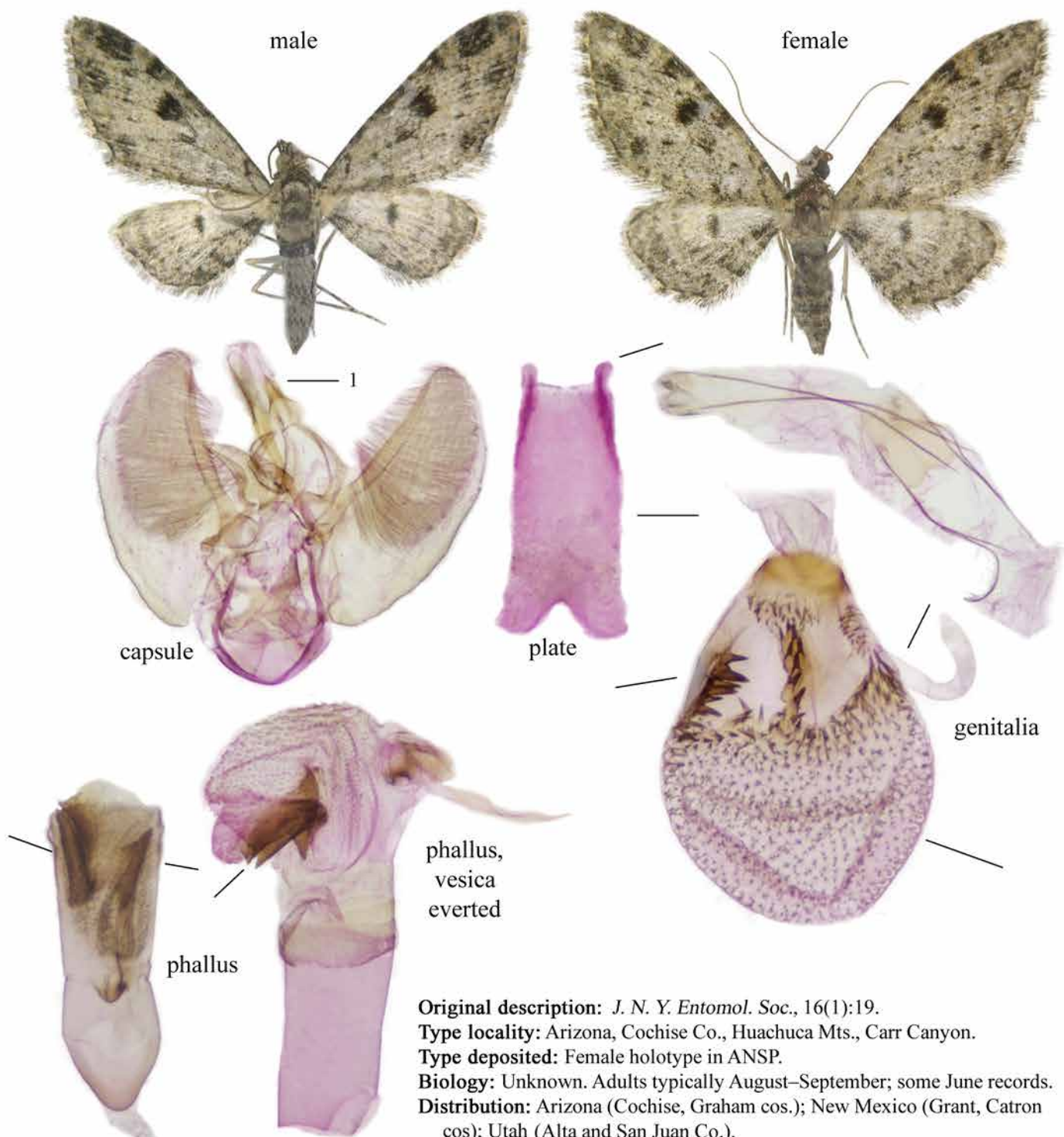
**Biology:** Unknown. Adults August–September.

**Distribution:** Arizona, Colorado, New Mexico, western Texas.

**Diagnostic characters:** Adults recognized immediately by the contrasting black-on-white markings; other characters as indicated by pointers.

**Reference:** McDunnough, J. H., 1949: p. 692; p. 727 fig. 19E; pl. 32 fig. 16.



*Prorella discoidalis* (Grossbeck, 1908)

**Original description:** *J. N. Y. Entomol. Soc.*, 16(1):19.

**Type locality:** Arizona, Cochise Co., Huachuca Mts., Carr Canyon.

**Type deposited:** Female holotype in ANSP.

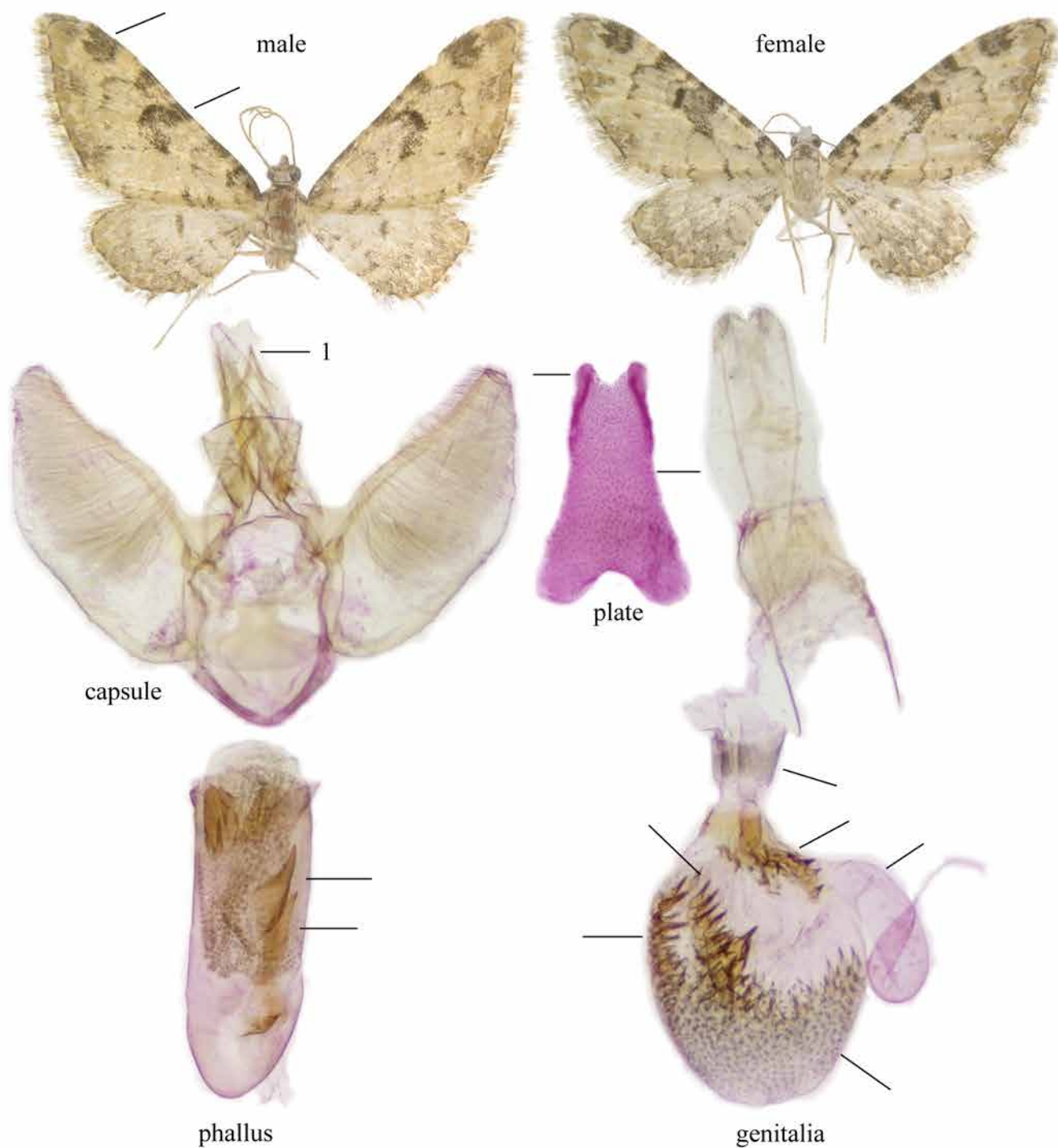
**Biology:** Unknown. Adults typically August–September; some June records.

**Distribution:** Arizona (Cochise, Graham cos.); New Mexico (Grant, Catron cos); Utah (Alta and San Juan Co.).

**Diagnostic characters:** Adults recognized by prominent black cell spots against a pale gray background; 1. bifid uncus tip; other characters as indicated.

**Reference:** McDunnough, J. H., 1949: p. 694; p. 727 fig. 19F; pl. 32 fig. 17.



*Prorella leucata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):267.

**Type locality:** Montana.

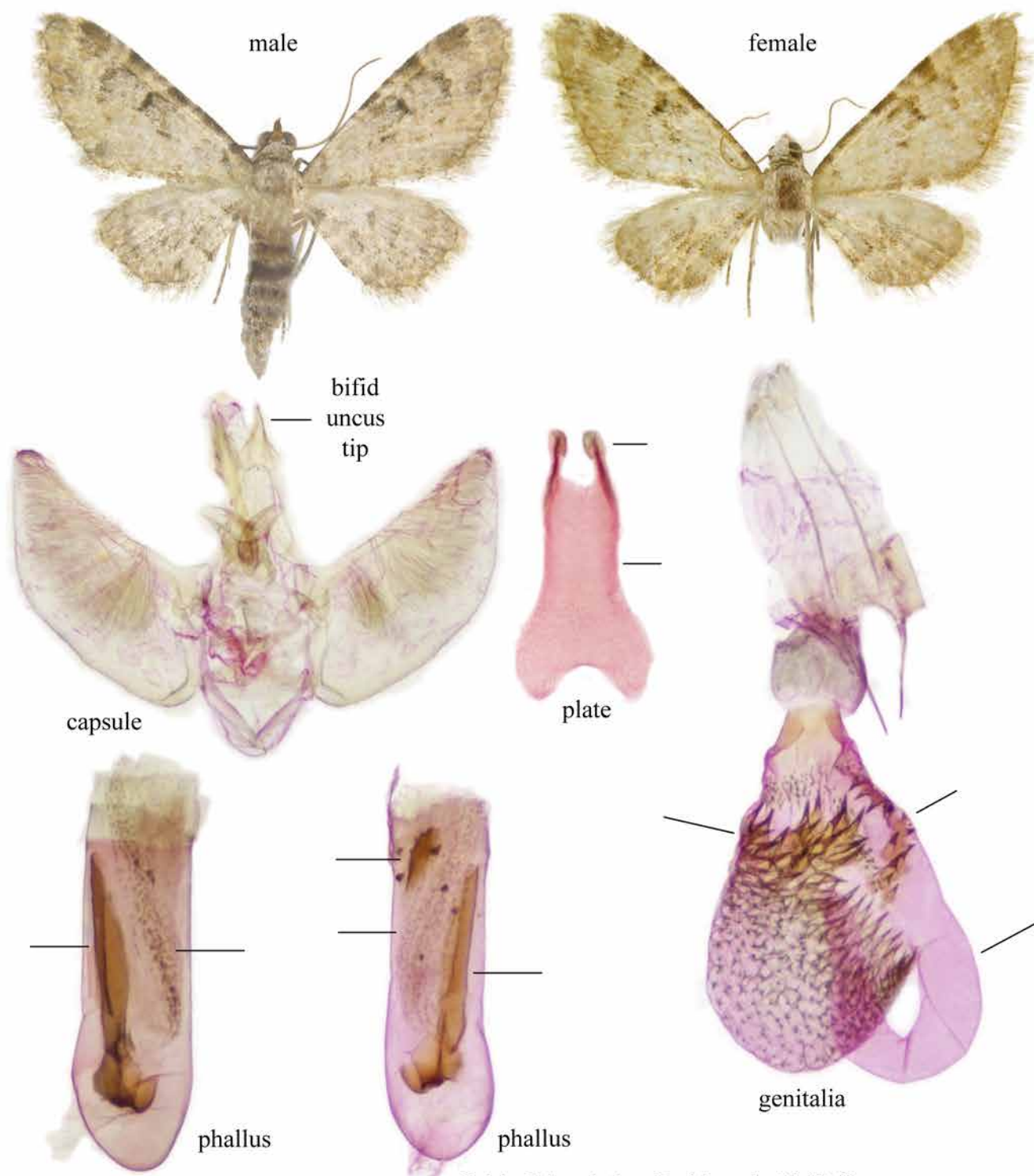
**Type deposited:** Female holotype in AMNH.

