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A Revision of the Moth Genus *Plataea* (Lepidoptera, Geometridae)

FREDERICK H. RINDGE¹

ABSTRACT

The genus *Plataea* is revised for the first time. The 13 available names represent six species: *calcaria* (Pearsall), *personaria* (H. Edwards), *ursaria* Cassino and Swett, *californiaria* Herrich-Schäffer, *diva* Hulst, and *trilinearia* (Packard). Two new species are described: *pausanias* from

Coahuila, Mexico, and *aristidesi* from México, Mexico. All species are fully described; keys and photographs are given for the adults and their genitalia. Taxonomic problems within the genus are discussed; sexual and seasonal dimorphism occur in certain species.

INTRODUCTION

The genus *Plataea* has never been revised. The last listing (McDunnough, 1938, p. 170) of the members of this genus gave 13 names arranged as seven species; one of the species had one subspecies and another had two subspecies, with the remaining names being listed as synonyms. A preliminary survey of the group showed that this arrangement needed changing. It is the purpose of the present paper to revise *Plataea*, to describe all the species, and to discuss the problems within the genus.

The genitalia, in conjunction with other characters, form the basis for much of the modern revisionary studies being done today in the Lepidoptera. Within a genus, the genitalia are usually relatively uniform and can be used to recognize the group; this is true of the American geometrids known to me. *Plataea* may be an exception. In the male genitalia of the species that I

include in this genus are four dissimilar types of structures; these are different enough so that they might be considered as representing four genera. The female genitalia (with two females being unknown), not unexpectedly, show less marked variety but still might be placed in at least two genera.

A careful study of the wings and their venation, the palpi, antennae, legs, and other structures shows that the eight species are remarkably uniform and cannot be satisfactorily separated by means of these characters. This could mean that the species belong to one genus. Knowledge of the early stages would provide another group of characters; unfortunately (and surprisingly, for so common a group of species) there is practically nothing known about the preparatory stages, so this important facet sheds no light.

Armed with the above facts, a decision had to

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be made as to whether these eight species should be included in a single genus or in more than one. I have chosen the first alternative, as I have considered the characters of the wings and of the various body appendages more important than the genitalic characters in this group. However, a re-evaluation may be necessary when accurate data become available from the early stages.

The eight included taxa comprise three pairs of closely related species (*pausaniasi* and *aristidesi*, *personaria* and *ursaria*, and *californiaria* and *diva*). Of the others, *calcaria* is most closely related to the first pair of species, and *trilinearia* stands apart by itself. The male genitalia of *trilinearia* are highly modified and need a detailed morphological study.

The genus as herein defined contains species that are found in North America, west of approximately 100 degrees longitude. In the north they occur in southern Saskatchewan, southern Alberta, and southeastern British Columbia; in the south they extend into northern Baja California in the west, and to the central Mexican highlands to the east. Two species (described under the name *Gorytodes*, a junior subjective synonym of *Plataea*) have been named from Mexico, namely *G. orsina* Druce ("1891-1900" [1893], p. 138) and *G. (?) mexicana* Druce ("1891-1900" [1899], p. 542). Neither species belongs in *Plataea*; their exact placement awaits a study of the Neotropical geometrids. Druce ("1891-1900" [1893], p. 138) also reported *G. trilinearia* Packard from central Mexico. The specific identification was incorrect; the species is described as new in the present paper. There are a few species in Chile that have maculation very similar to that of the *personaria-californiaria* complex; structurally the material from Chile is very different and is not closely related to *Plataea*.

The relationships of *Plataea* to other North American genera are not obvious. *Philtraea* Hulst has similar venation, but the palpi, antennae, and genitalia are very different. Perhaps when the Mexican and Neotropical faunas become better known the picture will become clearer.

Taxonomic work in *Plataea* has heretofore been complicated by several factors. The basic problem, of course, is that this genus, proposed about 120 years ago, has not been studied and revised in that length of time. One factor that has

caused problems is that in *calcaria* the sexes are dimorphic in color and pattern; three names have been proposed for this species as a result. Based on our present knowledge *calcaria* is the only dimorphic species in the genus; however, the females of both *pausaniasi* and *aristidesi* are unknown, and they could be dimorphic also. Another problem has been the occurrence of seasonal dimorphism in some species. This is most strongly marked in *personaria* in southern California; in the northern part of the range of this species (the San Francisco Bay area) this difference is not nearly so obvious. The different seasonal extremes of *personaria* were named as specific entities; these are discussed under that species.

After studying the large number of specimens available to me, I have decided not to use subspecific names in this genus even though such names have been used in the past. There do not appear to be any noticeable geographical gaps, with isolated populations, within any of the species. There are marked geographical and ecological differences within some of the species. One of these is *diva*; the form that is found on the coastal plains of southern California and northwestern Baja California is multivoltine, and the moths are relatively small and pale. The moths of the same species on the eastern side of the Sierra Nevadas, in Nevada and southeastern Oregon, and in the mountains of southern California are apparently normally univoltine, and are larger and more contrastingly marked than coastal specimens. Taken separately, these might be considered as subspecies, especially the geographic extremes; the type of *diva*, from Inyo County, is very different from lowland specimens in southern California. As far as I can tell, there is no geographic separation between these extremes; the species extends up the coastal canyons and foothills into the mountains, and specimens from these areas are intermediate in their characters. With *trilinearia*, a pale subspecies has been named from Olancho, Inyo County, California. When only topotypical specimens are studied the subspecies appears valid; when series of moths from the eastern face of the Sierra Nevadas and from the adjacent desert areas are examined, it turns out that there is a complete intergradation of individuals from the very pale "subspecies" to normal *trilinearia*

from Nevada. This is the most widely ranging of the species in the genus; the moths from Colorado have also been named. There is a fair amount of individual variability throughout the range of the species, but I have not found any consistent correlation between variation and distribution. As a result, I have placed both names, heretofore listed as subspecies, in the synonymy of *trilinearia*.

During the course of this study I examined 3416 specimens (1857 males, 1559 females) and 163 genitalic dissections (101 males, 62 females). The great majority of the latter were prepared by me; in addition, I made slide mounts of the antennae and legs of both sexes of all species when material was available. The majority of specimens are in two collections, those of the American Museum of Natural History (1211 moths, 120 genitalic slides) and of the Los Angeles County Museum of Natural History (1040 moths, 28 genitalic slides); the next largest is at the University of California, Berkeley (297 moths). All the types in the country have been studied, and are illustrated in the present paper; only those of *californiaria* Herrich-Schäffer and *dulciaria* Grote have not been examined. All specimens studied have had either identification or type labels placed on their pins.

All the photographs in this revision were taken by me. Whenever possible, specimens from the American Museum of Natural History were utilized; some material is from other collections and is specifically noted as such. The following abbreviations have been used:

AMNH, the American Museum of Natural History
 BM, Department of Entomology, the British Museum (Natural History)
 MCZ, the Museum of Comparative Zoology, Harvard University
 USNM, the National Museum of Natural History, Smithsonian Institution

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GENUS *PLATAEA* HERRICH-SCHÄFFER

Plataea Herrich-Schäffer, "1850-1858" [1856], pp. 29, 64, 84. Packard, 1876, p. 201 (as synonym of *Gorytodes*). Hulst, 1896, p. 342 (as valid genus). Dyar, "1902" [1903], p. 319. Smith, 1903, p. 75. Barnes and McDunnough, 1917, p. 115. McDunnough, 1938, p. 170.

Gorytodes Guenée, 1857, p. 179. Walker, 1862a, p. 1062. Packard, 1876, p. 201. Grote, 1882, p. 49. Anon., 1882, p. 22. Smith, 1891, p. 72. Gumpfenberg, 1896, p. 303. Hulst, 1896, p. 342 (as synonym of *Plataea*).

Apicrena Pearsall, 1911, p. 205. Barnes and McDunnough, 1917, p. 122; 1918, p. 151 (placed as synonym of *Plataea*).

Diagnosis. Specimens of this genus may be recognized by the porrect palpi being very long, about twice as long as the head; by the antennae of 41 to 54 segments, the elongate pectinations arising basally in the males, and being very shortly bipectinate in the females; and by the broad forewings having the apex produced, with 12 veins and with either one or two accessory cells.

Adult. Head with eyes of both sexes large, round, wider than front; front flat, covered by elongate anteroventrally directed scales; tongue present; palpi very long, porrect, about twice as long as head; antennae with from 41 to 54 seg-

ments, with pectinations arising basally; males with pectinations elongate, in length 4.4 to 6.7 times as long as basal segments, or 0.8 to 1.7 mm. in length, pectinations extending either to apex or with terminal six or seven segments simple; antennae of female shortly bipectinate, in length ranging from slightly more than to about twice length of segments, or 0.3 to 0.5 mm. long. Thorax slender, with tufts, with or without longitudinal median crest; fore tibia unarmed, with process of male arising near, or just distad of middle of segment and extending slightly beyond apex, of female shorter, arising between half and two-thirds length of tibia; hind tibia with two pairs of spurs in both sexes, male without either groove or hair pencil. Abdomen slender, elongate, without dorsal tufts; males with ventral surface of third segment without row of setae and last segment without modification.

Forewings broad, apex produced; outer margin extended at vein M_3 ; 12 veins present; venation variable, with either one or two accessory cells; R uniting with Sc; R_1 , R_2 , and R_3 all separated, R_4 going to costa just before apex; R_5 and M_1 from accessory cell; Cu_1 from shortly before lower angle; fovea absent. Hind wings elongate, broad, tending to be weakly concave between veins; frenulum strong in both sexes; Sc paralleling R from between one-half to entire length of cell; R and M_1 separating about half distance between cell and wing margin; $m+1dc$ curved; M_3 from lower angle; cell elongate, extending beyond middle of wing; Cu_1 arising nearer angle than to Cu_2 .

Upper surface of forewings either various shades of gray, marked with white or silvery white, with sexes alike, or beige or pale grayish brown, males with darker median area and females with unicolorous wings; maculation variable within each species, t. a. and t. p. lines usually uniting above anal margin, forming point or large ellipse, and with s. t. line present; hind wings pale grayish white, lighter in color than forewings, and with reduced or no maculation. Under surface either without definite maculation or with pattern of upper surface repeated.