**Biology:** Unknown. Adults late July—September.

**Distribution:** Montana, Wyoming, Colorado, Utah, southern California, (Los Angeles Co.).

**Diagnostic characters:** 1. bifid uncus tip; other features as indicated by pointers.

**Reference:** McDunnough, J. H., 1949: p. 694; p. 727 fig. 19G; pl. 32 fig. 18.

*Prorella albida* Cassino & Swett, 1923

**Original description:** *Lepidopterist* 4(8-9):63.

**Type locality:** Eureka, [Juab Co.], Utah.

**Type deposited:** Male holotype in MCZ.

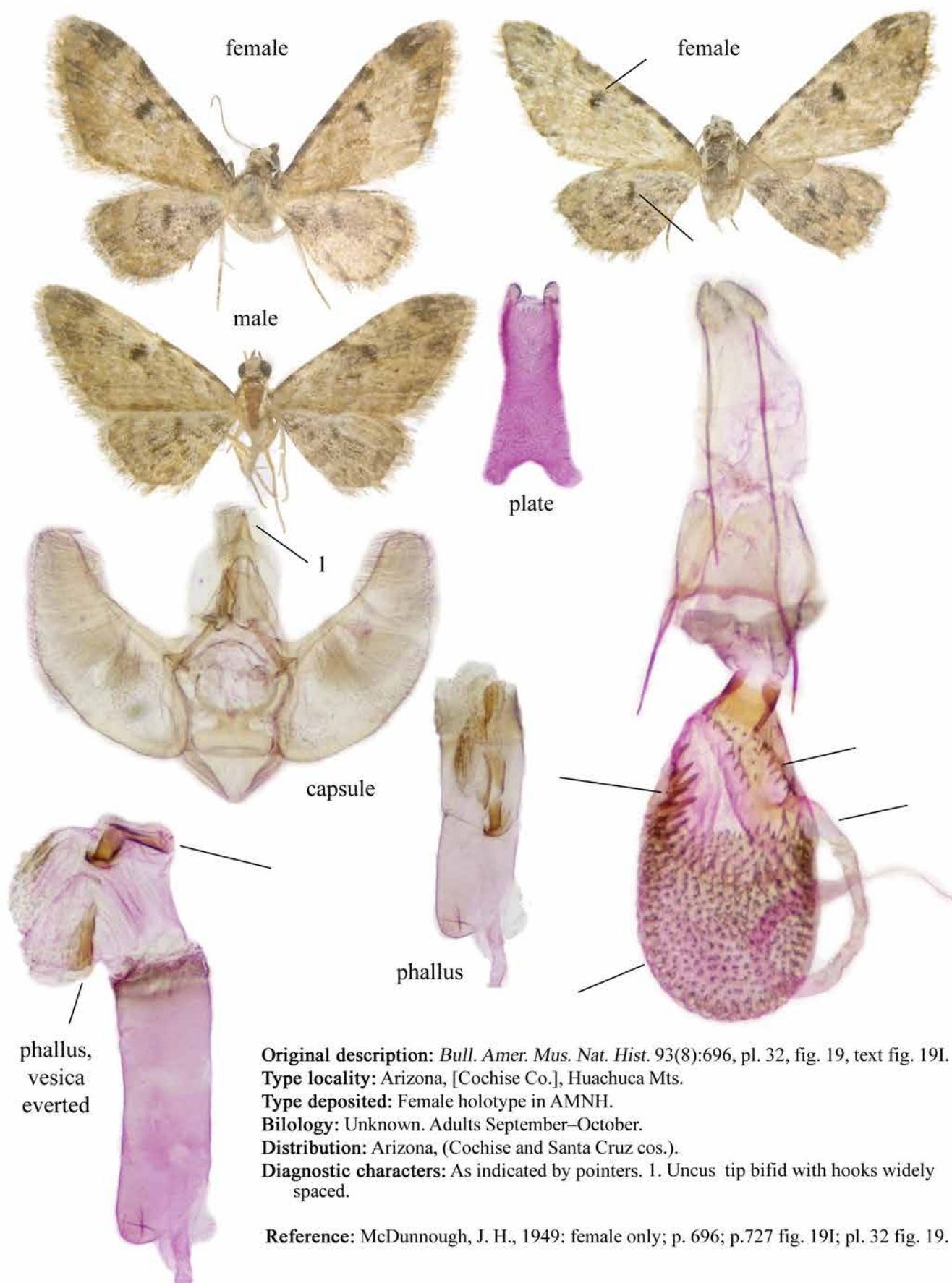
**Biology:** Unknown. Adults in September.

**Distribution:** Recorded from New Mexico (Grant, Sandoval cos.); Utah (Garfield, Juab, San Juan cos.); southwestern Texas and north to Malheur Co., Oregon.

**Diagnostic characters:** As noted by pointers.

**Reference:** McDunnough, J. H., 1949: p. 695; p. 727 fig. 19H; pl. 32 fig. 20.



*Prorella ochrocarneata* McDunnough, 1949

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):696, pl. 32, fig. 19, text fig. 19I.

**Type locality:** Arizona, [Cochise Co.], Huachuca Mts.

**Type deposited:** Female holotype in AMNH.

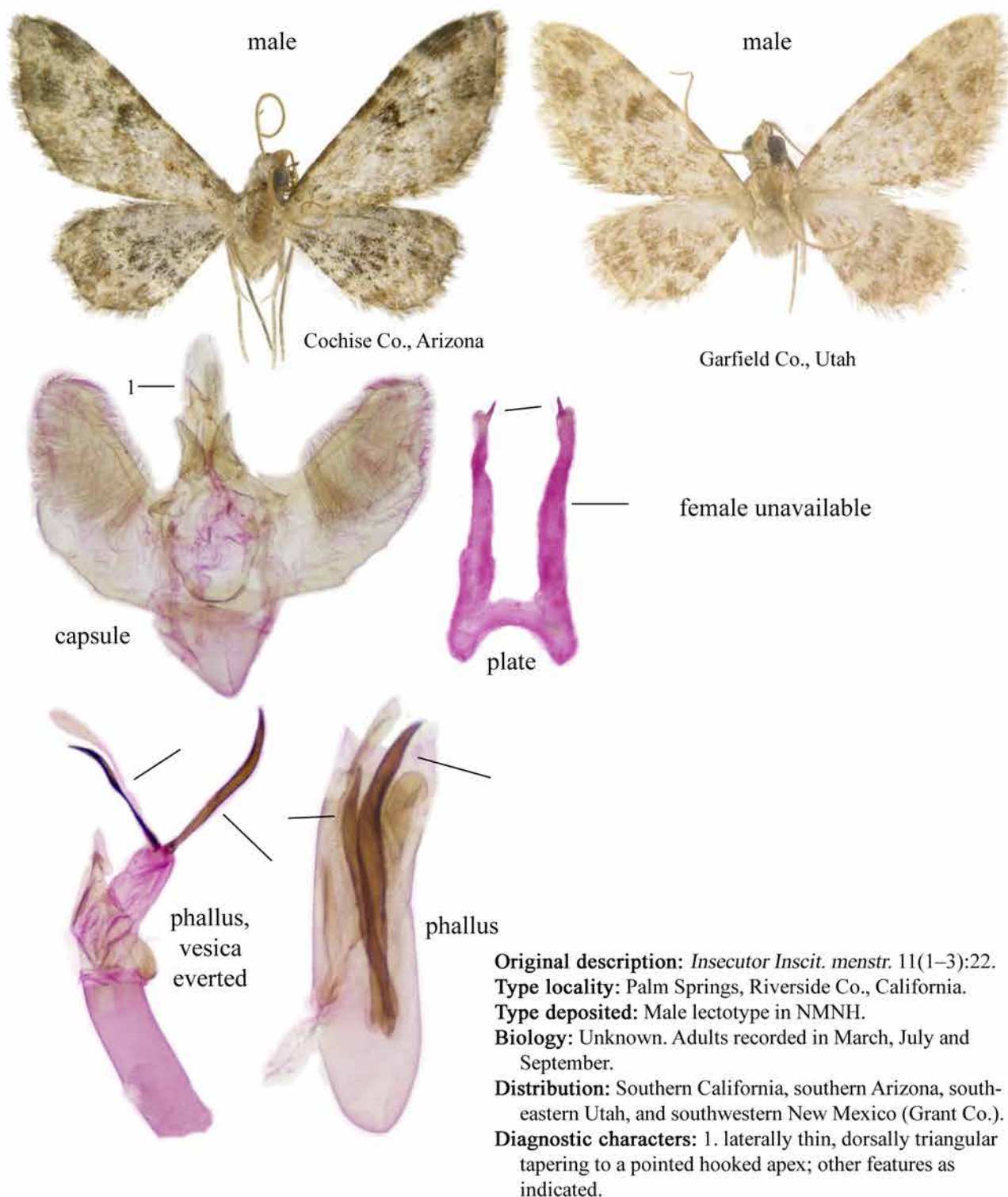
**Biology:** Unknown. Adults September–October.

**Distribution:** Arizona, (Cochise and Santa Cruz cos.).

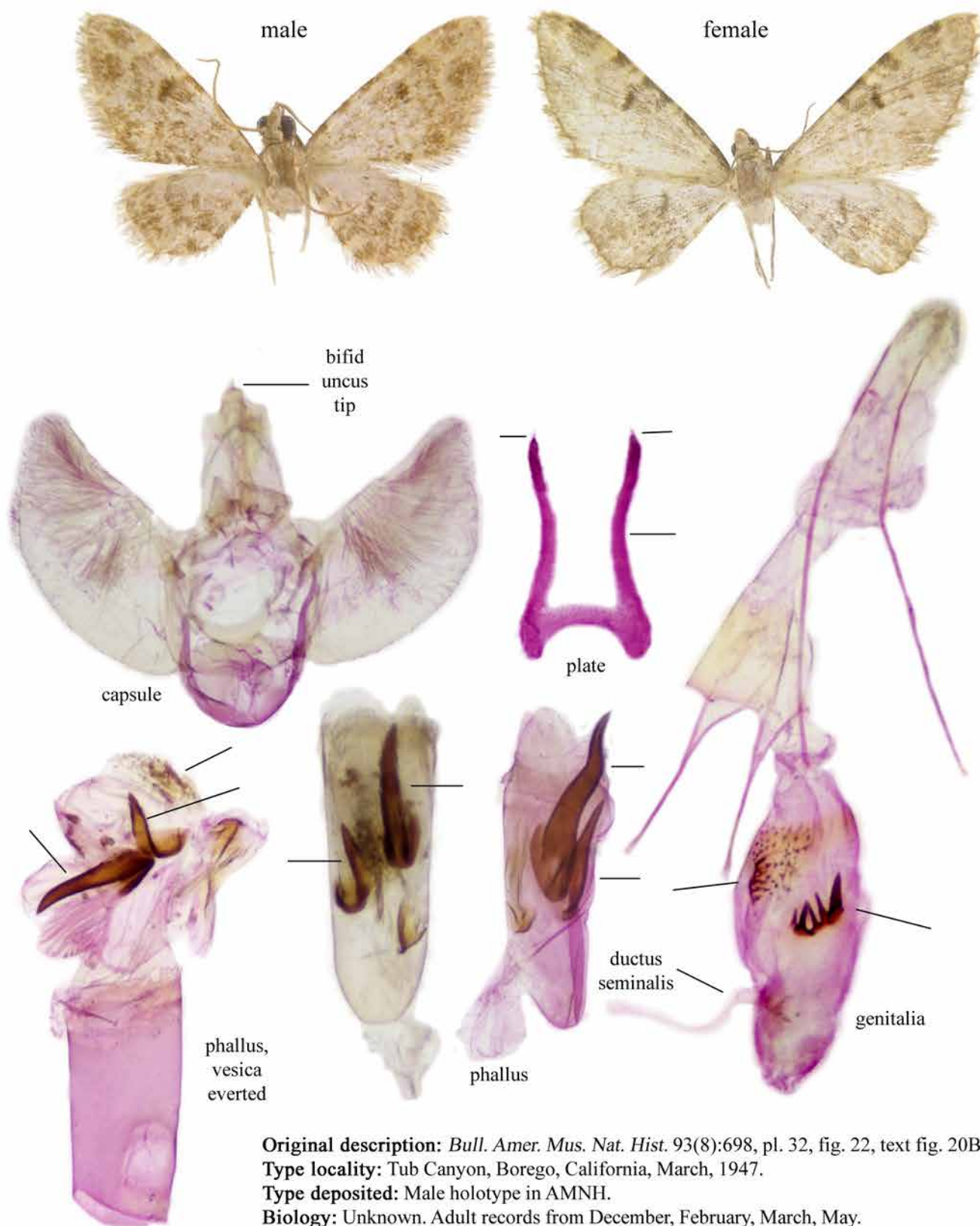
**Diagnostic characters:** As indicated by pointers. 1. Uncus tip bifid with hooks widely spaced.

**Reference:** McDunnough, J. H., 1949: female only; p. 696; p.727 fig. 19I; pl. 32 fig. 19.



*Prorella irremorata* (Dyar, 1923)

**Reference:** McDunnough, J. H., 1949: p. 697; p. 728 fig. 20A; pl. 32 fig. 21.

*Prorella tremorata* McDunnough, 1949

**Original description:** *Bull. Amer. Mus. Nat. Hist.* 93(8):698, pl. 32, fig. 22, text fig. 20B.

**Type locality:** Tub Canyon, Borego, California, March, 1947.

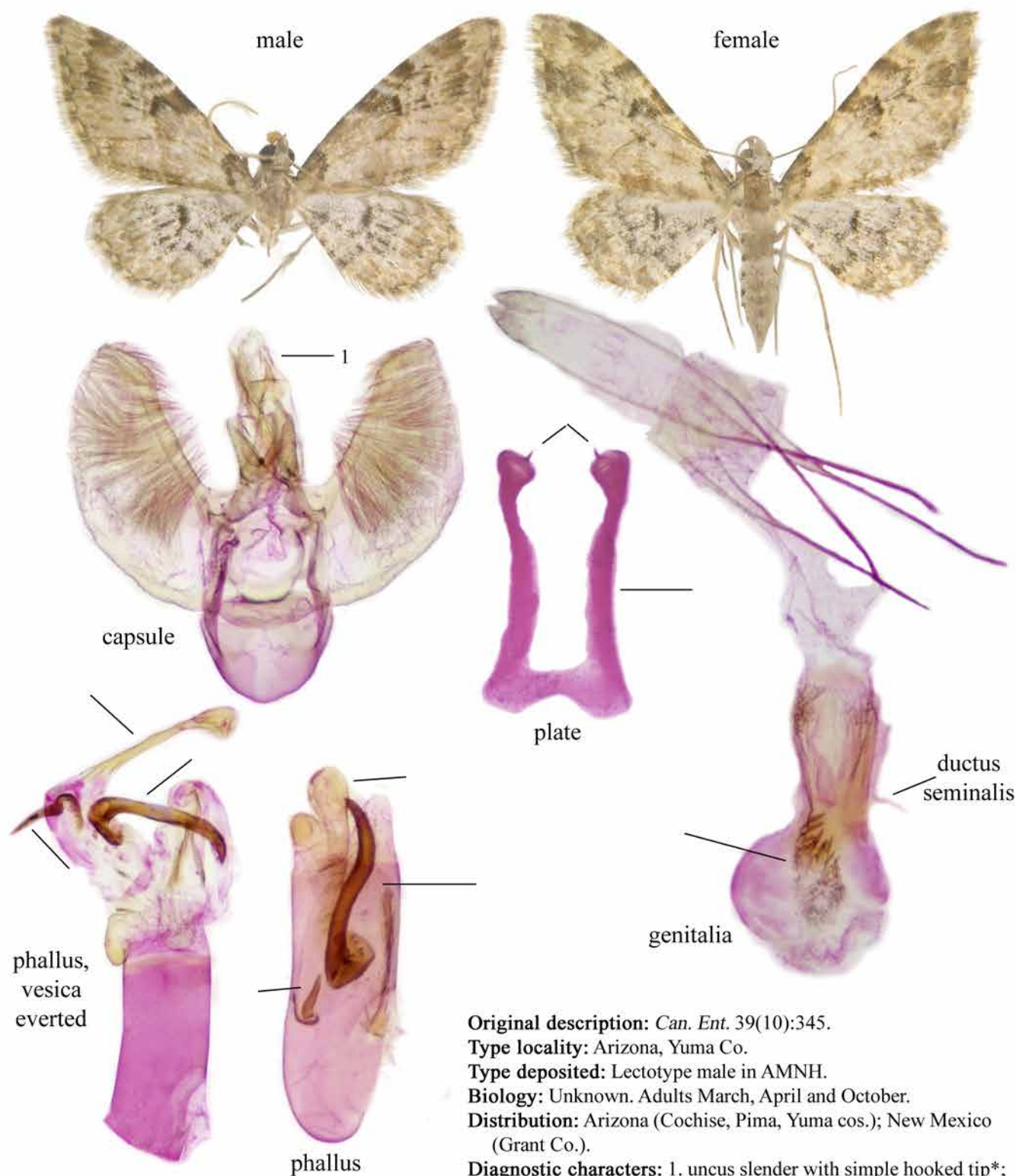
**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adult records from December, February, March, May.