Male Genitalia. Variable, of four basic types: (a) Uncus elongate, more or less slender, terminating in single point or two lobes; gnathos com-

plete, with either small median area or paired spinose areas; valves either simple and broad, or with very elongate costa and with ventrally curving, digitate process; transtilla present, complete; juxta either short or very long; aedeagus with posterolateral, narrow, sclerotized strips; vesica with sclerotized strip or unarmed. (b) Uncus swollen posteriorly, with simple apical point; gnathos very wide laterally, with large, finely spinate, ventrally projecting median swelling; valves elongate, simple; transtilla reduced medially; juxta with slender lateral process going to costa on each side, and with elongate slender median process; aedeagus weakly constricted medially, without sclerotized strips; vesica unarmed or with single spine. (c) Uncus similar to but more slender than type (b); gnathos not united medially, appearing as two sclerotized arms coming to midline ventrally; valves short, extending laterally, with broadly swollen costa; transtilla present; juxta short, with lateral paired, posteriorly curving processes (similar to those of the *Nacophorini*); aedeagus slender; vesica with one or two elongate spines and two or three shorter, transverse spines. (d) Uncus short, broad, hoodlike, without median point; gnathos bifid, upper arms elongate, extending posteriorly to uncus and having inwardly projecting point on each arm, lower arms more slender, well separated medially by posterior projection of transtilla, and having group of posteriorly directed spines at end of each arm; valves short, extending laterally, costal area sclerotized; transtilla present, having large spinose posterior projection; juxta broad; aedeagus slender; vesica unarmed.

Female Genitalia. Sterigma with lamella postvaginalis lightly to heavily sclerotized, platelike and transverse or triangular, lamella antevaginalis varying from membranous to a heavily sclerotized band; ductus bursae sclerotized, either short, with length about equal to width, or slender, about twice as long as width; ductus seminalis arising ventrally from posterior end of corpus bursae near junction with ductus bursae; corpus bursae symmetrical or asymmetrical, either elliptical or partly rounded, posterior end either membranous or lightly sclerotized and variably ribbed or rugose; signum absent. Apophyses posteriores short, 0.9 to 1.7 mm. in length. Seg-

ments 7 and 8 with posterior margins of dorsums either evenly rounded or heavily sclerotized and with median indentation.

Early Stages. Undescribed. The eggs of *trilinearia* have been figured by Peterson (1968). The cremaster of the pupa of *personaria* ends in eight slender recurved spines.

Food Plants. *Artemesia tridentata* Nuttall (Compositae), for *Plataea personaria* (H. Edwards).

Type Species. For *Plataea californiaria* Herich-Schäffer; sole included species.

For *Gorytodes uncanaria* Guenée; sole included species.

For *Apicrena calcaria* Pearsall; by original designation and sole included species.

Distribution. Western North America, extending from southwestern Canada to central Mexico. The greatest concentration of species is in California.

KEY TO SPECIES

Based on Pattern and Color

1. Upper surface of forewings with t. a. line straight or weakly curved, and with t. p. line varying from somewhat S-shaped to almost straight 2
 - Upper surface of forewings with t. a. line sharply angled distally on vein Cu, and with t. p. line tending to be irregularly curved to deeply dentate. 4
- 2(1). Upper surface of forewings with t. a. line meeting inner margin three-fourths distance from base; median area of males bordered by very narrow yellow-brown band; antennae of male with terminal six or seven segments simple 3
 - Upper surface of forewings with t. a. line meeting inner margin three-fifths distance from base; median area of male bordered by very narrow pure white band; antennae of male with pectinations extending up to end of structure *calcaria*
- 3(2). Palpi rising to top of eye, with terminal segment porrect, extending beyond eye 0.7 mm. (measured to end of segment, not including scaling); length of forewing 15.5 mm. *aristidesi*
- Palpi rising to middle of eye, with terminal segment decumbent, extending beyond

eye 0.9 mm.; length of forewing 14.0 to 14.5 mm. *pausaniasi*

- 4(1). Upper surface of forewings with t. p. line irregularly curved, and with discal spot white, elongate, prominent . . . *trilinearia*
- Upper surface of forewings with t. p. line dentate or deeply dentate, and with discal spot small, black 5
- 5(4). Upper surface of forewings with t. a. line acutely angled at junction of veins Cu₁ and Cu₂, and with discal spot tending to be solid black. 6
 - Upper surface of forewings with t. a. line more distad on wing, with angles on veins Cu₁ and Cu₂, and with discal spot tending to have small white center . . 7
- 6(5). Thorax above without longitudinal median crest; length of forewings 12 to 18 mm. *personaria*
- Thorax above with longitudinal median crest; length of forewings 18 to 24 mm. *ursaria*
- 7(5). Forewings with upper surface having dark, contrastingly colored median area and with s. t. line prominent . . . *californiaria*
- Forewings with upper surface having paler, scarcely contrasting median area and with s. t. line weakly represented or absent *diva*

Based on Male Genitalia

1. Uncus short, broad, hoodlike. . . *trilinearia*
- Uncus elongate, apically pointed 2
- 2(1). Gnathos forming a complete ring 3
- Gnathos not united medially 7
- 3(2). Each valve with very elongate sclerotized costa and with ventrally curving, digitate process *calcaria*
- Valves simple, not as above 4
- 4(3). Uncus slender, tapering to apex 5
- Uncus broad, apex wedge-shaped 6
- 5(4). Gnathos with irregular anteromedian margin; aedeagus 1.4 mm. in length
- *pausaniasi*
- Gnathos with smoothly rounded anteromedian margin; aedeagus 1.5 mm. in length *aristidesi*
- 6(4). Combined lengths of uncus, tegumen, and saccus 1.4 to 1.6 mm.; aedeagus 1.1 to 1.2 mm. in length *personaria*
- Combined lengths of uncus, tegumen, and saccus 1.7 to 1.9 mm.; aedeagus 1.5 to 1.6 mm. in length *ursaria*

- 7(2). Aedeagus 1.1 to 1.2 mm. in length; gnathos with each arm tapering to rounded median point *californiaria*
 Aedeagus 1.4 to 1.5 mm. in length; gnathos with each arm wedge-shaped medially, flat along midline of genitalia, postero-ventrally pointed. *diva*

Based on Female Genitalia¹

1. Corpus bursae membranous. 2
 Corpus bursae with posterior end lightly sclerotized and having either longitudinal ribbing or being irregularly rugose 3
 2(1). Ostium bursae smoothly, broadly and evenly sclerotized around outer edge; apophyses posteriores 1.2 to 1.5 mm. in length *diva*
 Ostium bursae not as above, ventral rim very lightly and narrowly sclerotized, dorsal surface irregularly sclerotized; apophyses posteriores 1.0 to 1.2 mm. in length *californiaria*
 3(1). Corpus bursae long and slender 4
 Corpus bursae short, partly rounded, asymmetrical. 5
 4(3). Corpus bursae with posterior necklike process 0.25 to 0.40 mm. in length *trilinearia*
 Corpus bursae with posterior necklike process 0.50 to 0.75 mm. in length *calcaria*
 5(3). Lamella postvaginalis 0.4 to 0.6 mm. wide, surface nonspiculate. *ursaria*
 Lamella postvaginalis 0.4 mm. wide, surface finely spiculate *personaria*

Plataea pausaniasi, new species

Figures 1, 7

Diagnosis. This species can be recognized by the end of the male antennae being simple, by the very long palpi rising only to the middle of the eyes, by the dark grayish black median area of the forewings above, and by the elongate and slender uncus.

Male. Head with vertex and front white, with scales pale grayish brown medially; palpi grayish white, rising to middle of eye, terminal segment decumbent, extending beyond eye 0.9 mm.

¹The females of *pausaniasi* and *aristidesi* are unknown.

(measured to end of last segment, not including scaling); antennae with about 47 segments, apical six simple, with longest pectinations 0.9 mm. in length. Thorax above white, with scales narrowly pale grayish brown medially; below pale grayish white; legs with mixture of pale grayish white and brown scales; fore tibia with process arising distad of middle of segment. Abdomen pale grayish white above and below.

Upper Surface of Wings: Forewings white, with variable number of grayish brown and brown scales; costa striate with dark brown scales; indefinite area of dark scales in cell Cu between base of wing and t. a. line; t. a. line arising on costa about one-fifth distance from base, angled distally, being weakly concave on vein Cu, touching hind margin three-fourths distance from base, then swinging sharply anteriad, becoming t. p. line, with broad basal curve in cell Cu₁, outwardly bowed on vein M₂, concave to costa, meeting latter three-fourths distance from base; median area, enclosed by t. a. and t. p. lines, bordered by very narrow yellow-brown band, grayish black, with break in t. p. line along cross vein 1dc, white, T-shaped, extending to radial vein and extending along it; subterminal area broadly dark along white, complete s. t. line; terminal area darkened, becoming darkest below apex of wing; terminal line pure white; fringe white with dark grayish brown patches at vein endings. Hind wings pale grayish white, with pale grayish brown scaling, the latter becoming more concentrated distally; maculation absent; terminal line narrow, grayish brown; fringe grayish brown basally, white distally.

Under Surface of Wings: Forewings light grayish brown except for white area below apex; median area of upper surface repeated, grayish brown; terminal line either white or dark brown; fringe as above. Hind wings white, with scattered brown scales; without maculation; terminal line and fringe as above.

Length of Forewing: 14.0 to 14.5 mm.; holotype 14.5 mm.

Female. Unknown.

Male Genitalia. Of type (a): uncus elongate, slender, apex weakly curved ventrally and having single broad terminal point; gnathos tapering in width ventrally, medially truncate, with irregular

anteromedial margin, and having pair of small spinose projections; valves simple, broad basally, relatively short, each costa with apex slightly extended and pointed beyond end of valve, valvula membranous, cucullus covered with small spines; transtilla prominent; juxta elongate, posteriorly Y-shaped; aedeagus 1.4 mm. in length; vesica with slender sclerotized strip 0.5 mm. in length, partially swollen in distal portion and swelling having dentate rim.

Female Genitalia. Unknown.

Early Stages. Unknown.

Food Plant. Unknown.

Types. Holotype, male, 1 mile south of Cedritos, Coahuila, Mexico, June 22, 1957 (R. Zweifel). (See fig. 1.) The genitalia of the holotype are mounted on slide FHR 17600. Paratypes: two males, same data, June 23, 1957.

The holotype and both paratypes are in the collection of the American Museum of Natural History.

Distribution. This species is known only from the type locality in eastern Coahuila, in the lower portion of the Sierra Madre Oriental. The locality is about 16 miles east of Arteaga, in a piñon pine and yucca association.

Flight Period. June.

Remarks. Three specimens (all males) and two genitalic dissections have been studied.

There does not appear to be much individual variation present in the limited amount of material studied.

Etymology. This species is named after Pausanias, King of Sparta, who defeated the Persians at the battle of Plataea in 479 B.C.

***Plataea aristidesi*, new species**

Figures 2, 8

Gorytodes trilinearia (misidentification): Druce, "1891-1900" [1893], p. 138 (in part).

Diagnosis. This species can be distinguished from *pausaniasi* by the shorter palpi rising to the top of the eye, by its longer forewings, and by its browner color.

Male. Head with vertex pale ochreous white; front pale ochreous; palpi grayish white, rising to the top of the eye, terminal segment porrect, ex-

tending 0.7 mm. beyond eye (measured to end of segment, not including scaling); antennae of about 44 segments, apical seven segments simple, with longest pectinations 0.8 mm. in length. Thorax above pale ochreous to grayish white; below grayish white; (legs lacking). Abdomen grayish white above and below.

Upper Surface of Wings: Forewings brown with prominent white band surrounding median area; maculation similar to that of *pausaniasi* but with inner margin of median area tending to be slightly more concave in anterior portion of wing; median area tending to be striate with paler brown scales; s. t. line complete, apparently not so wide as in *pausaniasi*. Hind wings similar to those of *pausaniasi* but having less brown scaling.

Under Surface of Wings: Similar to that of *pausaniasi* but with paler forewings.

Length of Forewing: 15.5 mm. (holotype).

Female. Unknown.

Male Genitalia. Similar to those of *pausaniasi* (type a), differing mainly as follows: uncus with more triangular base and with shorter apical portion; gnathos with smoothly rounded anteriomedial margin; valves more elongate, apex more pointed; juxta more slender anteriorly; aedeagus 1.5 mm. in length; vesica with slightly broader sclerotized strip having longer posterior point.

Female Genitalia. Unknown.

Early Stages. Unknown.

Food Plant. Unknown.

Type. Holotype, male, Amecameca, Mexico, April, 1888 (F. D. G[odman]). (See fig. 2.) Druce ("1891-1900" [1893], p. 138) placed the above locality in Morelos. Selander and Vaurie (1962, p. 20): "Amecameca, México, México. Town on the highway between the city of México and Cuautla, Morelos, 48 km. southeast of the city of México; 9629 feet." The genitalia of the holotype are mounted on slide FHR 17680.

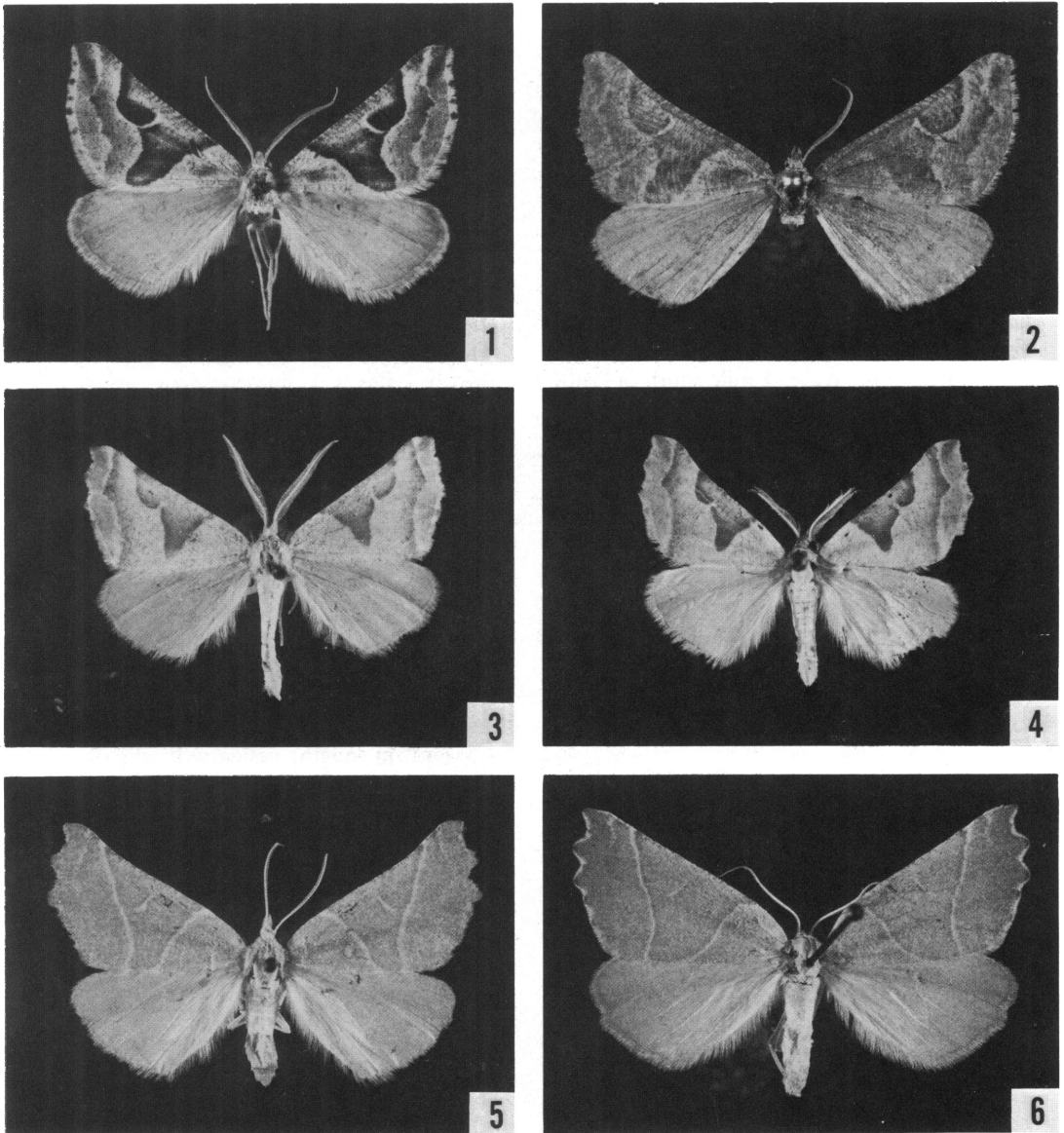
The holotype is in the collection of the British Museum (Natural History).

Distribution. This species is known only from the type locality.

Flight Period. April.

Remarks. One specimen and one genitalic dissection have been studied.

Further descriptive details will have to be



FIGS. 1-6. Adults of *Plataea*. 1. *P. pausaniasi*, new species, holotype male, 1 mi. S Cedritos, Coahuila, June 22, 1957 (R. Zweifel; AMNH). 2. *P. aristidesi*, new species, holotype male, Amecameca, Mexico, April, 1888 (F. D. G[odman]; BM). 3-6. *P. calcaria* (Pearsall). 3. *P. triangularia* Barnes and McDunnough, holotype male, Palm Springs, California, April 16-23 (USNM). 4. Male, Palm Springs, California, April 9, 1960 (A. H. Rindge; AMNH). 5. *Apicrena calcaria* Pearsall, lectotype female, Yuma County, Arizona, "4/12" (AMNH). 6. *P. dulcinia* Dyar, lectotype female, Palm Springs, California, March (K. R. Coolidge; USNM). All $\times 2$.

added when additional material comes to hand; as Druce (*op. cit.*) remarked, the specimen is "in poor condition."

Etymology. This species is named after Aristides, who commanded the Athenian forces at the victory of the Greeks at Plataea.

Plataea calcaria (Pearsall)

Figures 3-6, 9, 29, 42

Apicrena calcaria Pearsall, 1911, p. 205. Barnes and McDunnough, 1917, p. 122.*Plataea calcaria*: Barnes and McDunnough, 1918, p. 151. McDunnough, 1938, p. 170. Rindge, 1955, p. 139.*Plataea triangularia* Barnes and McDunnough, 1916, p. 27, pl. 3, fig. 18 (holotype male); 1917, p. 115; 1918, p. 151 (placed as synonym of *calcaria*).*Plataea dulcinia* Dyar, 1923, p. 23.*Plataea dulcinea* [sic]: McDunnough, 1938, p. 170 (listed as synonym of *calcaria*).

Diagnosis. The males have maculation similar to that of *pausaniasi*, but *calcaria* can be separated from that species by the pectinations of the antennae extending to the end of the structure, and by the genitalia. *Plataea calcaria* can be separated from all the following species by its female being dimorphic in color and pattern.

Male. Head with vertex and front white, with a few grayish brown scales; palpi white, with variable number of grayish brown scales; antennae with from 41 to 44 segments, pectinations extending to apex, with longest pectinations 1.0 to 1.3 mm. in length. Thorax above white with faint grayish brown tone; below pale grayish white; legs with mixture of pale grayish white and brown scales; fore tibia with process arising at or slightly basad of middle of segment. Abdomen pale grayish white above and below.

Upper Surface of Wings: Forewings pale grayish white to pale brownish gray; costa not striate with dark scales; maculation similar to that of *pausaniasi* but with t. a. line meeting inner margin nearer base, at three-fifths distance from base; median area bordered by narrow white band, anteriorly grayish white, becoming brown or olivaceous brown posteriorly, with break in t. p. line along cross vein ldc; subterminal area grayish brown to brown along white, complete s. t. line; terminal area darkened, slightly darker below apex in some specimens; terminal line absent; fringe concolorous with terminal area basally, white distally. Hind wings white or pale grayish white, tending to become slightly pale brownish gray distally; without maculation; fringe concolorous with wing.

Under Surface of Wings: Forewings pale

brownish gray, with costa pale gray, having scattered brown scales; median area of upper surface very weakly repeated; subterminal area with scattered brownish black scales below costa; fringe as above, or slightly darker opposite vein endings. Hind wings pale grayish white, some specimens with variable number of scattered pale brown scales; without maculation; fringe as above.

Length of Forewing: 10 to 15 mm.