**Distribution:** Southern California, Utah (Emery, Garfield, San Juan cos.).

**Diagnostic characters:** As indicated by pointers.



*Prorella remorata* (Grossbeck, 1907)

**Original description:** *Can. Ent.* 39(10):345.

**Type locality:** Arizona, Yuma Co.

**Type deposited:** Lectotype male in AMNH.

**Biology:** Unknown. Adults March, April and October.

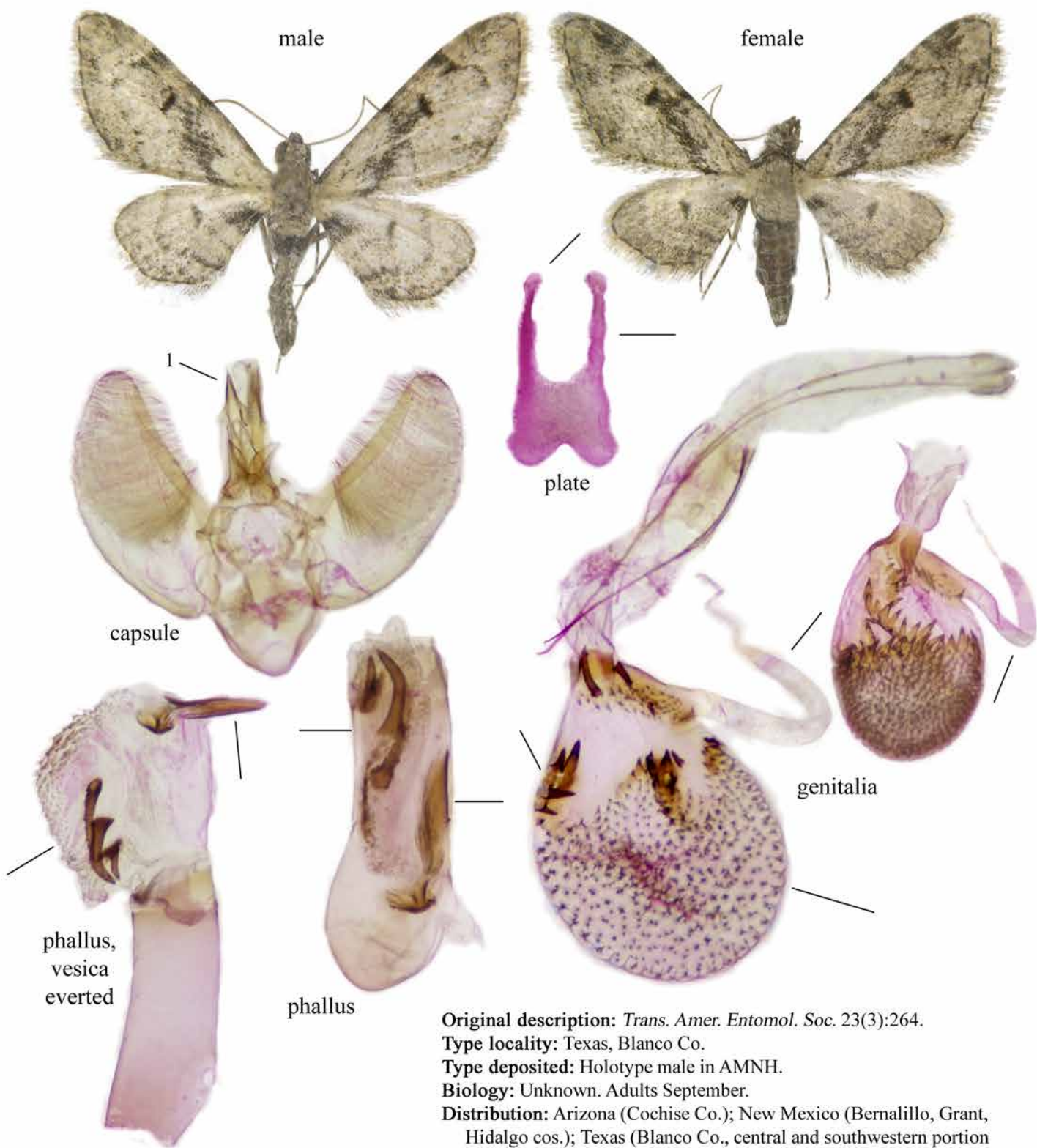
**Distribution:** Arizona (Cochise, Pima, Yuma cos.); New Mexico (Grant Co.).

**Diagnostic characters:** 1. uncus slender with simple hooked tip\*; other features as indicated.

\*McDunnough (1949, p. 699) stated "Uncus short and stubby with the ordinary bifid apex." All of the specimens that I have examined (spring and October, various localities) have a single hook at the uncus tip.

**Reference:** McDunnough, J. H., 1949: p. 699; p. 728 fig. 20C; pl. 32 fig. 23.



*Prorella desperata* (Hulst, 1896)

**Original description:** *Trans. Amer. Entomol. Soc.* 23(3):264.

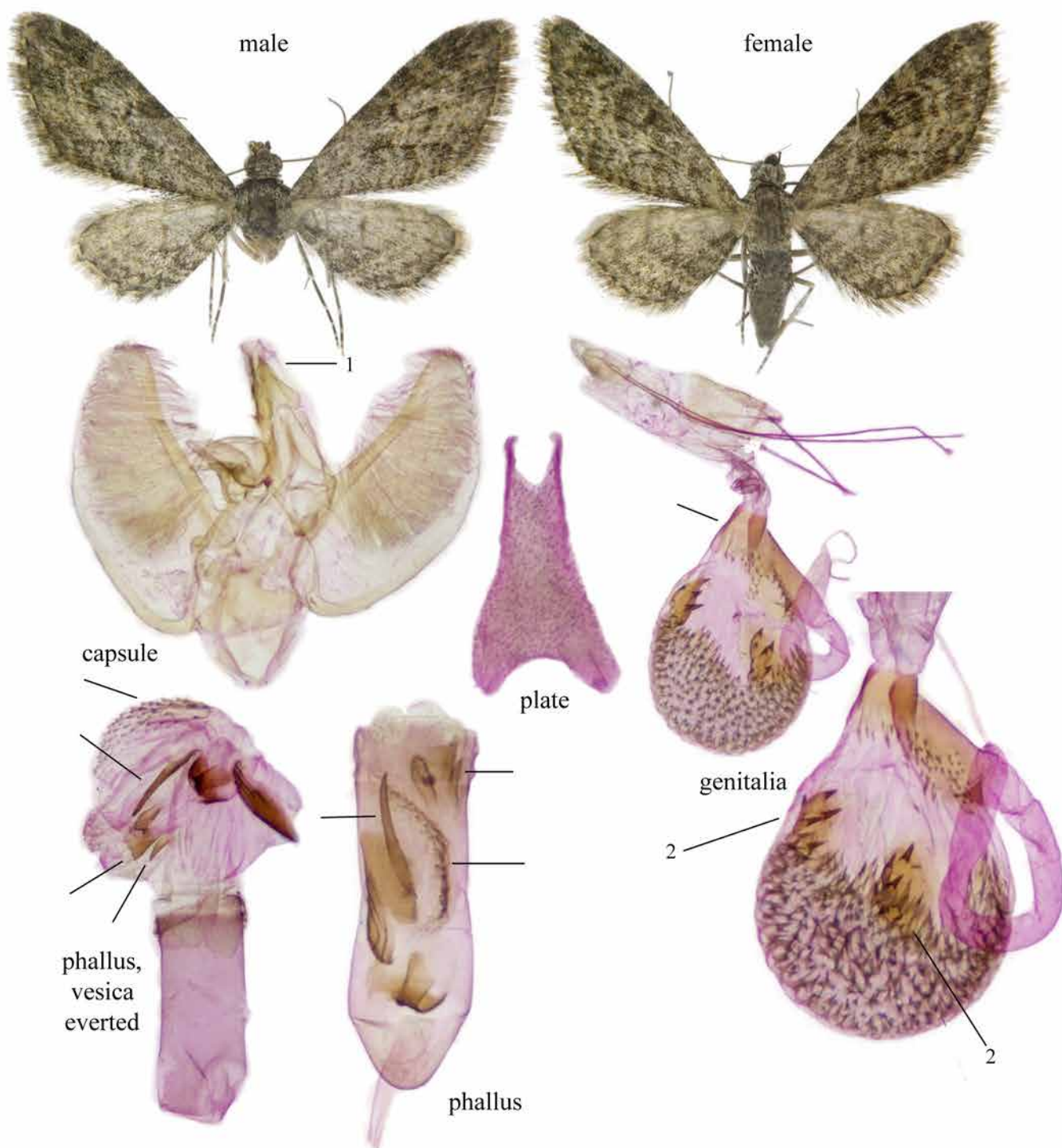
**Type locality:** Texas, Blanco Co.

**Type deposited:** Holotype male in AMNH.

**Biology:** Unknown. Adults September.

**Distribution:** Arizona (Cochise Co.); New Mexico (Bernalillo, Grant, Hidalgo cos.); Texas (Blanco Co., central and southwestern portion of state).

**Diagnostic characters:** Adults recognized by the transverse black band against the pale gray background extending from the forewing cell spot to the inner margin; 1. bifid uncus tip; other characters as indicated.

*Prorella artestata* (Grossbeck, 1908)

**Original description:** *J. N. Y. Entomol. Soc.* 16(1):20.

**Type locality:** Arizona, Cochise Co., Huachuca Mts., Carr Canyon.

**Type deposited:** Female holotype in ANSP.

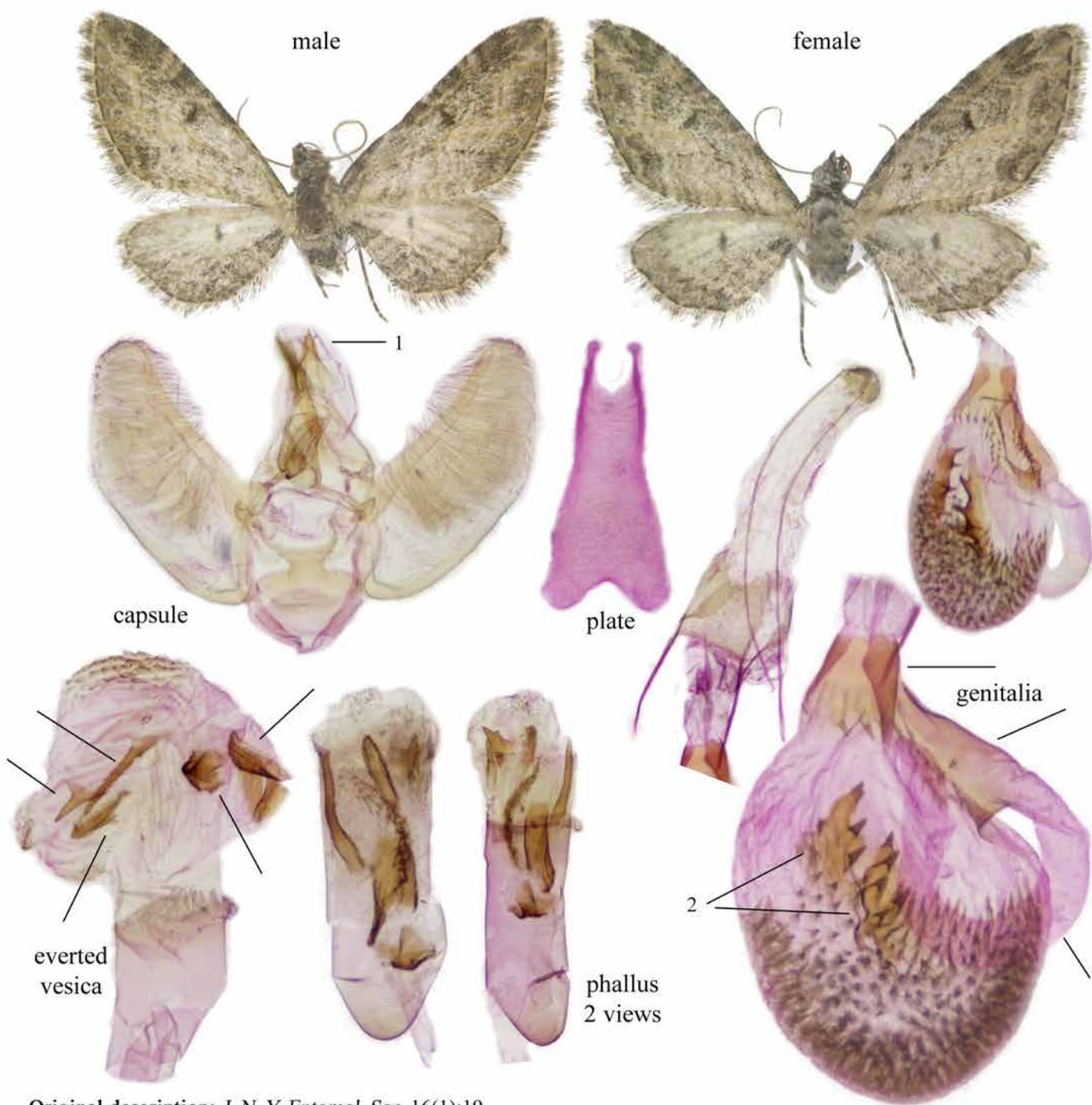
**Biology:** Unknown. Adults August to October.

**Distribution:** Southwestern Texas, New Mexico, southern Arizona, Colorado to Albany Co., Wyoming.

**Diagnostic characters:** Adults dark gray with multiple striations; 1. uncus with bifid tip; 2. bursa with 2 broad toothed chitinous bands; other characters as indicated.

**Reference:** McDunnough, J. H., 1949: p. 701; p.p. 728 fig. 20E; pl. 32 fig. 25.



*Prorella mellisa* (Grossbeck, 1908)

**Original description:** *J. N. Y. Entomol. Soc.* 16(1):19.

**Type locality:** Arizona, Yavapai Co., Minnehaha.

**Type deposited:** Male holotype in AMNH.

**Biology:** Unknown. Adults in September.

**Distribution:** Arizona (Cochise, Yavapai cos.); Colorado (Mesa Co.); New Mexico (Catron, Grant cos.). Possibly west Texas and central Utah.