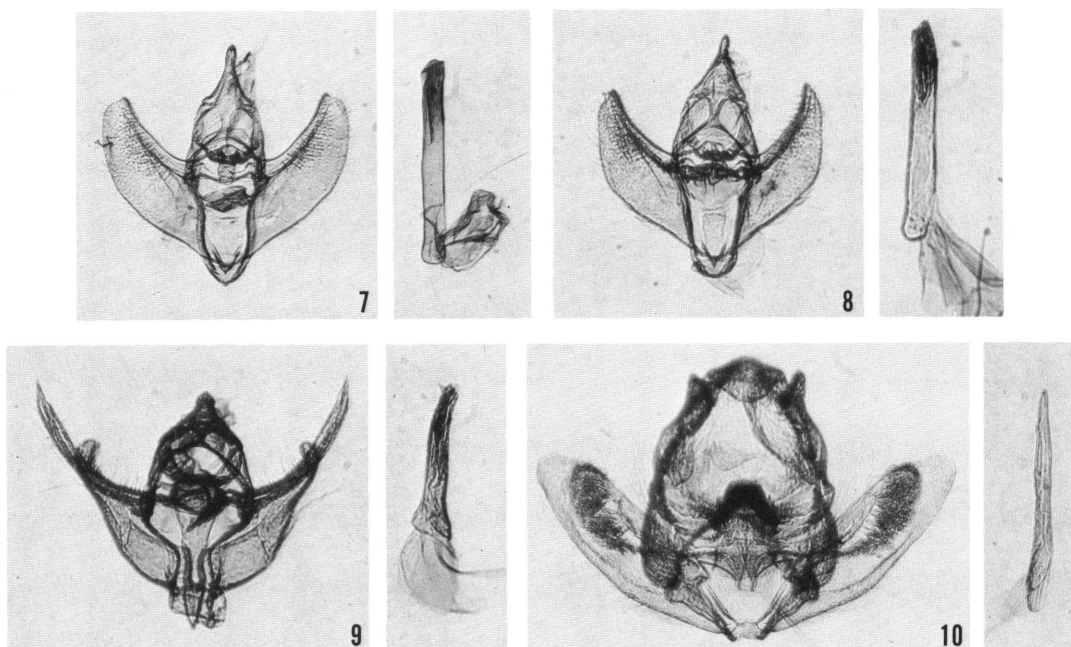
Female. Head, thorax, and abdomen similar to those of male; antennae with pectinations about 0.5 mm. in length.

Upper Surface of Wings: Forewings unicolorous pale brownish gray to pale ochreous; cross lines grayish white; t. a. line arising on costa one-fifth distance from base, going more or less straight to middle of inner margin; discal dash present or absent; t. p. line arising on costa three-fourths distance from base, running straight across wing, with slight basal bend in cell Cu_2 , meeting inner margin between four-fifths and seven-eighths distance from base; s. t. line absent or partially represented; terminal line absent; fringe concolorous with wing basally, white distally. Hind wings pale grayish white or pale brownish gray, becoming slightly darker distally; without maculation; fringe similar to that of forewing.

Under Surface of Wings: Forewings pale brownish gray; costa pale gray, with scattered dark brown scales; maculation of upper surface weakly reflected; fringe as above. Hind wings pale grayish white, more or less heavily covered with brown and grayish brown scales, except for anal margin; without maculation except for faint trace of pale extradiscal line anteriorly on some specimens; fringe pale grayish brown.

Length of Forewing: 12 to 18 mm.

Male Genitalia. Of type (a): uncus heavily sclerotized, straight, projecting ventrally, lateral margins weakly concave, apex broad, rounded, terminating in two small lobes; gnathos heavily sclerotized, ringlike, median area in form of small, weakly dentate ridge; each valve with very elongate, pointed costa, sacculus sclerotized, extending to about middle of costa, then curved ventrally as flaplike projection; juxta sclerotized, very long, slender anteriorly, widening posteriorly; tegumen with posterior portion sharply angled ventrally; saccus constricted medially, narrowed anteriorly; aedeagus 1.1 mm. in length,



FIGS. 7-10. Male genitalia of *Plataea*. 7. *P. pausaniasi*, new species, paratype, 1 mi. S Cedritos, Coahuila, June 23, 1957 (R. Zweifel; AMNH). 8. *P. aristidesi*, new species, holotype, Amecameca, Mexico, April, 1888 (F. D. G[odman]; BM). 9. *P. calcaria* (Pearsall), Palm Springs, California, November 4, 1954 (A. H. Rindge; AMNH). 10. *P. trilinearia* (Packard), Roscoe, Nebraska, May 29, 1919 (R. A. Leussler; AMNH).

with paired lateral sclerotized rods, apically having swelling or short projection; vesica unarmed.

Female Genitalia. Sterigma with lamella postvaginalis sclerotized, slightly tapering, apically bluntly rounded and with median indentation, in length subequal to length of ductus bursae; lamella antevaginalis in form of separate, lateral, sclerotized strips extending from ductus bursae to dorsum of segment 8; ductus bursae short, length about equal to width, varying in shape from tubelike with slightly swollen anterior section to posteriorly swollen; corpus bursae elongate, posterior portion slender, sclerotized, with longitudinal striations, then swelling on left side, forming elongate saclike body. Apophyses posteriores 1.3 to 1.7 mm. in length. Segments 7 and 8 with posterior margins of dorsums evenly rounded, unmodified.

Early Stages. Unknown.

Food Plant. Unknown.

Types. Pearsall described *calcaria* from two females; both specimens are in the American Mu-

seum of Natural History. The lectotype was designated by Rindge (1955, p. 139). (See fig. 5.)

Barnes and McDunnough described *triangularia* from a single male, this specimen is in the National Museum of Natural History. (See fig. 3.)

Dyar named *dulcinia* from two females. The lectotype is hereby designated, and labeled; it is USNM 25817. (See fig. 6.)

Type Localities. Colorado Desert, Yuma County, Arizona (*calcaria*); Palm Springs, Riverside County, California (*trilinearia* and *dulcinia*).

Distribution. Southwestern Arizona, southeastern California, and adjacent Nevada, inhabiting the Colorado Desert. This species has also been taken in the State of Baja California, Mexico. (See fig. 42.)

Flight Period. October through June.

Remarks. One hundred sixty-eight specimens (68 males, 100 females) and 14 genitalic dissections (nine males, five females) have been examined.

This species is distinctive (with the possible

exception of the preceding two species, whose females are unknown) in *Plataea* in having sexual dimorphism in the color and pattern of the upper surface of the forewings.

Several kinds of variation are noticeable within *calcaria*. One is the color of the wings. Male specimens caught during the winter and spring (November into March and April) have a much darker and more contrastingly colored median area of the forewings than do examples caught in late spring and late fall (late April, May, and November). Females taken in winter and spring (December into April and May) tend to have grayer forewings than do those caught later in the year. A second type of variation is in size; specimens caught in late spring and late fall tend to be smaller than the moths flying in mid-winter. Apparently independent of the above two types of variability is the pattern of the forewings. This is fairly constant although there are some differences in the shape of the median area of the males, and as to whether or not the median area extends all the way to the hind margin of the forewing. In the females there is variation in the size and extent of the discal dash, and in the strength of the s. t. line.

Plataea personaria (H. Edwards), revised status
Figures 11-14, 17, 18, 30

Gorytodes personaria H. Edwards, 1881, p. 120.
Grote, 1882, p. 49. Anon., 1882, p. 22. Hulst, 1887, p. 11 (placed as synonym of *uncanaria*).
Beutenmüller, 1892, p. 195.

Plataea californiaria personaria: Dyar, "1902" [1903], p. 319. Smith, 1903, p. 75.

Plataea personaria: Barnes and McDunnough, 1917, p. 115 (listed as synonym of *californiaria*).

Plataea lessaria Pearsall, 1907, p. 373. Barnes and McDunnough, 1917, p. 115. McDunnough, 1938, p. 170. NEW SYNONYMY.

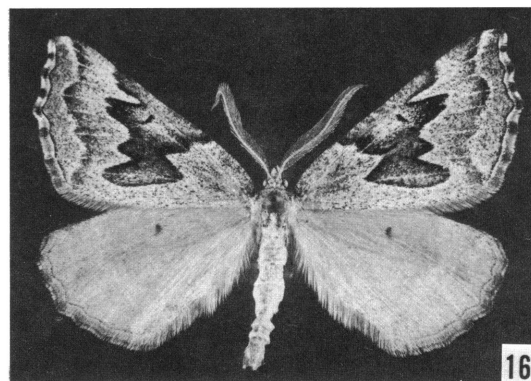
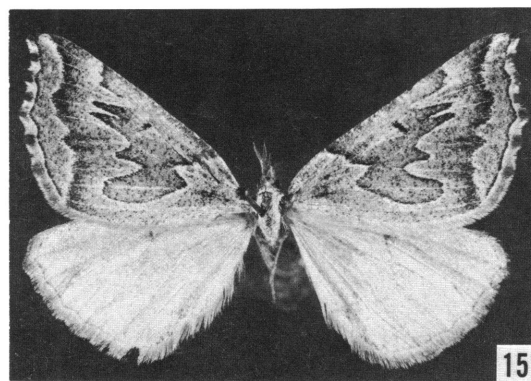
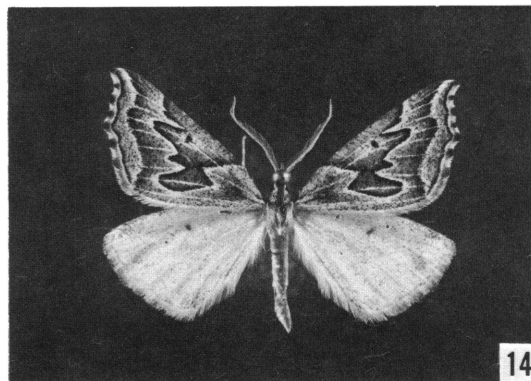
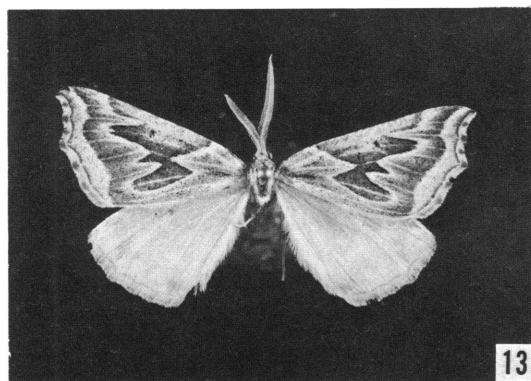
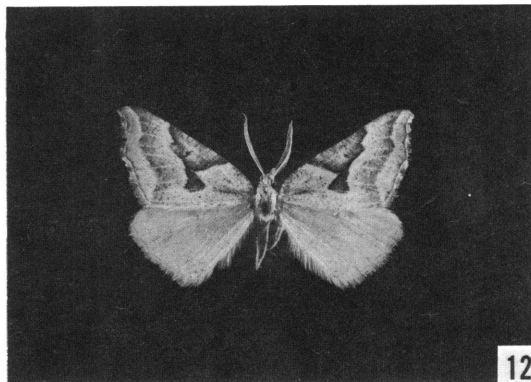
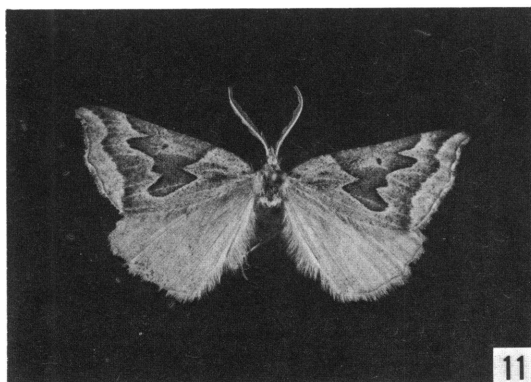
Plataea californiaria pasadenaria Wright, 1917, p. 123. McDunnough, 1938, p. 170. NEW SYNONYMY.

Diagnosis. This contrastingly colored species can be recognized by the sharply angulate t. a. line crossing the cubital vein at the junction of Cu_1 and Cu_2 , by the solid black discal dot, and by the sharply defined s. t. line. The genitalia of both sexes are quite distinct from those of the preceding species; see keys for details.

Male. Head with vertex pale grayish brown, the scales broadly white apically; front with mixture of pale grayish brown and white scales; palpi grayish brown, some scales narrowly grayish white apically; antennae with from 43 to 47 segments, pectinations extending to apex, with longest pectinations about 1.2 mm. in length. Thorax above with mixture of pale gray, pale grayish brown, and blackish brown scales; below pale gray; legs pale gray on inner surfaces, brown to dark brown on outer surfaces; fore tibia with process arising at or just beyond middle of segment. Abdomen above and below pale gray with variable number of brown scales.

Upper Surface of Wings: Forewings grayish brown, with variable number of dark brown or blackish brown scales; veins mostly white in basal and subterminal areas; basal area with diffuse patch of dark scaling; t. a. line blackish brown, arising on costa one-fifth distance from base, going straight to cubital vein at junction of veins Cu_1 and Cu_2 , then sharply angled basad to middle of cubital cell, angled posteriorly to form large ellipse above anal vein, curving anteriorly as t. p. line, with concave areas, extending outwardly in cells Cu_1 , M_2 and M_1 , with deep basal tooth on vein M_1 , then outwardly to meet costa three-fourths distance from base; median area enclosed by t. a. and t. p. lines, dark brown or brownish black, with white scaling anteriorly, bordered by prominent, pure white band, and containing prominent, solid black, discal dot or dash; subterminal area turning progressively darker distally, bordered by pure white, complete, s. t. line; terminal area grayish brown; terminal line blackish brown, complete, prominent; fringe grayish white; broadly blackish brown opposite veins. Hind wings pale gray, with scattered brown scales; without maculation except for small grayish brown to blackish brown discal dot, and for complete or partially represented, narrow, dark grayish brown terminal line; fringe concolorous with wing, weakly darkened opposite veins in some specimens.

Under Surface of Wings: Forewings brown, dark brown in cell, grayish brown distally and posteriorly; costal margin tending to be gray, with dark brown scaling; without maculation except for blackish brown discal spot; terminal line narrowly dark brown; fringe as above. Hind wings pale grayish white, with numerous grayish



FIGS. 11-16. Males of *Plataea*. 11-14. *P. personaria* (H. Edwards). 11. *Gorytodes personaria* H. Edwards, holotype, "Sier. Nev. Cal." (AMNH). 12. *P. lessaria* Pearsall, holotype, San Diego, California, July 20, 1906 (AMNH). 13. *P. californiaria pasadenaria* Wright, holotype, Pasadena, California, May 1, 1902 (AMNH). 14. Rancho La Sierra, Arlington, California, February 16, 1951 (A. H. Rindge; AMNH). 15, 16. *P. ursaria* Cassino and Swett. 15. *P. ursaria* Cassino and Swett, holotype, Bear Lake, California, June 14, 1919 (MCZ). 16. Upper Santa Ana River, California, June 21, 1948 (G. H. and J. L. Sperry; AMNH). All $\times 1.6$.

brown and blackish brown scales; discal dot blackish brown; extradiscal and s. t. lines weakly indicated by lack of dark scales in some specimens, lines shaded basally by weak concentration of dark scales; terminal line obsolescent; fringe concolorous with wing.

Length of Forewing: 12 to 18 mm.

Female. Similar to male; longest antennal pectinations 0.3 mm. in length.

Length of Forewing: 12 to 18 mm.

Male Genitalia. Of type (b): uncus with broad base, 0.4 to 0.5 mm. wide, lateral margins biconcave, with small median swelling, apical section slightly swollen or with parallel sides, having median posteroventral ridge and terminating in single, elongate point; gnathos very wide laterally, tapering medially, and having prominent, strongly raised, thickly and finely spinose median swelling; valves simple, elongate, each costa sclerotized, not extending beyond apex of valve, valvula membranous basally, transversely truncate, then lightly sclerotized, sacculus angled in lightly sclerotized area of valvula; transtilla reduced medially; juxta swollen anteriorly, sclerotized, with median depression, extending posteriorly as slender sclerotized arm, medially having slender Y-shaped arms, posterior end pointed, slightly asymmetrical with apex tending to be on left side, entire juxta 0.7 to 1.0 mm. in length; aedeagus straight, 1.1 to 1.2 mm. in length, slightly swollen apically; vesica varying from being unarmed to having up to five minute spines.

Female Genitalia. Sterigma with lamella postvaginalis a transverse, minutely spiculate, slender area thickened posteriorly, 0.4 mm. long; lamella antevaginalis a broad, smoothly sclerotized band, somewhat narrowed medially and forming part of ductus bursae; ductus bursae a simple, sclerotized tube slightly longer than wide; corpus bursae somewhat kidney-shaped, with ductus bursae entering mediodorsally, corpus bursae asymmetrical, extending from ventrally on left side to dorsally on right side, surface spiculate, area around ductus bursae smoothly sclerotized and with variable number of indented, irregular striations. Apophyses posteriores 0.9 to 1.2 mm. in length. Segments 7 and 8 with posterior margins of dorsums evenly rounded, unmodified.

Early Stages. Undescribed.

Food Plant. *Artemesia californica* Lessing (Compositae); this grayish shrub is called "California sagebrush."

Types. Edwards described *personaria* from a single male. The holotype is in the collection of the American Museum of Natural History with its genitalia mounted on slide FHR 4555. (See fig. 11.)

Pearsall described *lessaria* from a single male. The holotype is in the collection of the American Museum of Natural History, with its genitalia mounted on slide FHR 4551. (See fig. 12.)

The holotype, male, and allotype, female of *pasadenaria* are in the collection of the American Museum of Natural History. (See fig. 13.) The genitalia of the holotype are on slide FHR 4537, of the allotype on 4590.

Type Localities. Summit, Sierra Nevada, California (*personaria*); San Diego, San Diego County, California (*lessaria*); Pasadena, Los Angeles County, California (*pasadenaria*).

The type locality for *personaria* is probably incorrect. Summit was a station on the Central Pacific Railroad; this locality may be the one of the same name on the Southern Pacific Railroad west of Truckee, Placer County. *Plataea personaria* is a coastal plains species; no authentic specimens are known to me from the Sierra Nevada Mountains. Edwards's type specimen does not bear one of his catalogue numbers, although it has the American Museum number 12847; the entry for this number states that the moth is the type of *Gorytodes personaria*, caught by Hy. Edwards in the Sierra Nevada, California. Edwards gave Summit as the type locality in his original description. There is absolutely no question that this holotype represents the coastal species; I am just as convinced that the specimen bears an incorrect locality label. Unfortunately, there are no other specimens from Edwards's collection of this species known to me, and so we cannot tell where else he might have caught *personaria*. It is possible that the specimen came from the San Francisco Bay area (Edwards did catch other species of *Plataea* there), although it looks more like a southern California example.

Distribution. From northwestern Baja California into California as far as Sonoma County, north of the San Francisco Bay area (see fig. 17).

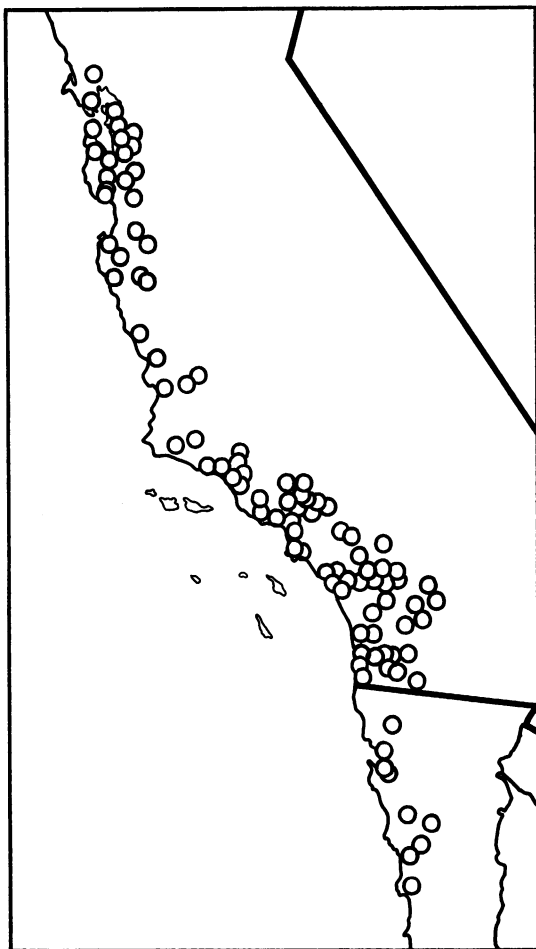


FIG. 17. Distribution of *Plataea personaria* (H. Edwards).

The species is usually found at low elevations, with most specimens being taken along the coastal plains.

Flight Period. Specimens have been taken during every month of the year in southern California. In the San Francisco Bay area the moths have been taken from March into November.

Remarks. Eight hundred ninety-seven specimens (549 males, 348 females) and 49 genitalic dissections (34 males, 15 females) have been studied.

This species is seasonably dimorphic; this is more evident in the south than in the northern

portion of the range of the species. Moths that fly in winter and early spring are larger in size and tend to have the upper surface of the forewings more contrastingly colored than do specimens flying from late spring into fall. The dates of flight vary between San Diego and Riverside counties. The large specimens have usually been taken from November through May in San Diego County, and from February through May in Riverside County; the small moths from about June into November (San Diego County), and from May into January (Riverside County). It was one of the small summer specimens, caught July 20, that Pearsall named *lessaria*. Wright's *pasadenaria* is a late-flying large specimen, caught May 1. In the northern portion of the range of *personaria* the seasonal dimorphism is not so strongly marked; smaller specimens have been examined from October and November in the Alameda and Contra Costa county area.

Individual variation is present in the course of the t. a. and t. p. lines. In some examples the lower, elliptical portion of the median area is completely cut off from the anterior portion of the area.