**Diagnostic characters:** The central portion of the dorsal forewings has a distinct tawny hue in fresh material; 1. uncus with bifid tip; 2. bursa with two large irregular chitinous patches; other features as indicated.

**Reference:** MDunnough, J. H., 1949: p. 702; p. 728 fig. 20F (plate not shown); pl. 32 fig. 26 (male holotype).



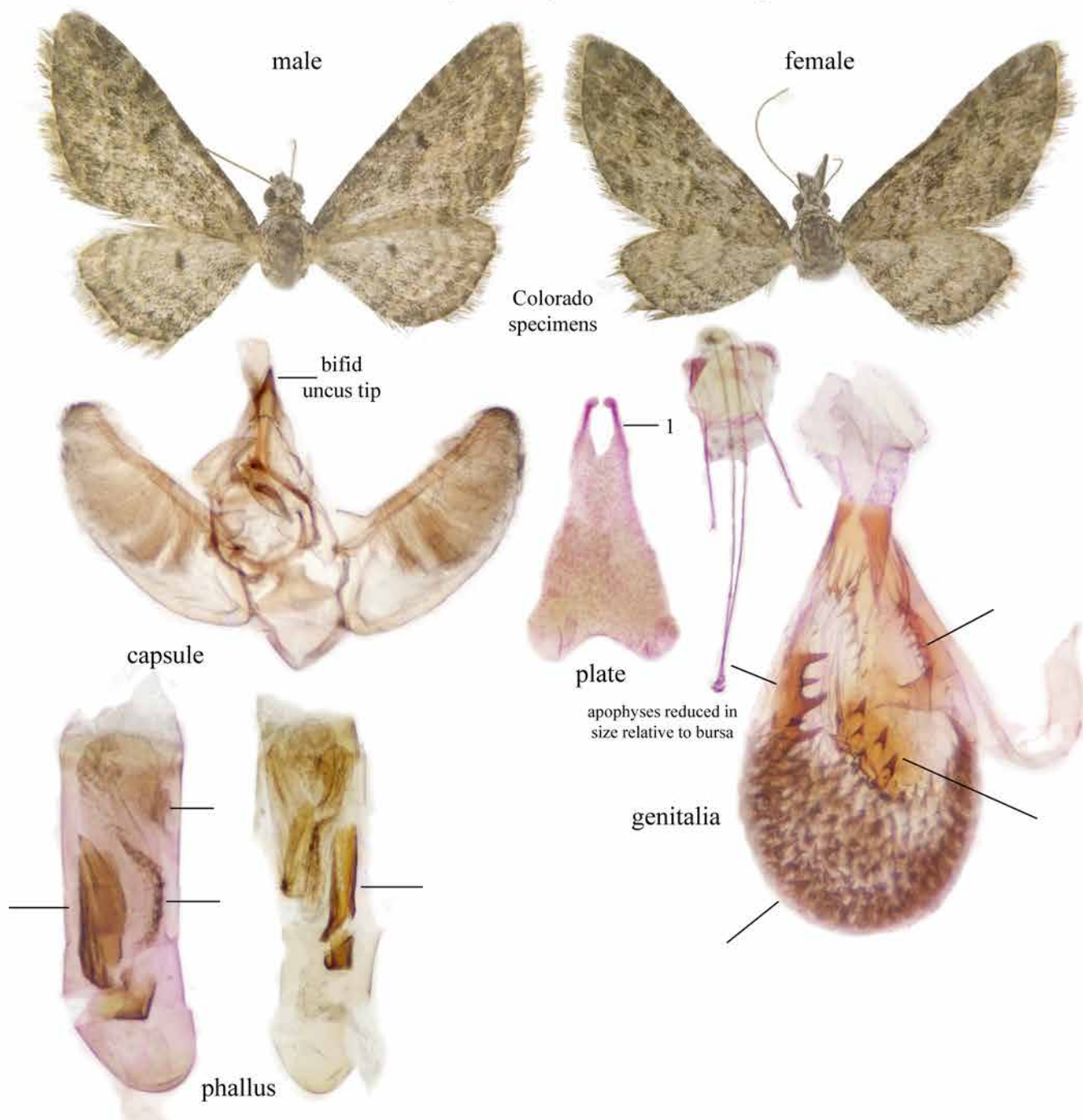
***Prorella mellisa* (Grossbeck, 1908) continued**

male

Example of the ochreous form. Specimen from the Chiricahua Mts., Cochise Co., Arizona.

***mellisa******artestata***

Comparison of cornuti in vesicae of *Prorella mellisa* and *Prorella artestata*. Each vesica has been removed intact from the respective phallus sheath and flattened for photography. The *mellisa* vesica is from the specimen illustrated above; the *artestata* vesica is also from a specimen collected in the Chiricahua Mts.

*Prorella insipidata* (Pearsall, 1910)

**Original description:** *Proc. Entomol. Soc. Wash.* 12(3):138.

**Type locality:** Las Vegas Hot Springs, New Mexico, August.

**Type deposited:** Male holotype in NMNH.

**Biology.** Unknown. Adults August and September.

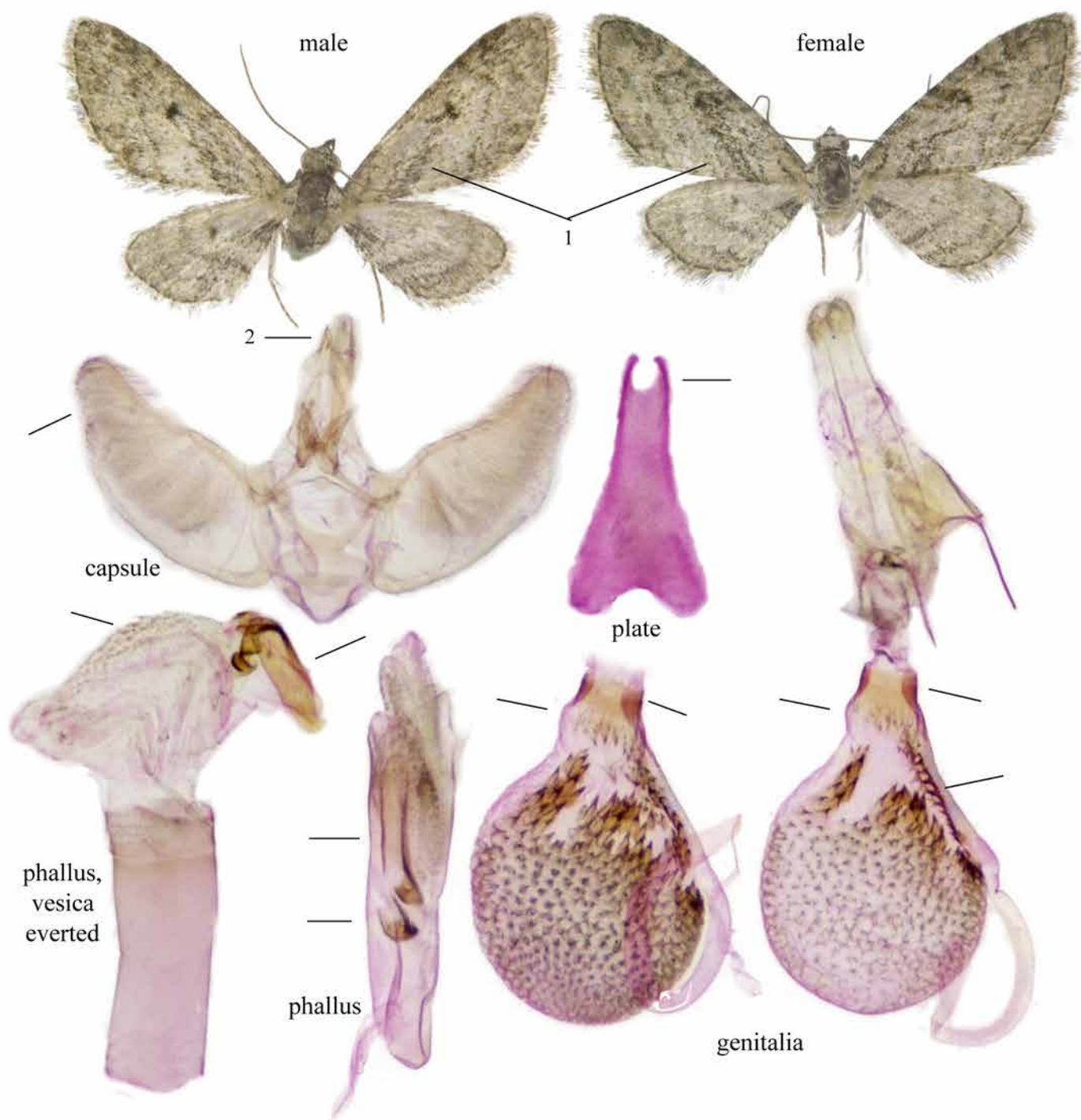
**Distribution:** Arizona; Colorado (Larimer Co.); New Mexico; SW Texas.

**Diagnostic characters:** 1. projections from apex of plate are long and slender from a V-shaped base; other features as indicated.

**Note:** This is one of three vexing species and the main text should be consulted for discussion.

**Reference:** McDunnough, J. H., 1949: p. 703; p. 728 fig. 20G; pl. 32 fig. 27.



*Prorella opinata* (Pearsall, 1909) — dark form

**Original description:** *Proc. Entomol. Soc. Wash.* 11(3):119.

**Type locality:** Arizona, [Yavapai Co.], Prescott.

**Type deposited:** Male lectotype in AMNH.

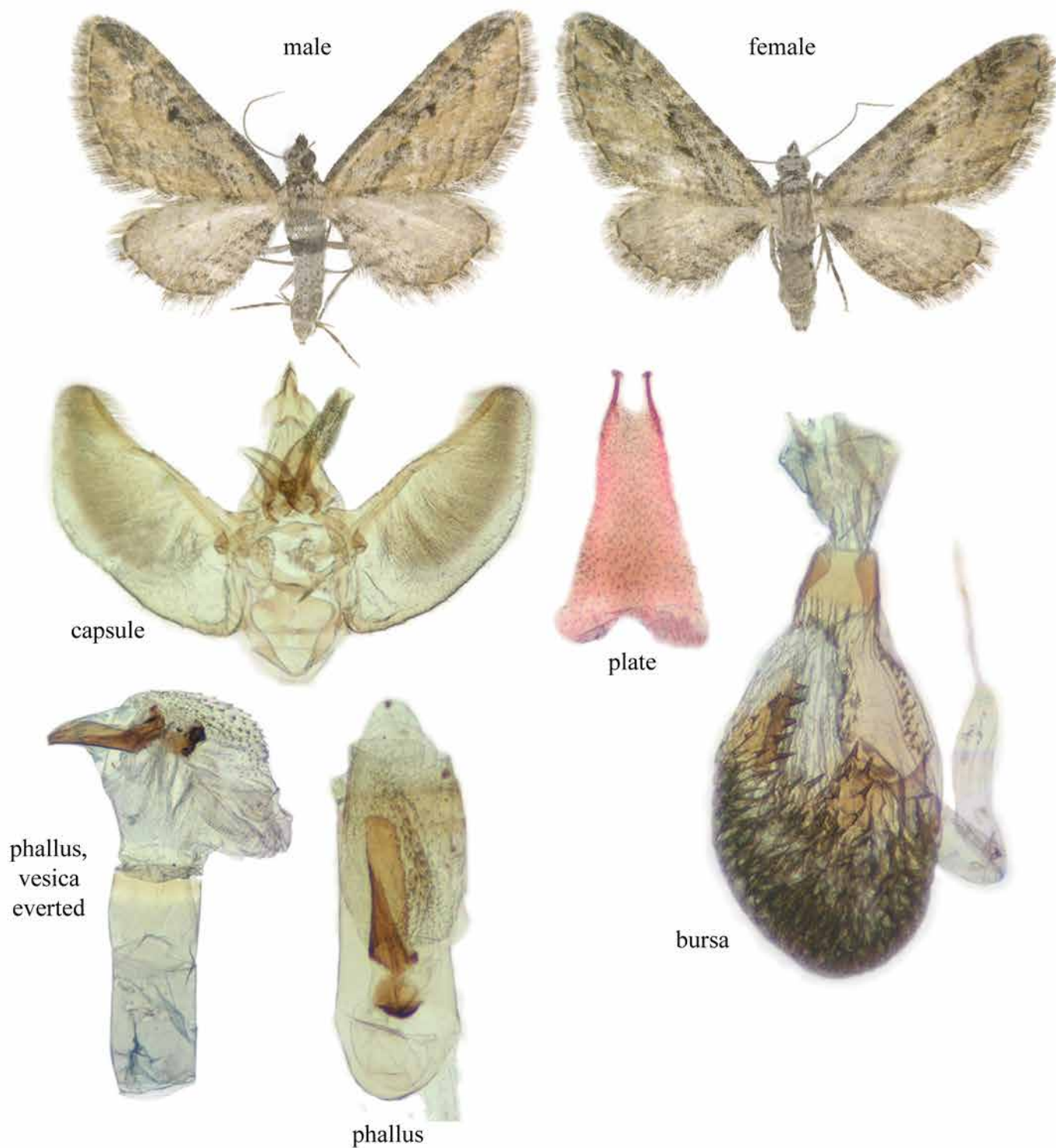
**Biology:** Unknown. Adults mid–August to mid–October.

**Distribution:** This appears to be the most common and widely distributed *Prorella* species. It occurs in San Bernardino Co., California, across much of Arizona, Utah, and New Mexico into west Texas, and northward into Colorado to Albany Co. in southern Wyoming.

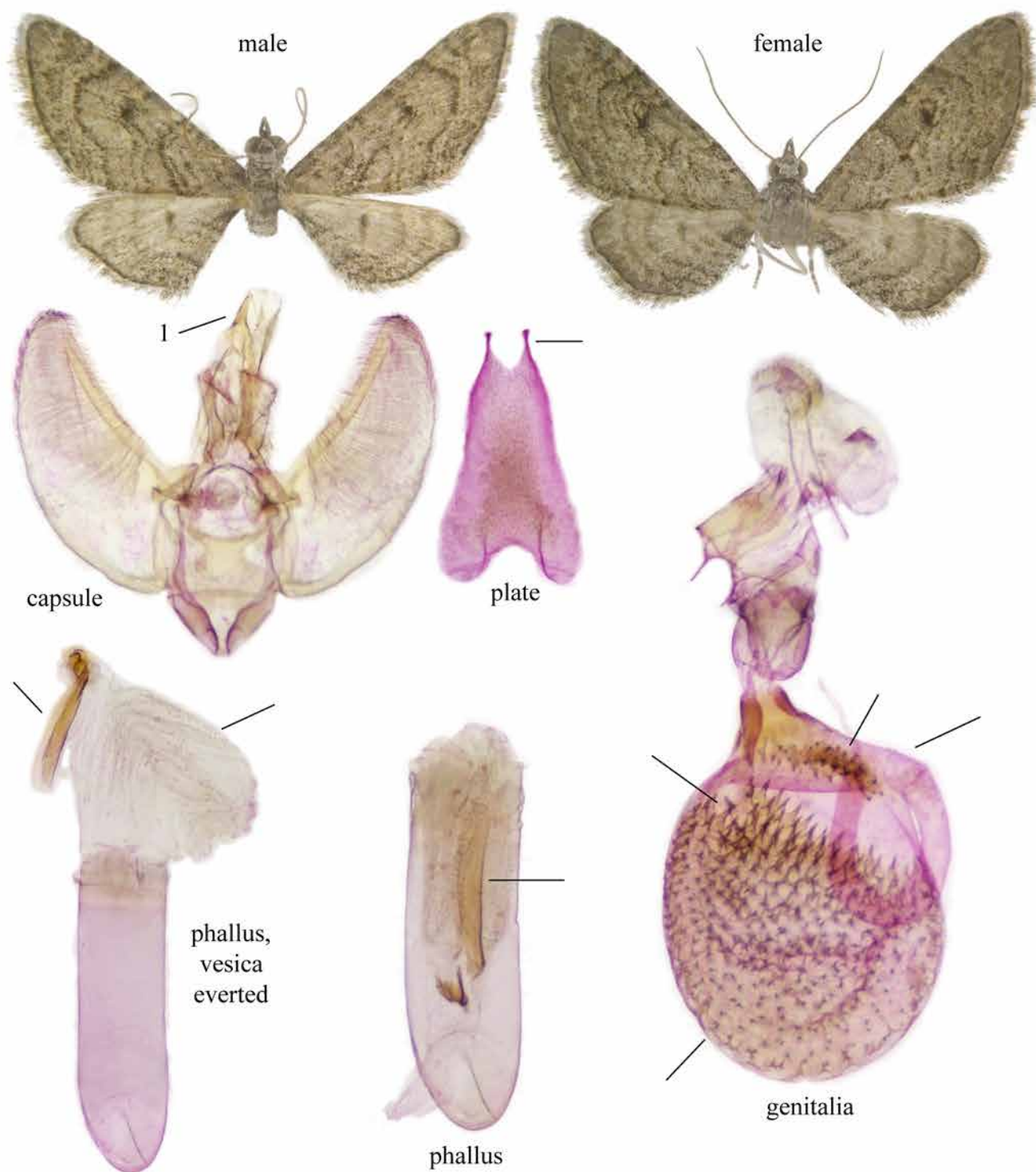
**Diagnostic characters:** 1. dorsal forewing with central diagonal diffuse dark band; 2. bifid uncus tip; other features as indicated.

**Reference:** McDunnough, J. H., 1949: p. 704; p. 728 fig. 20H; pl. 32 figs. 28–29.



*Prorella opinata* (Pearsall, 1909) — pale (ochreous) form

This phenotype has been collected in southern Wyoming and central and southern Utah. The specimens illustrated are from Albany Co., Wyoming. McDunnough (1949, pl. 32, fig. 29) illustrated a specimen from Eureka, Utah.

*Prorella protoptata* (McDunnough, 1938)

**Original description:** *Can. Ent.* 70(11):240.

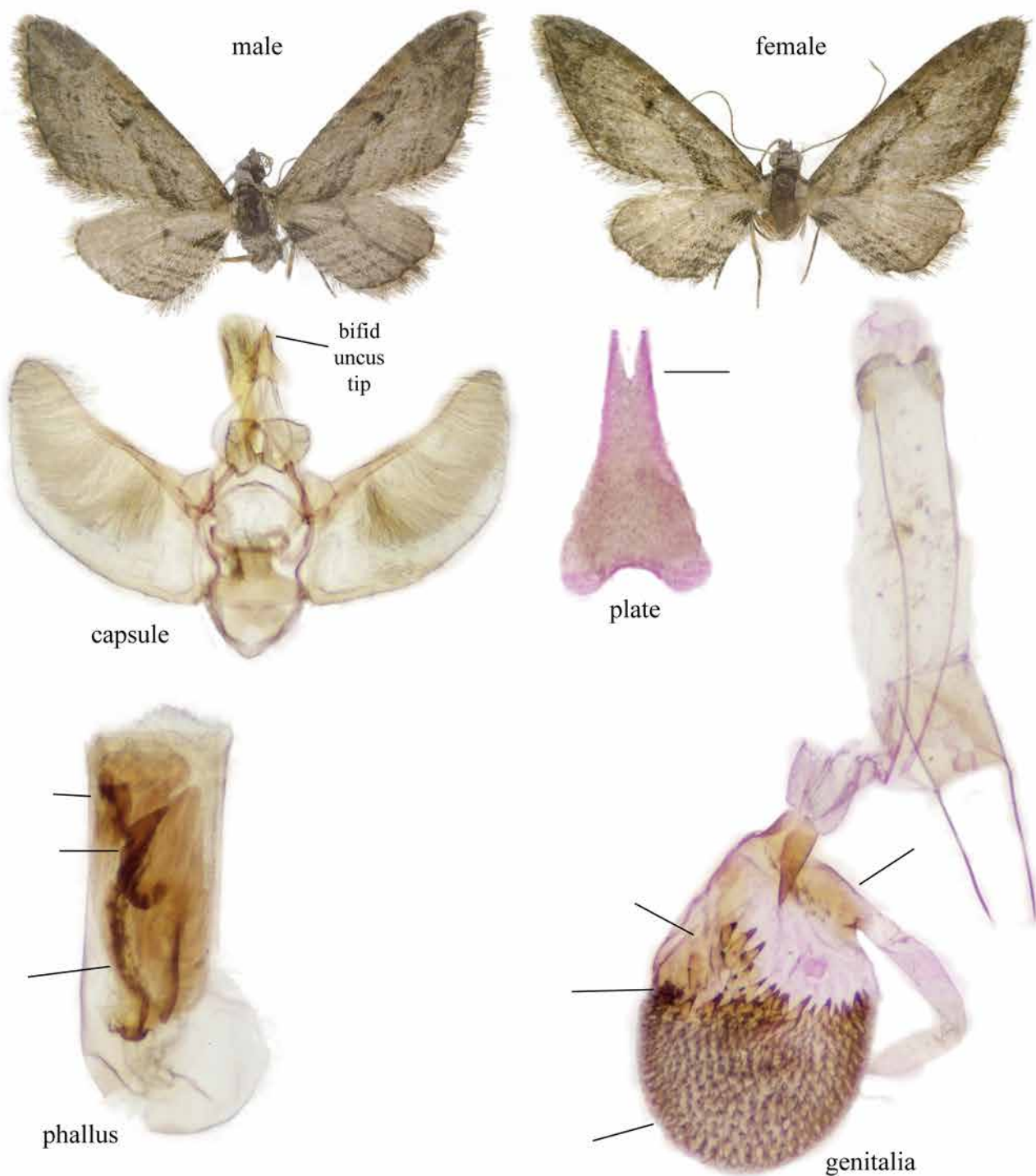
**Type locality:** Southwestern Texas.

**Type deposited:** Male holotype in CNC.

**Biology:** Unknown. Adults August.

**Distribution:** Southwestern Texas, Specimens studied from Culberson Co.

**Diagnostic characters:** 1. bifid uncus tip; adults with black wavy line maculation; other features as indicated by pointers.

*Prorella* species 1 — undescribed?

**Biology:** Unknown. Adults fly in August, in relatively dry ponderosa pine forest above 6700'.

**Distribution:** To date, this moth has been collected in Cochise Co., Arizona in the Chiricahua Mtns., Grant Co., New Mexico in the Pinos Altos Mtns., and Catron Co., New Mexico in the San Francisco Mtns.

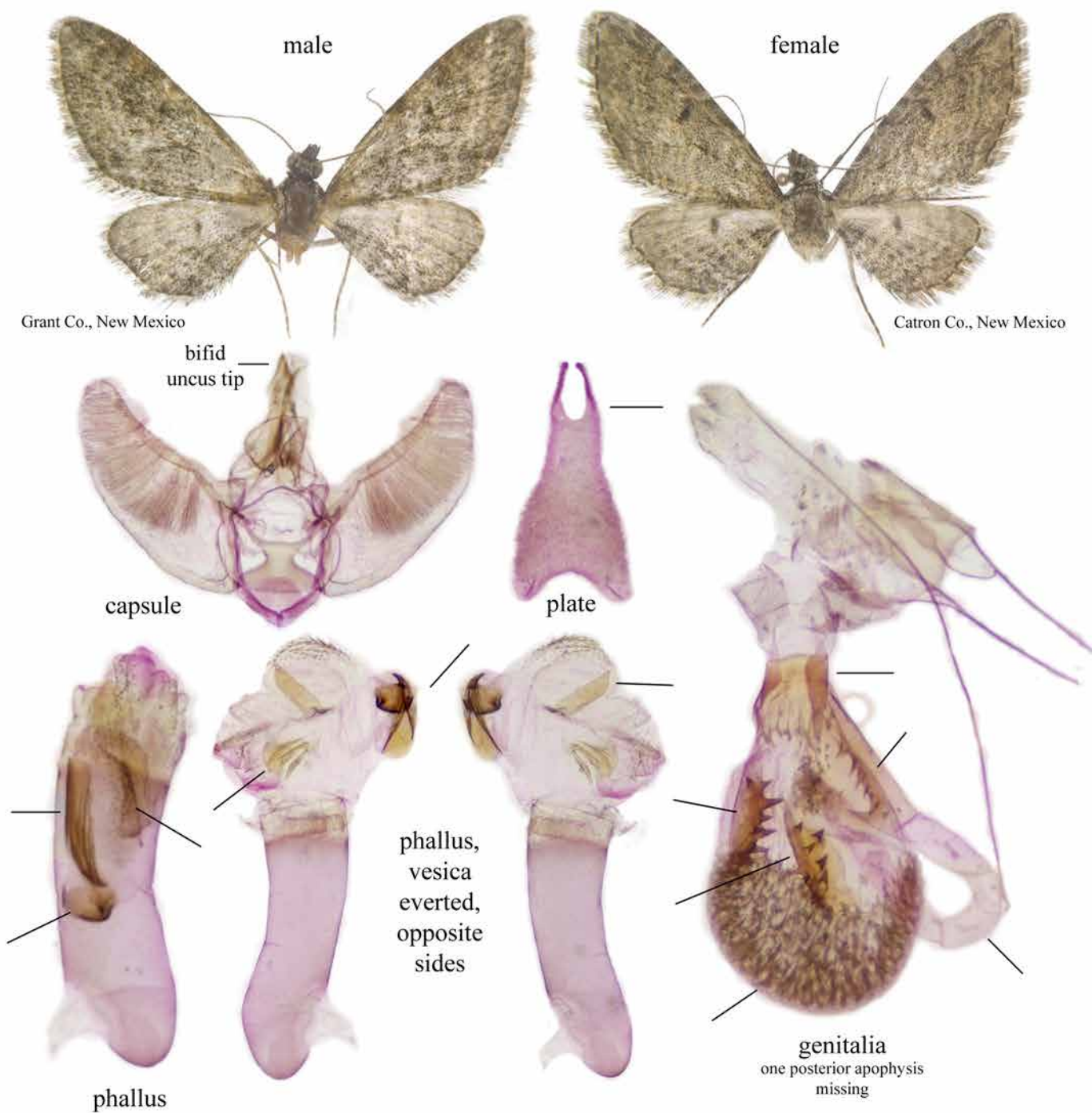
This is either an undescribed species, or possibly a species described from Mexico.



***Prorella* ? species 2 — undescribed?**

This species is presently known from a single female from the Barfoot Park area, 8300', Chiricahua Mts., Cochise Co., Arizona, 18 August, 2009. The moth presents the general morphology of the Eupitheciini and is tentatively placed in *Prorella*. Until additional study material can be obtained and barcoded the correct phylogenetic status is uncertain.

***Prorella* species 3 — undescribed or a form of *insipidata* (Pearsall, 1910)?**



**Biology:** Unknown. Adults fly in September.

**Distribution:** New Mexico, Grant Co., Pinos Altos Mts., ca. 8000'; Catron Co., San Francisco Mts., 6800'.

**Discussion:** The male holotype and genitalia slide of *P. insipidata* have been examined by high-resolution digital photograph.

The adult is badly rubbed and faded with considerable loss of maculation detail. The capsule and plate match those illustrated above. The cornuti appear to be slightly different from the holotype, but the slide has darkened and yellowed with age making close comparison difficult. The phallus illustrated by McDunnough, 1949 (text fig. 20G) differs from the holotype. The female genitalia shown above agree closely with McDunnough's concept of *insipidata*, when his comments (page 704) concerning the condition of the slide available to him are taken into account. Both the holotype and McDunnough's female are from northern New Mexico (San Miguel and Sandoval cos., respectively). The specimens shown above are from southwest New Mexico. Multiple specimens of both sexes have been examined.