Plataea personaria has been standing as a synonym of *californiaria* since 1917 (Barnes and McDunnough, 1917, p. 115); the two names represent quite distinct species (as Edwards pointed out in 1881), although they are superficially alike in color and pattern.

As mentioned above, the holotype of *lessaria* represents a summer specimen, and the holotype of *pasadenaria* a spring specimen of the same species. As both are indistinguishable morphologically, and by pattern and color, from *personaria*, they are placed as synonyms of Edwards's species.

Plataea ursaria Cassino and Swett

Figures 15, 16, 19, 22, 31

Plataea ursaria Cassino and Swett, 1922, p. 144.
McDunnough, 1938, p. 170.

Diagnosis. This species is larger than *personaria*. The upper surface of the forewings tends to be somewhat less contrastingly colored and the s. t. line to be more irregular in *ursaria* than in *personaria*. The present species has a longitudinal

midthoracic crest. There are differences in the genitalia between the two species; see keys for details.

Male. Head with vertex and front having grayish brown scales, broadly white apically; palpi grayish brown; antennae with from 42 to 49 segments, pectinations extending to apex, with longest pectinations 1.4 to 1.6 mm. in length. Thorax above grayish white, with variable amount of grayish brown scaling; longitudinal white midthoracic crest present, with grayish brown scaling laterally; below pale gray; legs with variable mixture of pale gray, brown, and dark brown scales; fore tibia with process arising at or near middle of segment. Abdomen above and below grayish white, with scattered brown scales.

Upper Surface of Wings: Forewings similar in color to those of *personaria* but having more white scaling; pattern similar to that of *personaria* but with s. t. line more irregular in course,

and terminal line thinner and darker. Hind wings less sharply angulate at apex than in *personaria*, otherwise as in that species.

Under Surface of Wings: Similar to that of *personaria*.

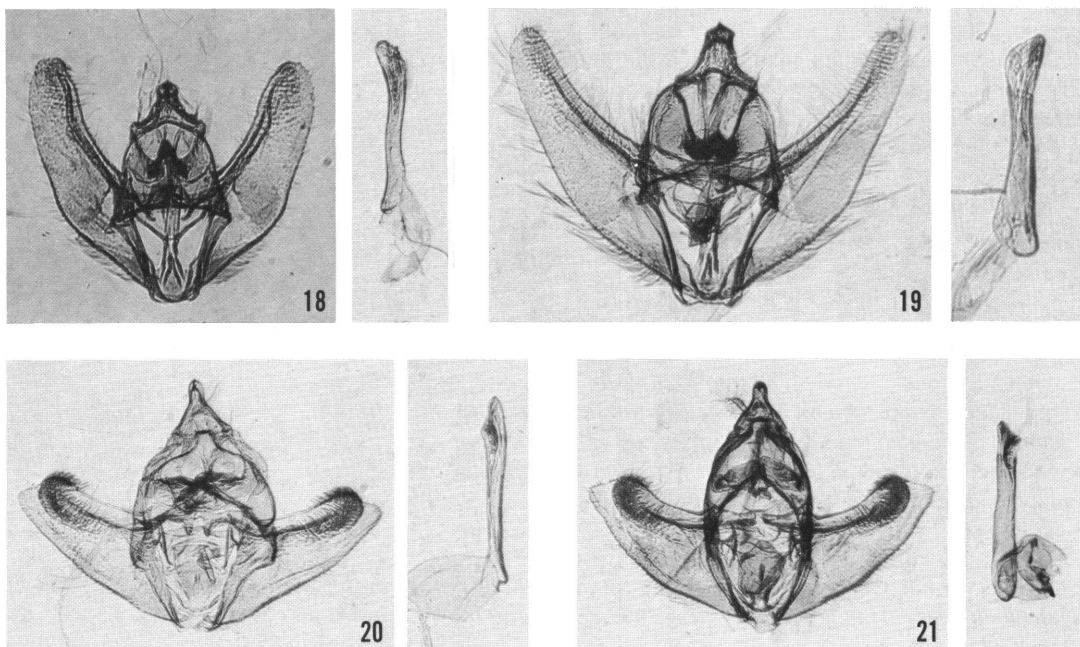
Length of Forewing: 18 to 24 mm.

Female. Similar to male; longest antennal pectinations 0.3 to 0.5 mm. in length.

Length of Forewing: 19 to 22 mm.

Male Genitalia. Of type (b): similar to those of *personaria*, differing mainly as follows: larger; uncus with base 0.6 mm. wide, and with raised keel-like posterodorsal ridge; gnathos with more pointed median swelling having more numerous spines; juxta 1.1 mm. in length, apex tending to be slightly more heavily sclerotized and to curve ventrally; aedeagus 1.5 to 1.6 mm. in length, with posterior end curving ventrally and swollen; vesica having from one to three small spines.

Female Genitalia. Similar to those of *person-*



FIGS. 18-21. Male genitalia of *Plataea*. 18. *P. personaria* (H. Edwards), Rancho La Sierra, Arlington, California, April 8, 1948 (A. H. Rindge; AMNH). 19. *P. ursaria* Cassino and Swett, Upper Santa Ana River, California, June 1, 1947 (G. H. and J. L. Sperry; AMNH). 20. *P. californiaria* Herrich-Schäffer, "Middle Cala." (AMNH). 21. *P. diva* Hulst, Rochester, Nevada, June 10, 1966 (J. H. Baker; AMNH).

aria, differing mainly as follows: larger; lamella postvaginalis 0.4 to 0.6 mm. long, surface not spiculate; lamella antevaginalis tending to be more slender; ductus bursae less clearly defined posteriorly, more tapering anteriorly, and tending to have corneous lateral margins distad of sclerotized tube; corpus bursae larger but tending to have smaller, sclerotized, striated area. Apophyses posteriores 0.9 to 1.2 mm. in length. Segments 7 and 8 with posterior margins of dorsums evenly rounded, unmodified.

Early Stages. Unknown.

Food Plant. Unknown.

Type. Holotype, male, MCZ 21880. (See fig. 15.)

Type Locality. Bear Lake, San Bernardino County, California.

Distribution. In Baja California, the species is known from the Sierra San Pedro Martir and the Sierra Juarez at elevations up to 6000 feet. In southern California *ursaria* is found in the mountains; it occurs in the Transverse Range, extending west into Ventura and Santa Barbara counties. It extends north along the eastern face of the Sierra Nevadas into Mono County, California, where it has been captured at 9500 feet, and into the adjacent high desert country of Nevada (see fig. 22).

Flight Period. March into July, with a few specimens having been taken in September and October.

Remarks. Two hundred ninety-five specimens (199 males, 96 females) and 14 genitalic dissections (eight males, six females) have been studied.

This species appears to be basically univoltine; occasionally a few specimens from a partial second generation may occur. The latter tend to be slightly smaller and a bit darker in color than the earlier specimens.

As with *personaria*, there is some individual variability in the t. a. and t. p. lines, and hence in the shape of the median area of the forewings above.

Plataea californiaria Herrich-Schäffer

Figures 20, 23, 24, 32, 35

Plataea californiaria Herrich-Schäffer, "1850-1858" [1856], pl. 94, fig. 537; "1850-1858" [1858], pp. 64 (as *californiaria*, *lapsus*), 84.

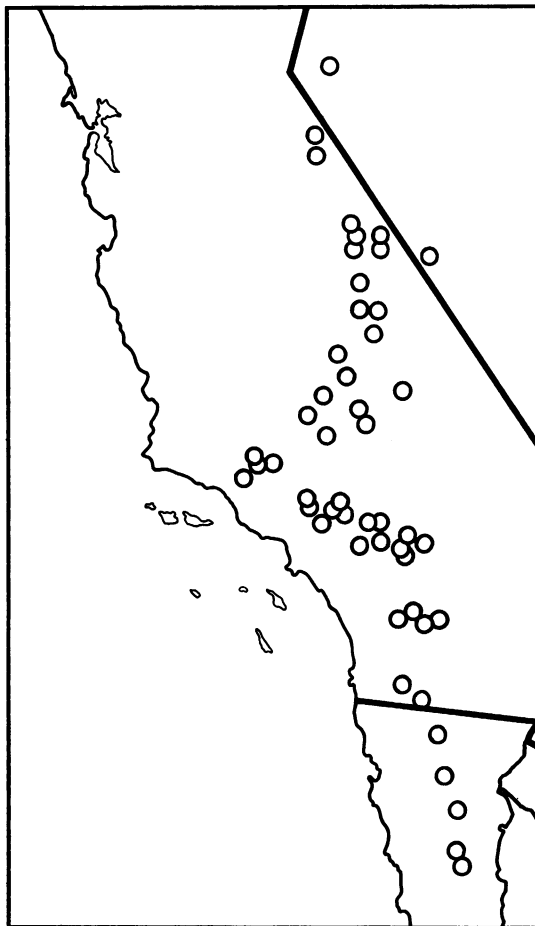


FIG. 22. Distribution of *Plataea ursaria* Cassino and Swett.

Grote, 1863, p. 344. Hulst, 1887, p. 11 (placed as synonym of *uncanaria*); 1896, p. 342 (as valid species). Dyar, "1902" [1903], p. 319. Smith, 1903, p. 75. Barnes and McDunnough, 1917, p. 115. McDunnough, 1938, p. 170.

Aspilates ? californiaria: Walker, 1862b, p. 1673. *Gorytodes californiaria* [sic]: Packard, 1876, p. 201 (as synonym of *uncanaria*). Gumpenberg, 1896, p. 304.

Gorytodes californiaria: Grote, 1882, p. 49 (as synonym of *uncanaria*).

Gorytodes uncanaria Guenée, 1857, p. 180. Walker, 1862a, p. 1062. Packard, 1876, p. 201, pl. 9, fig. 32 (adult male). Grote, 1882, p. 49. Anon., 1882, p. 22. Hulst, 1887, p. 10. Smith, 1891, p. 72 (as "*uncanaria* H.-S.").

Gumpennberg, 1896, p. 304. NEW SYNONYMY.

Plataea uncanaria: Hulst 1896, p. 342 (as synonym of *californiaria*). Dyar, "1902" [1903], p. 319 (as synonym of *californiaria*). Smith, 1903, p. 75 (as synonym of *californiaria*). Barnes and McDunnough, 1917, p. 115 (as valid species). McDunnough, 1938, p. 170.

Diagnosis. This species can be recognized by the biangulate t. a. line, the white centered discal dot, by the presence of the s. t. line and by the contrastingly colored upper surface of the forewings. The genitalia are quite different from those of the preceding species; see keys for details.