*Prorella species 3* — continued



Grant Co., New Mexico

*Prorella species 3*

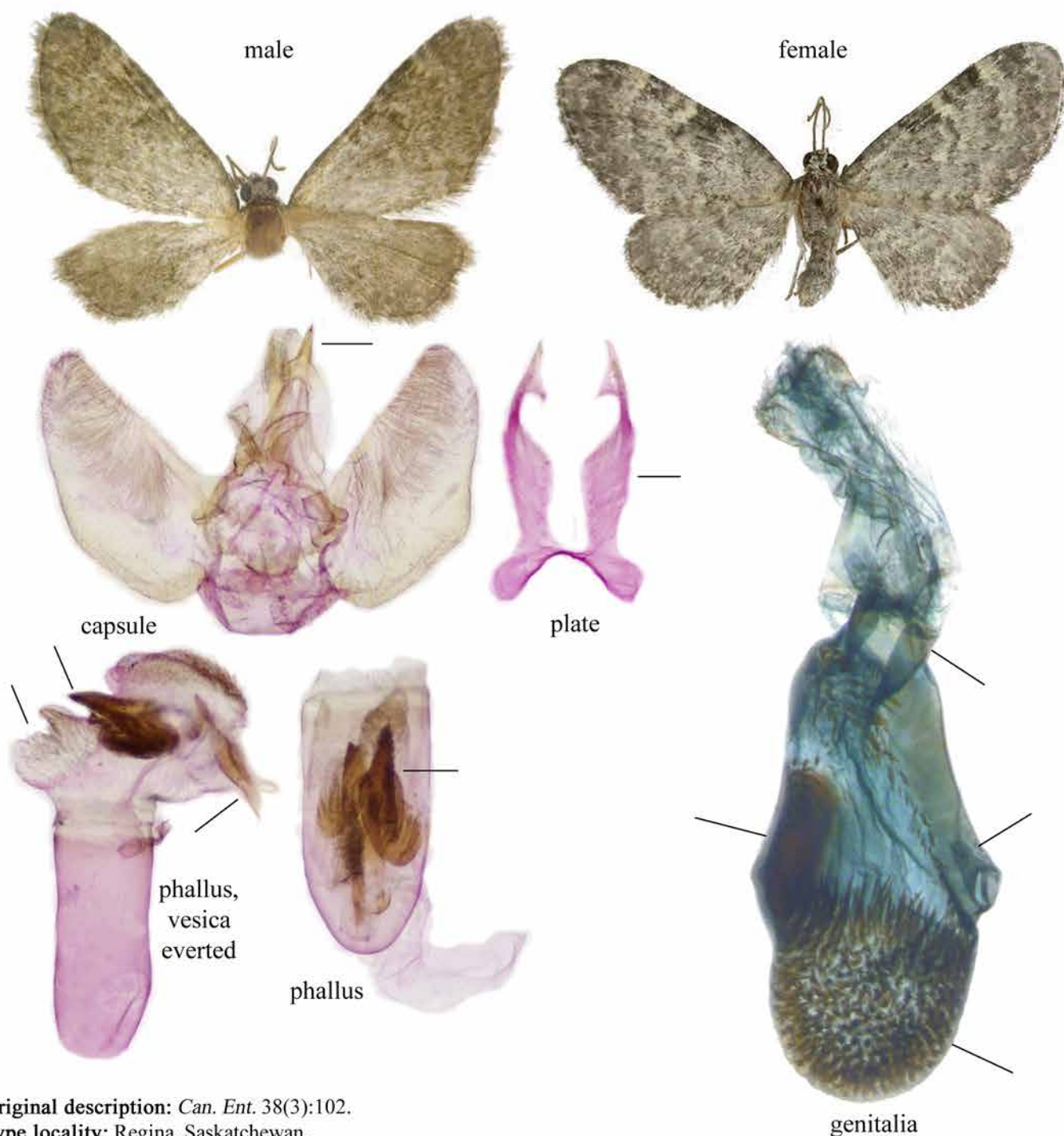


Larimer Co., Colorado

*Prorella insipidata*

Vesicae extracted and flattened to shown cornuti.



*Eupithecia regina* Taylor, 1906

**Original description:** *Can. Ent.* 38(3):102.

**Type locality:** Regina, Saskatchewan.

**Type deposited:** Male holotype in NMNH.

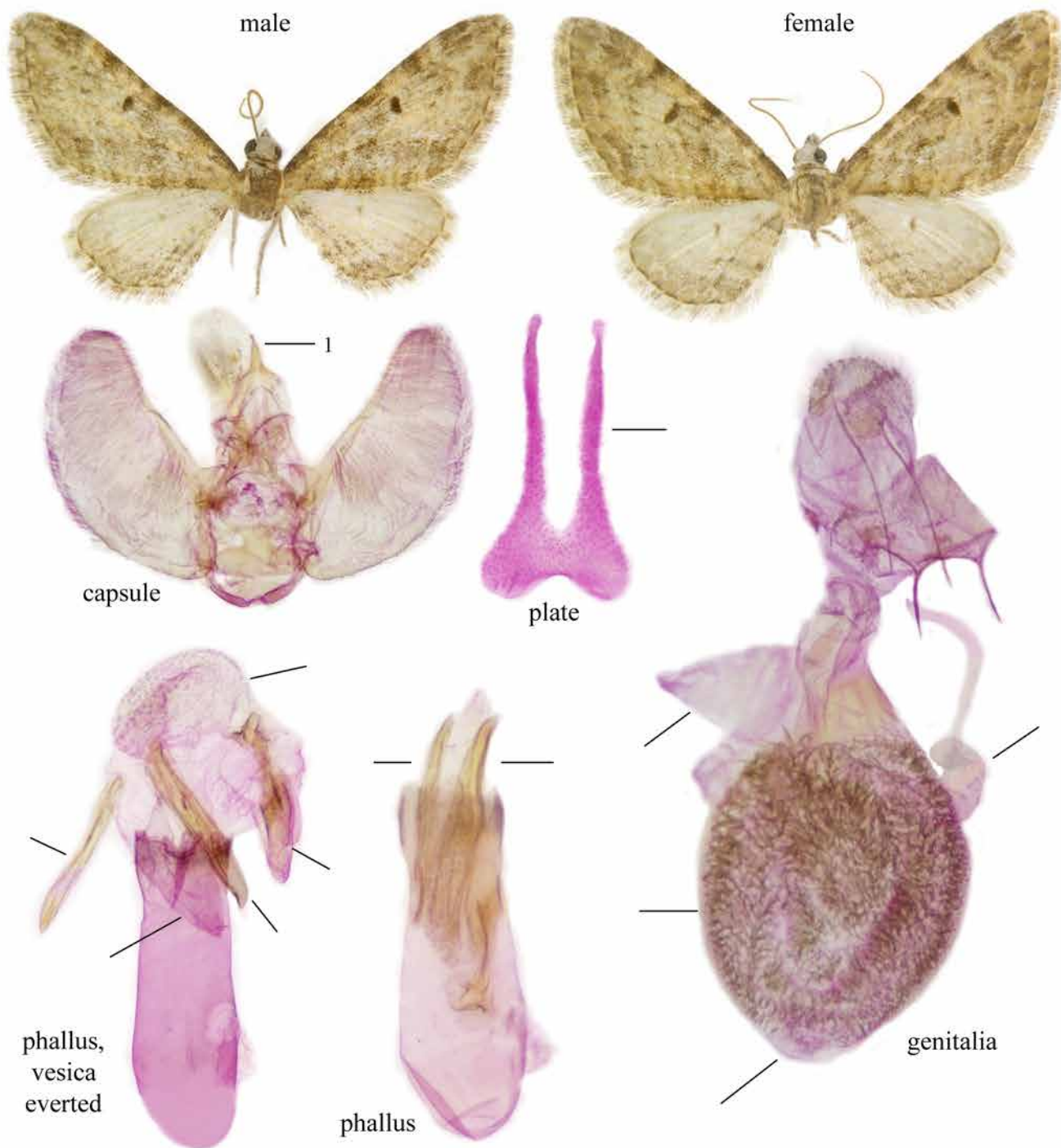
**Biology:** Unknown. Adults May—late July.

**Distribution:** Published records are from western Manitoba to Keremeos, British Columbia, however, the species has a disjunct distribution and also occurs in Kentucky (the male was taken at light in Woodford Co., Kentucky on 4 May, 1981), western North Carolina and eastern Tennessee.

**Diagnostic characters:** Uncus with bifid tip; unique plate shape; other features as indicated.

**References:** Bolte, K. B., 1990: p. 40; p. 212; figs. 101–102. McDunnough, J. H., 1949: 571; p. 712 fig. 4F; pl. 27 fig. 12.

Female adult and genitalia photos courtesy of J. Bolling Sullivan, Beaufort, NC.

*Eupithecia palmata* [Cassino & Swett], 1922

**Original description:** *Lepidopterist* 3(10):171.

**Type locality:** Palm Springs, California.

**Type deposited:** Male holotype in MCZ.

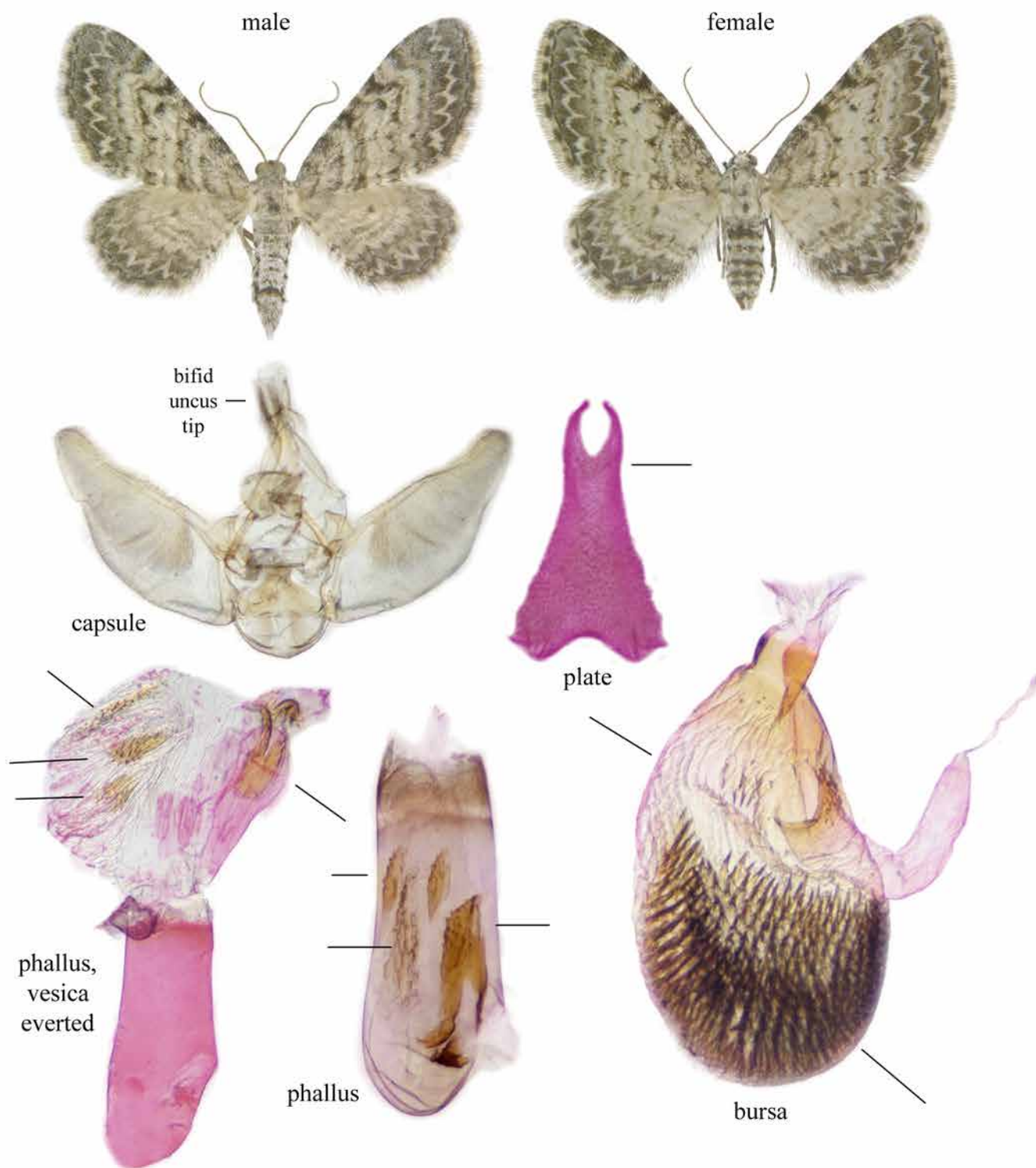
**Biology:** Unknown. Adults February–March.

**Distribution:** Desert areas of southern California; a female from Clark Co., Nevada, March.

**Diagnostic characters:** 1. uncus tip a simple hook; other characters as indicated.

**Reference:** McDunnough, J. H., 1949: p. 590; p. 714 fig. 6E; pl. 28 fig. 4.



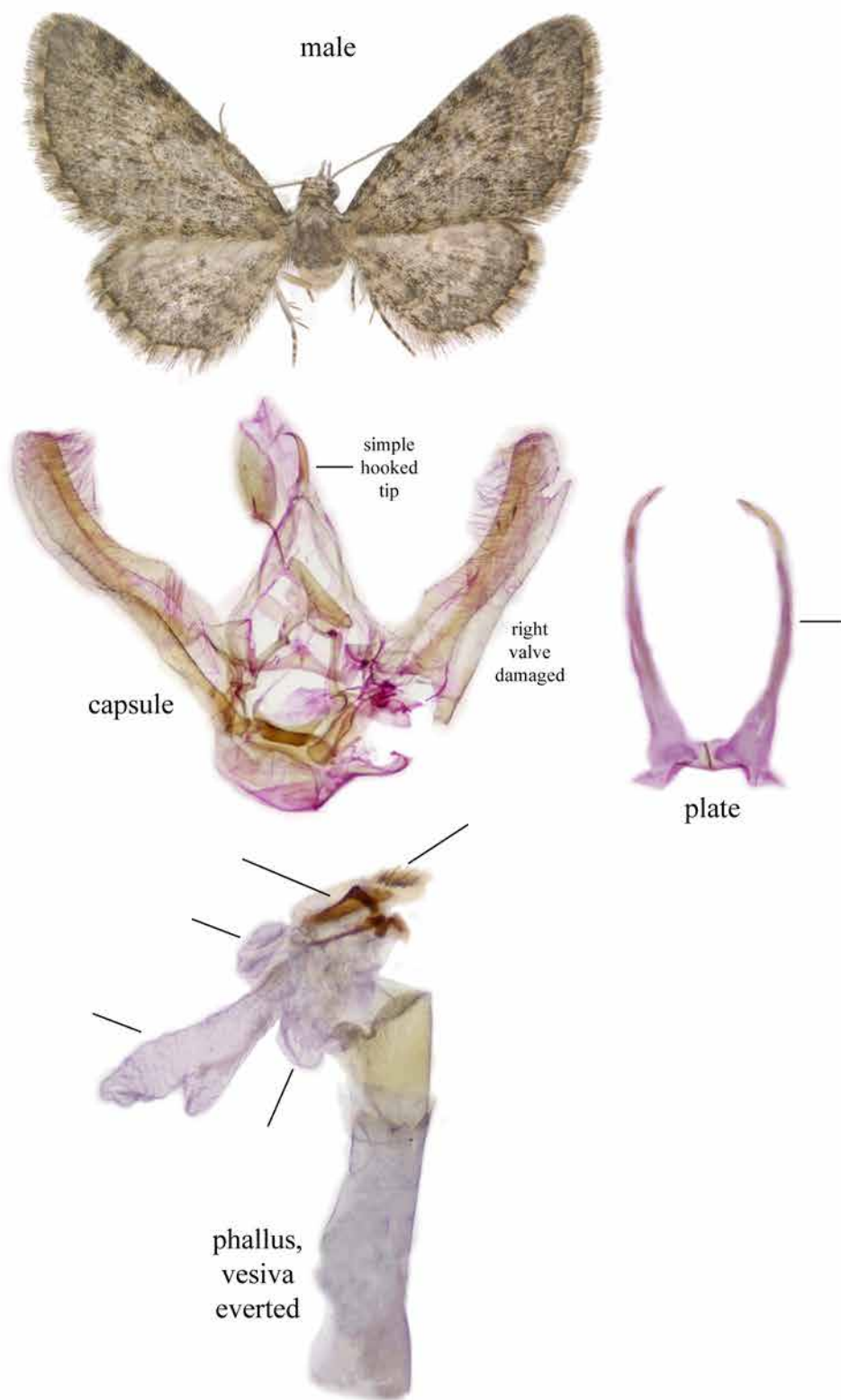
*Eupithecia* species 3 — undescribed?