Male. Head with vertex, front, and palpi grayish brown; antennae with 42 to 45 segments, pectinations extending to apex, with longest pectinations 1.2 to 1.7 mm. in length. Thorax above pale grayish brown, with some raised white scales medially; below brownish gray, legs with mixture of pale gray, brownish gray, and brown scales; fore tibia with process arising at middle of segment. Abdomen above and below grayish white, with scattered brown scales.

Upper Surface of Wings: Similar to that of *personaria* in color and pattern, differing mainly as follows: forewings with t. a. line more outwardly oblique, paralleling inner margin to vein Cu₁, angled posteriorly to vein Cu₂, then swinging basally to middle of cubital cell; discal dot small, brownish black, round or elliptical with white scales in center; t. p. line with weak inward tooth on vein M₁, meeting costa seven-eighths distance from base. Hind wings similar to those of *personaria*.

Under Surface of Wings: Similar to that of *personaria*, but tending to be slightly browner.

Length of Forewing: 15 to 18 mm.

Female. Similar to male; longest antennal pectinations 0.3 to 0.4 mm. in length.

Length of Forewing: 15 to 17 mm.

Male Genitalia. Of type (c): uncus with base 0.35 to 0.45 mm. wide, lateral margins evenly tapering, apical region attenuate, sides either parallel or weakly swollen, apex with strong posterior ridge, terminating in single point; gnathos consisting of two arms, converging medially but not connected, each becoming wedge-shaped near midline, anterior margin converging on straight posterior margin; valves short, broad,

each costa wide, swollen and spinose distally, with spines extending on to valvula, apex of valve extending beyond costa to blunt point, cucullus swollen, lightly sclerotized; transtilla constricted medially between two anteriorly pointing projections; juxta with anterior portion rhomboidal, each posterolateral area with lateral, paired, posteriorly curving, sclerotized process; aedeagus slender, 1.1 to 1.2 mm. in length; vesica armed with from two to five spines, variable in length, one or two usually relatively long, remainder shorter, curved, tending to be transverse.

Female Genitalia. Sterigma with lamella postvaginalis a broad sclerotized band, having posteromedial indentation, and continued ventromedially as lamella antevaginalis, posterior edge of last evenly swollen; ductus bursae with broad, tapering, membranous sinus vaginalis tapering into sclerotized, slightly tapering ductus bursae; corpus bursae elongate, ovoid. Apophyses posteriores 1.0 to 1.2 mm. in length. Segments 7 and 8 with posterior margin of dorsum heavily sclerotized, 8 projecting posteromedially and having small median indentation.

Early Stages. Unknown.

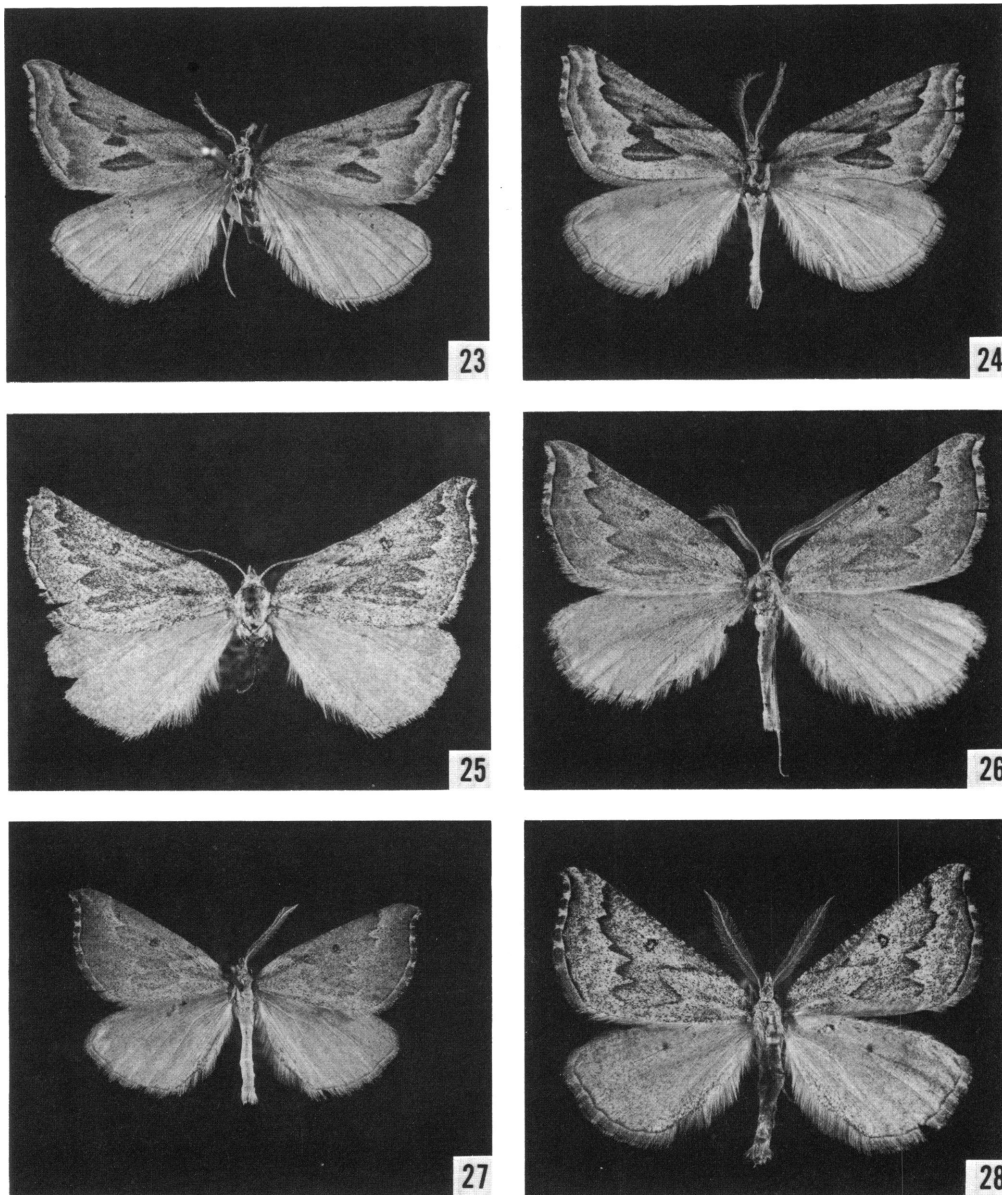
Food Plant. Unknown.

Types. Of *californiaria*, present location unknown.

Guenée described *uncanaria* from three male specimens. One of these is in the National Museum of Natural History; it is in excellent condition. This specimen is hereby designated, and has been labeled, as the lectotype. (See fig. 23.) Its genitalia are mounted on slide HWC 6020.

Type Localities. California (both *californiaria* and *uncanaria*). It is probable that the types of both names came from central California, but we cannot be certain. It is possible that H. H. Behr, who knew Herrich-Schäffer, collected the type of *californiaria*. Guenée, in his original description of *uncanaria*, stated that the types were in the collections of Boisduval and Guenée; it is probable that P. J. M. Lorquin collected the material for Boisduval. It is known that both Behr and Lorquin collected in and around San Francisco. I therefore suspect that the vicinity of San Francisco, San Francisco County, California was type locality for both *californiaria* and *uncanaria*.

Distribution. California, occurring along the coast from San Luis Obispo to Marin and Sonoma counties (see fig. 35).



FIGS. 23-28. Adults of *Plataea*. 23, 24. *P. californiaria* Herrich-Schäffer. 23. *Gorytodes uncanaria* Guenée, lectotype male, California (USNM). 24. Male, "Middle Cala." (AMNH). 25-28. *P. diva* Hulst. 25. *P. diva* Hulst, lectotype female, Argus Mountains, California, April, 1891 (K.; AMNH). 26. Male, Mojave desert, California, May 2, 1937 (AMNH). 27. Male, Julian, California, October, 1948 (N. Crickmer; AMNH). 28. Male, Barton Flats, California, June 16, 1947 (Melander; AMNH). All $\times 1.6$.

Flight Period. February into November.

Remarks. One hundred twenty-nine specimens (77 males, 52 females) and 11 genitalic dissec-

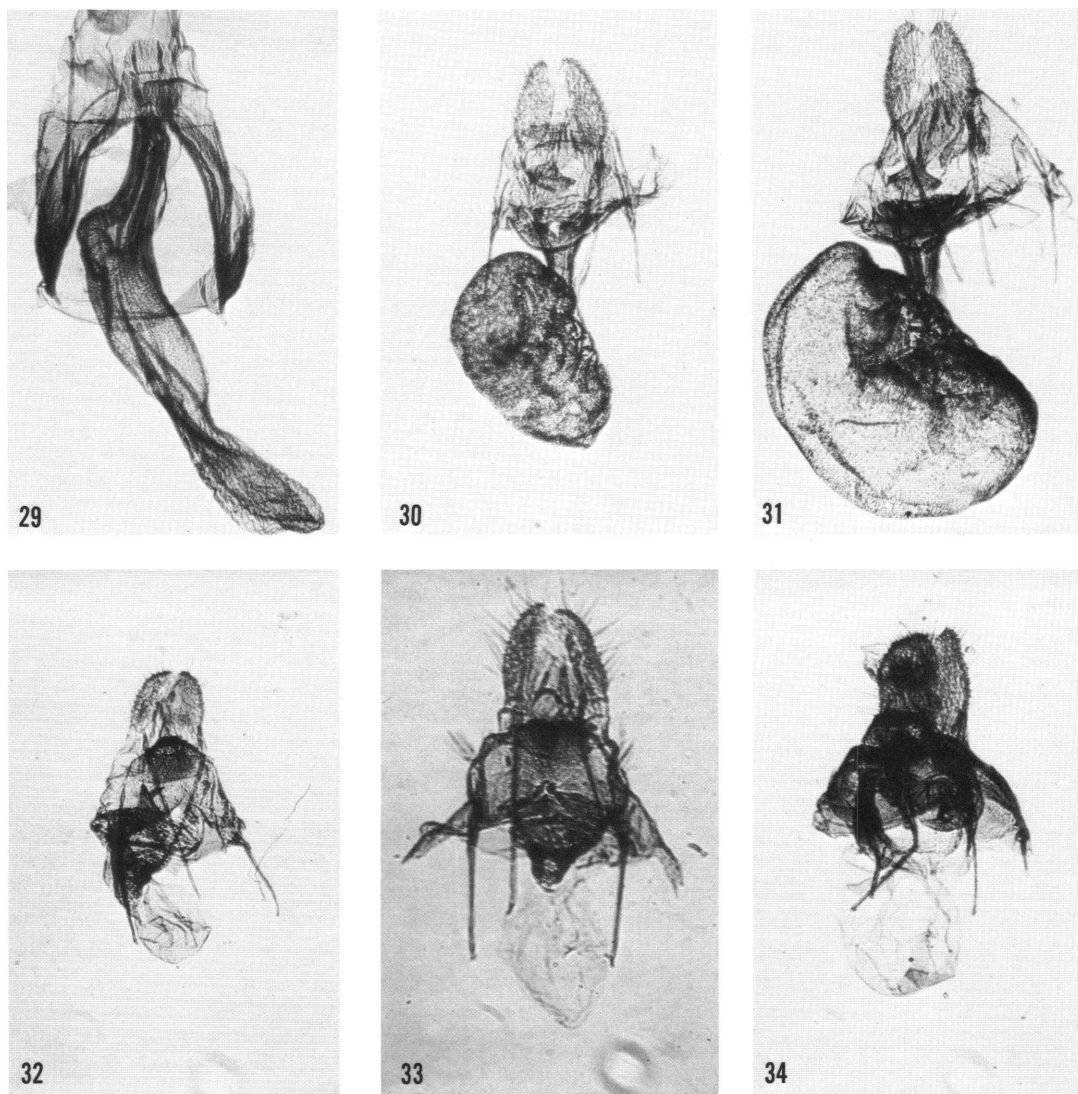
tions (six males, five females) have been examined.