**Biology:** Larvae found in and reared on *Anticlea elegans* var. *glauca* (Pursh.) Rydb. [*Zigadenus elegans* subspecies *glauca*] by George Balogh. Larvae May–June; Adults in September.

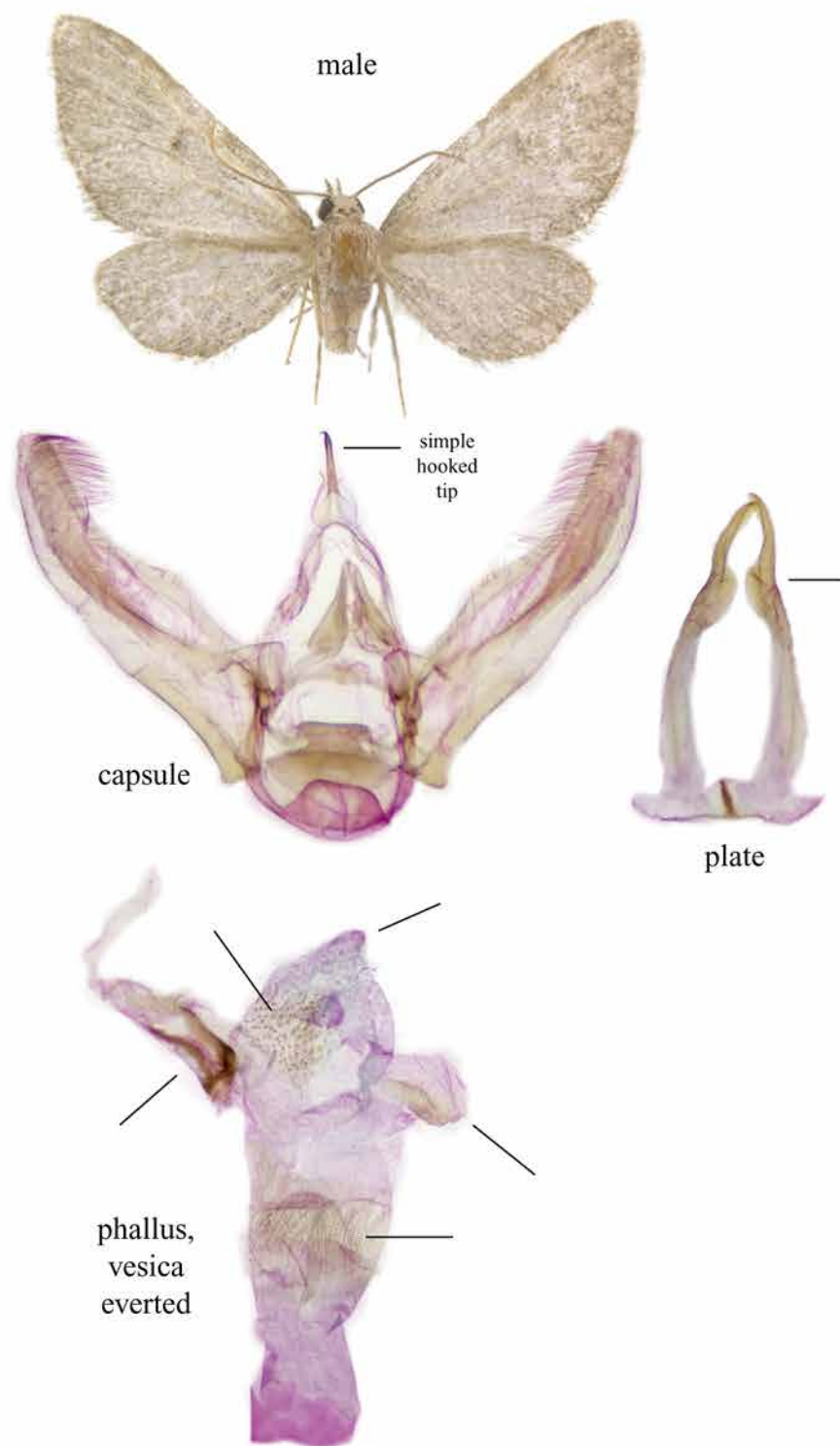
**Distribution:** The only specimens that I have seen of this moth are from the upper peninsula of Michigan (Mackinac Co.).

**Discussion:** The genitalia appear to be intermediate between those of *E. cretacea* and *E. zygadeniata*. The habitus is more strongly and contrastingly maculated than in those species.

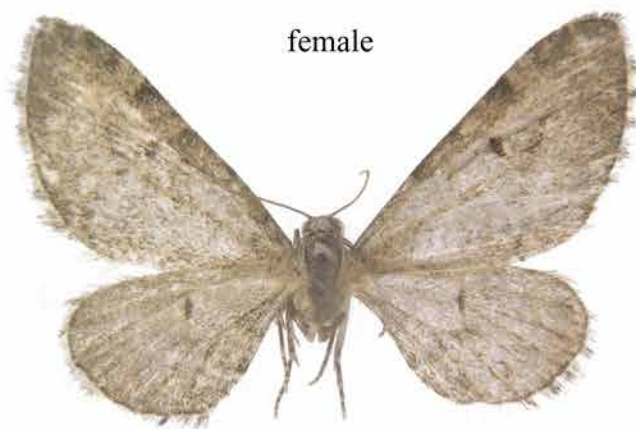


*Eupithecia* species 4 — near *maestosa*

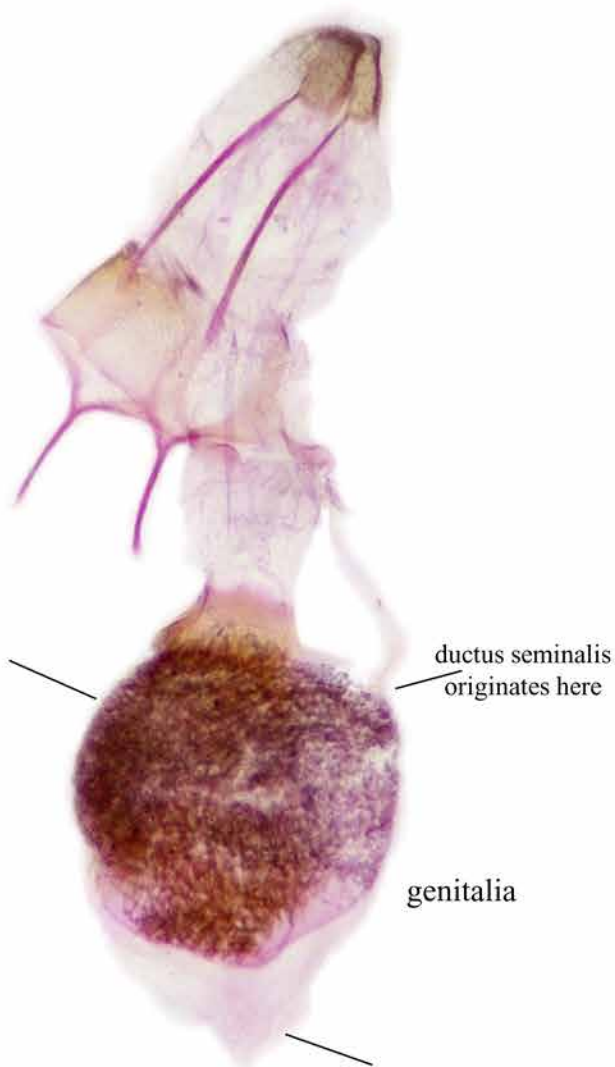
Moth known from this single specimen from Mt. Graham, Graham Co., Arizona, 8849', 9 October, 2007.

*Epithecia* species 5 —undescribed?

Moth known from this single worn specimen from above Onion Saddle, Chiricahua Mts., Cochise Co., Arizona, 7630', 10 October, 2007. Possibly a described Mexican species.

*Eupithecia* species 6 — undescribed?

female

ductus seminalis  
originates here

genitalia

Moth known from this single female from Upper Gallinas Canyon, Black Range, 7000',  
Grant Co., New Mexico, 20 August, 2009

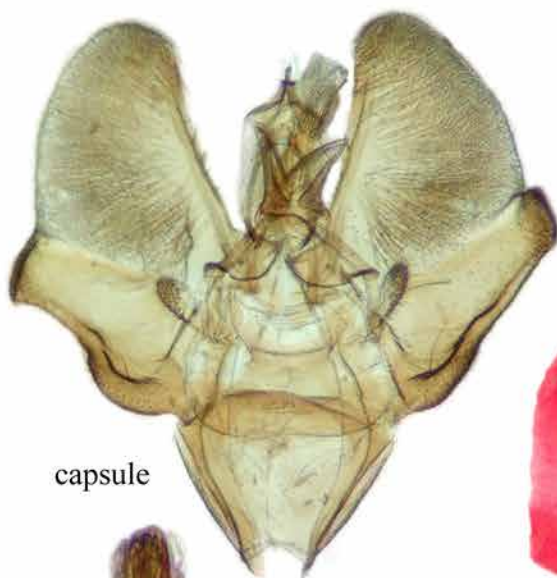


*Eupithecia* species 7 — undescribed?

This moth known from a single female from Pinos Altos Mts., at MP 27 of state road 15, 6120', Grant Co., New Mexico, 25 August, 2016.

*Eupithecia* species 8 — undescribed?

male



capsule



plate

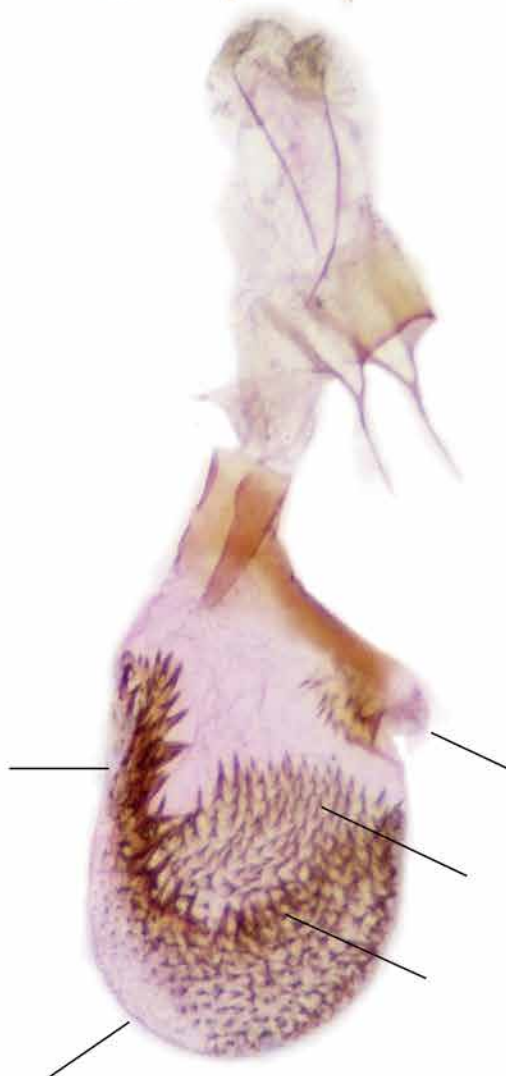
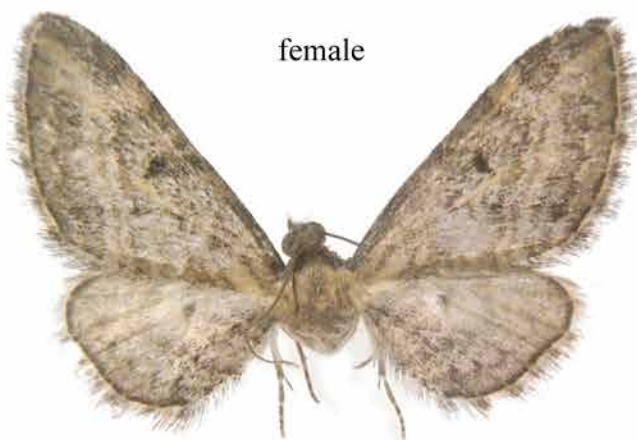


phallus

This moth is known from 3 specimens in EME from the Chiricahua Mts., Cochise Co., Arizona: 2 males from Rustler Park, 8500', 12 July, 1972, and 1 specimen from Barfoot Park, 5 August, 1991. Based on the male genitalia, this moth appears to be close to *E. huachuca*.

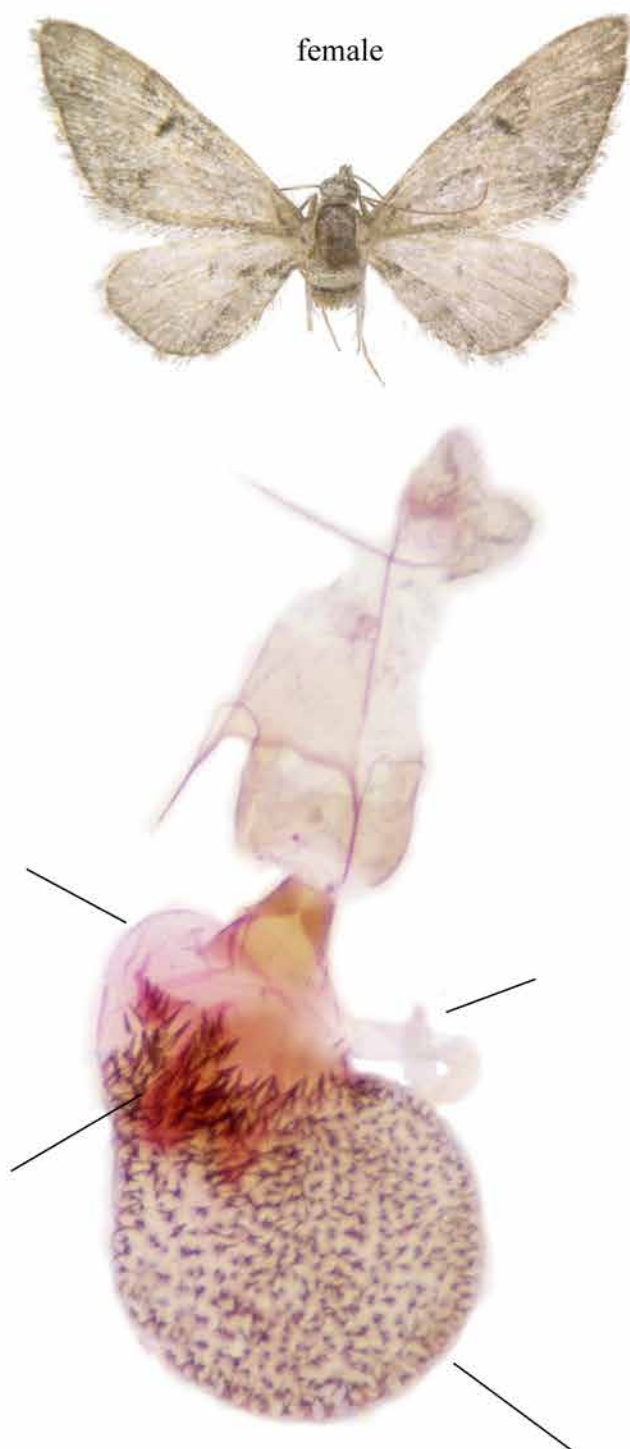
***Eupithecia* species 9 —undescribed?**

female

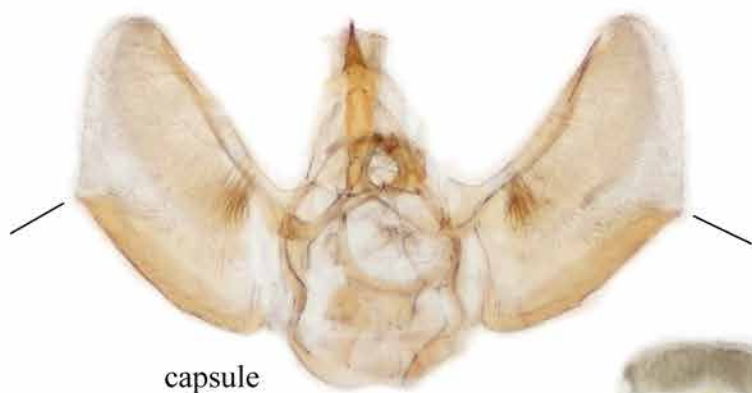


This single female is from Carr Canyon, Huachuca Mts., 5600',  
Cochise Co., Arizona, 7 August, 2009.



***Eupithecia* species 10 — undescribed?**

This single worn female specimen is from Pinery Canyon,  
Chiricahua Mts., 6970', 28 August, 2014.

*Eupithecia neomexicana* McDunnough, 1945

vesica partially extracted  
and flattened to show cornuti



This specimen is from Harding Co., New Mexico at apparently the extreme northeastern boundary of moth's geographic range. It was collected in early September. This plate illustrates the degree of variation in both habitus and genitalia for this species. Compare to Plate 51.

*Eupithecia pinata* Cassino, 1925

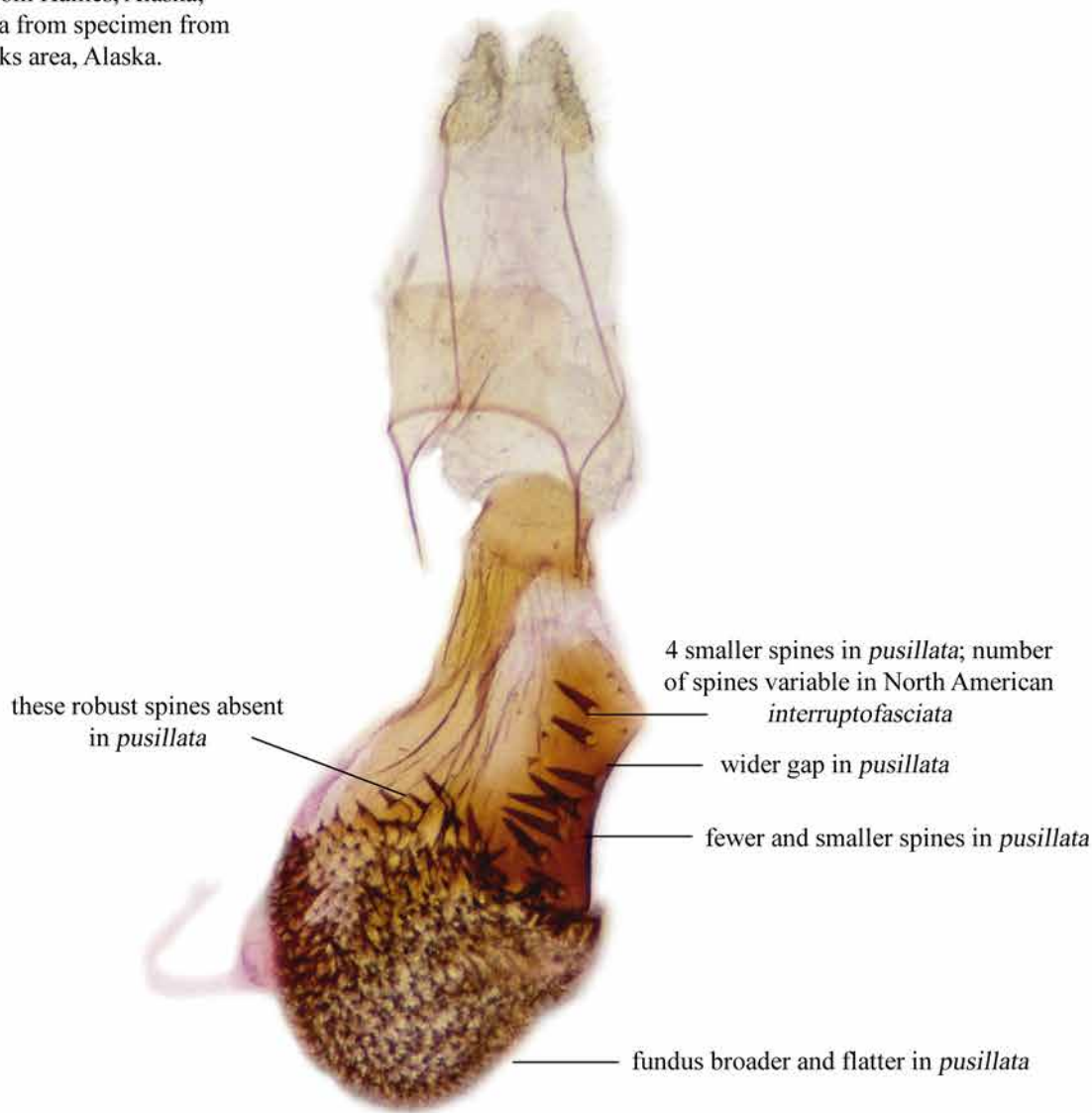


Female specimen from Douglas, Cochise Co., Arizona, 13 March, 1979.

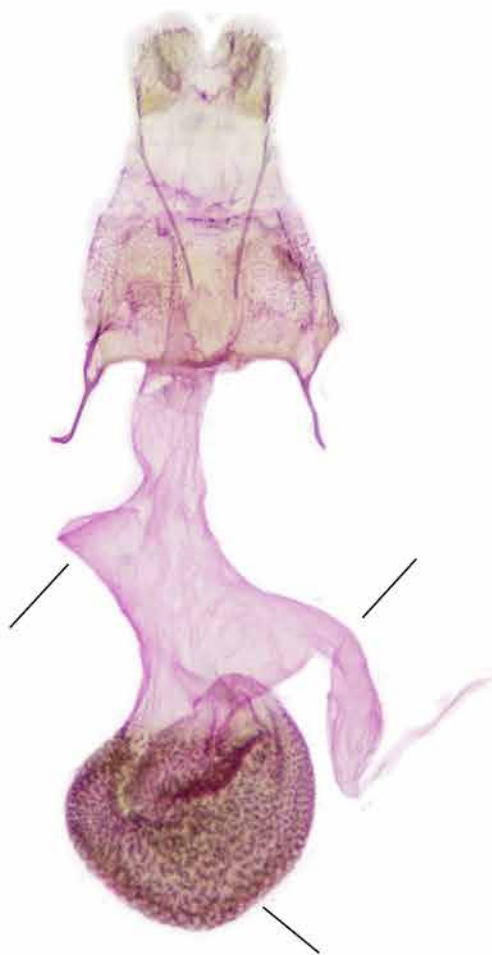
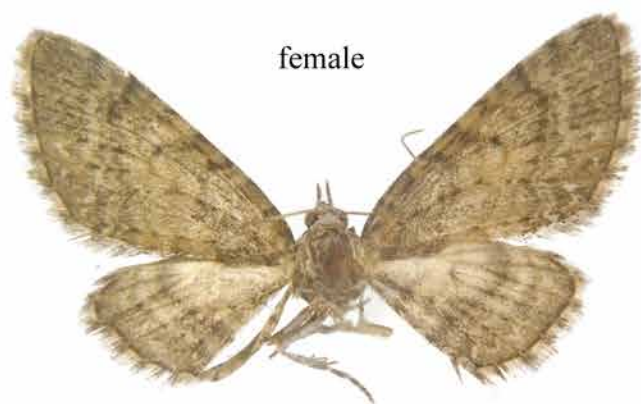


*Eupithecia interruptofasciata* Packard, 1873 — Alaska

Moth from Haines, Alaska;  
genitalia from specimen from  
Fairbanks area, Alaska.

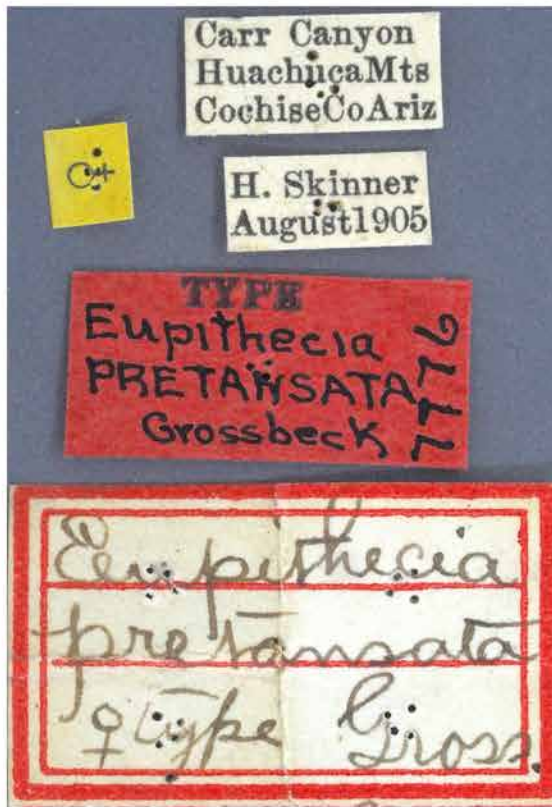


*Eupithecia pusillata* [Denis & Schiffermüller, 1775] has been reported from British Columbia, Canada, as noted in the introductory material. Three females from Alaska have been examined and based on their genitalia, they are referable to *E. interruptofasciata*. Five adult females of *E. pusillata* and genitalia of both sexes were illustrated by Mironov (2003, pl. 6, figs. 56a–e; p. 383, fig. 56; p. 408, fig. 56). Based on Mironov's illustration, the differences in female genitalia between these two species are illustrated above.

*Eupithecia* species near *palpata*

The moth illustrated is from Skidaway Island, Camden Co., Georgia, 6 March, 1992. The specimen is placed in MGCL, Acc. #2016-16 L. Dow.

*Eupithecia pretansata* Grossbeck, 1908  
Holotype

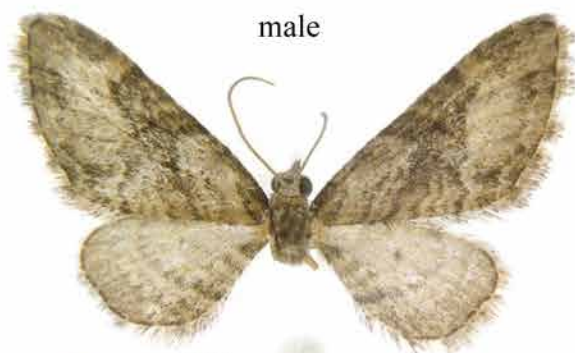


Adult and label photos courtesy of Jason D. Weintraub, ANSP; genitalia photo and plate by C. D. Ferris, August, 2018.

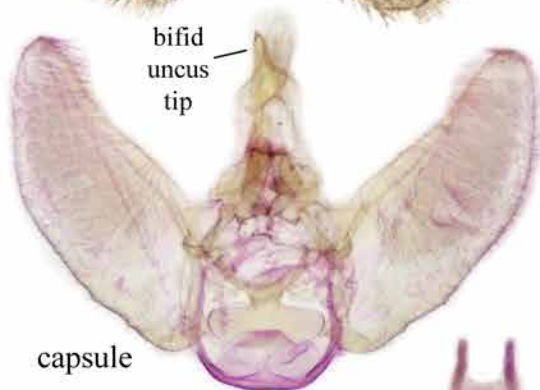


*Eupithecia pretansata* Grossbeck, 1908

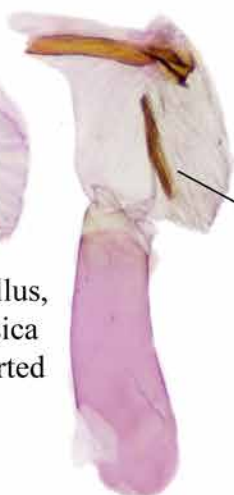
male



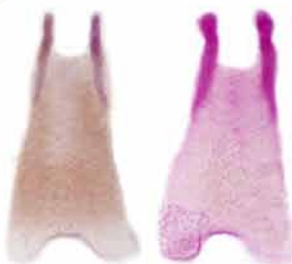
females

females slightly  
polyphenicbifid  
uncus  
tip

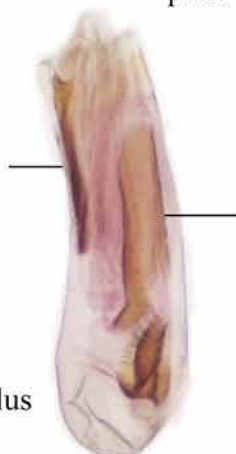
capsule

phallus,  
vesica  
everted

plate



phallus



genitalia

**Original description:** *J. N. Y. Entomol. Soc.* 16(1):23.**Type locality:** Arizona, Cochise Co., Huachuca Mts., Carr Canyon.**Type deposited:** Female holotype in ANSP.**Biology:** Unknown.**Distribution:** Adults in June, August, September in the Guadalupe Mts.,

Culberson Co., Texas; in August in the Chiricahua Mts., Cochise Co., Arizona

and the Pinos Altos Mts., Grant Co., New Mexico. HT from Huachuca Mts., Cochise Co., Arizona.

**Diagnostic characters:** As indicated.**Reference:** McDunnough, J. H., 1949: p. 591; pl. 28 fig. 5; genitalia not illustrated.

## Notes