Plataea californiaria is easily identified from

Herrich-Schäffer's illustration; the biangulate t. a. line and the white centered discal dot on the upper surface of the forewings are clearly shown. As the lectotype of *uncanaria* has these same

characters, it is placed as a synonym of *californiaria*.

There appears to be more individual variation in this species than in the preceding ones; this



FIGS. 29-34. Female genitalia of *Plataea*. 29. *P. calcaria* (Pearsall), paratype, Colorado desert, Arizona, April 12 (AMNH). 30. *P. personaria* (H. Edwards), paratype of *pasadenaria* Wright, Pasadena, California, April 30, 1902 (AMNH). 31. *P. ursaria* Cassino and Swett, Phelan, California, May 2, 1936 (G. H. and J. L. Sperry; AMNH). 32. *P. californiaria* Herrich-Schäffer, Monterey, California (AMNH). 33. *P. diva* Hulst, Upper Santa Ana River, California, June 3, 1946 (G. H. and J. L. Sperry; AMNH). 34. *P. trilinearia* (Packard), Keystone Canyon, California, April 20, 1960 (J. M. and S. N. Burns; AMNH).

variability is found chiefly in the t. a. and t. p. lines, and in the extent of the median area of the upper surface of the forewings. The posterior elliptical portion of the median area may be rather broadly attached to the anterior portion of the median area, or there may be a narrow neck, or else the elliptical portion may be completely free.

Seasonal dimorphism is another kind of variation that is present. Moths caught in the spring tend to be larger, to have darker and more contrastingly colored maculation on the upper surface of the forewings than do moths caught in the summer and fall.

Plataea diva Hulst

Figures 21, 25-28, 33, 35

Plataea diva Hulst, 1896, p. 343. Dyar, "1902" [1903], p. 319. Smith, 1903, p. 75. Barnes and McDunnough, 1917, p. 115. McDunnough, 1938, p. 170. Rindge, 1955, p. 141.

Diagnosis. This species can be separated from *californiaria* by the upper surface of the forewings being paler and less contrasting in color than in that species, and by the less prominent s. t. line.

Male. Head similar to that of *personaria*; antennae with from 39 to 45 segments, with longest pectinations 1.6 mm. in length. Thorax and abdomen similar to those of *personaria* but tending to have more scattered brown scaling.

Upper Surface of Wings: Forewings similar to those of *personaria*, differing mainly as follows: paler and less contrasting in color, due to fewer brown scales and to paler median area; s. t. line more weakly represented or obsolescent. Hind wings similar to those of *personaria*.

Under Surface of Wings: Similar to that of *personaria* but with discal dots tending to be more strongly represented.

Length of Forewing: 13 to 20 mm.

Female. Similar to male, but with upper surface of forewings tending to have more scattered brown scaling; antennal pectinations 0.3 to 0.4 mm. in length.

Length of Forewing: 12 to 20 mm.

Male Genitalia. Of type (c): similar to those of *californiaria*, differing mainly as follows: larger,

more heavily sclerotized; tegumen larger, tending to be more or less at right angle to saccus; uncus with base 0.3 to 0.5 mm. wide; gnathos broader, each arm pointing posteriorly at midline, anterior margin rounded medially, with roughly parallel, very finely dentate sides medially, posterior margin extending posteroventrally, ending in point; juxta more heavily sclerotized, anterior portion with median indentation, paired lateral processes larger, longer; aedeagus 1.4 to 1.5 mm. in length; vesica with from three to six spines, arranged as in *californiaria*.

Female Genitalia. Similar to those of *californiaria*, differing mainly as follows: larger; sterigma with lamellae more smoothly sclerotized, wider, posterior margin of lamella antevaginalis finely dentate; ductus bursae with broader sinus vaginalis, and with ductus bursae relatively wider and shorter. Apophyses posteriores 1.2 to 1.5 mm. in length. Segments 7 and 8 with posterior margins of dorsums heavily sclerotized, 8 projecting posteromedially and having small to prominent median indentation.

Early Stages. Unknown.

Food Plant. Unknown.

Type. Hulst did not specify either the number or sex of the type specimens of *diva*; at least two must have been present, as two wing lengths are given. The specimen from the Hulst collection, now in the American Museum of Natural History (Rindge, 1955, p. 141) is hereby designated, and labeled, as the lectotype; the moth is a female and is without abdomen. (See fig. 25.) There are two females labeled as type in the National Museum of Natural History collection; one has the correct locality data, the other is without any label other than "Collection Brklyn Mus."

Type Locality. Argus Mountains, Inyo County, California.

Distribution. In Mexico, *diva* is known from northwestern Baja California; specimens have been taken on the coastal plains and in the foothills up to about 3600 feet elevation. In southern California, *diva* occurs on the coastal plains of San Diego, Orange, and Riverside counties; apparently there may be a continuous succession of generations per year in this area. The species is also found in the southern California mountains, occurring as high as 6000 feet, and extends to

the east onto the adjacent Mohave Desert. From the Transverse Ridge, *diva* extends north up the Inner Coast Ranges as far as Alameda County; to the east it is found along the eastern slopes of the Sierra Nevadas as far as Mono County, where it has been collected at 7200 feet. The species occurs in western Nevada, and gets as far north as southeastern Oregon (see fig. 35).

Flight Period. The species has been taken in every month of the year in the lowlands of southern California; in the Sierras, Nevada, and Oregon, *diva* has been captured from April into September.

Remarks. Eight hundred ninety-one specimens (445 males, 446 females) and 47 genitalic dissections (26 males, 21 females) have been studied.

The moths from the coastal plains of southern California, especially those caught in the summer months, are smaller and paler than the presumably single-brooded examples from the mountains and desert areas.

The adults show the same kind of variability in maculation as is found in *californiaria*.

Plataea trilinearia (Packard)

Figures 10, 34, 36-42

Gorytodes trilinearia Packard, 1873, p. 24, pl. 1, fig. 23 (adult male); 1876, p. 202, pl. 9, fig. 33 (adult male). Grote, 1882, p. 49. Anon., 1882, p. 22. Smith, 1891, p. 72. Hulst, 1887, p. 11. Gumpfenberg, 1896, p. 303.

Plataea trilinearia: Hulst, 1896, p. 342. Dyar, "1902" [1903], p. 319; 1903, p. 226. Smith, 1903, p. 75. Barnes and McDunnough, 1917, p. 115. McDunnough, 1938, p. 170. Peterson, 1968, p. 91, fig. 39 (eggs).

Gorytodes dulciaria Grote, 1880, p. 46. Gumpfenberg, 1896, p. 303 (as "species dubia"). NEW SYNONYMY.

Gorytodes dulciaria [sic]: Grote, 1882, p. 49. Anon., 1882, p. 22. Smith, 1891, p. 72 (as synonym of *trilinearia*).

Plataea trilinearia dulciaria [sic]: Dyar, "1902" [1903], p. 319. Smith, 1903, p. 75.

Plataea trilinearia dulciaria: Barnes and McDunnough, 1917, p. 115. McDunnough, 1938, p. 170.

Plataea trilinearia astrigaria Barnes and McDunnough, 1918, p. 150, pl. 20, fig. 1 (lectotype male). McDunnough, 1938, p. 170. NEW SYNONYMY.

Diagnosis. This species can be recognized by the upper surface of the forewings having a broad white border to the median area, a prominent,

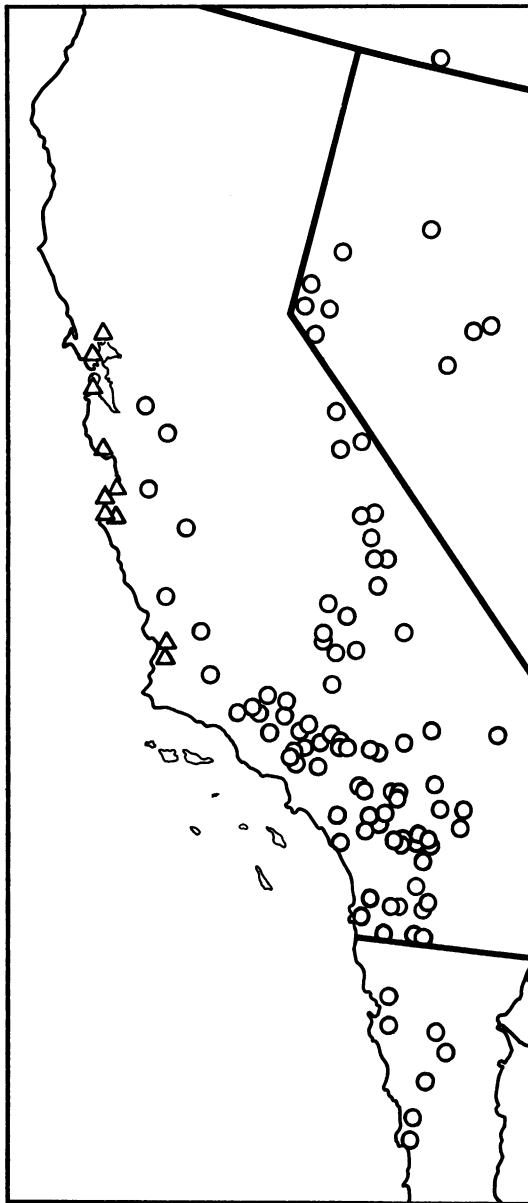
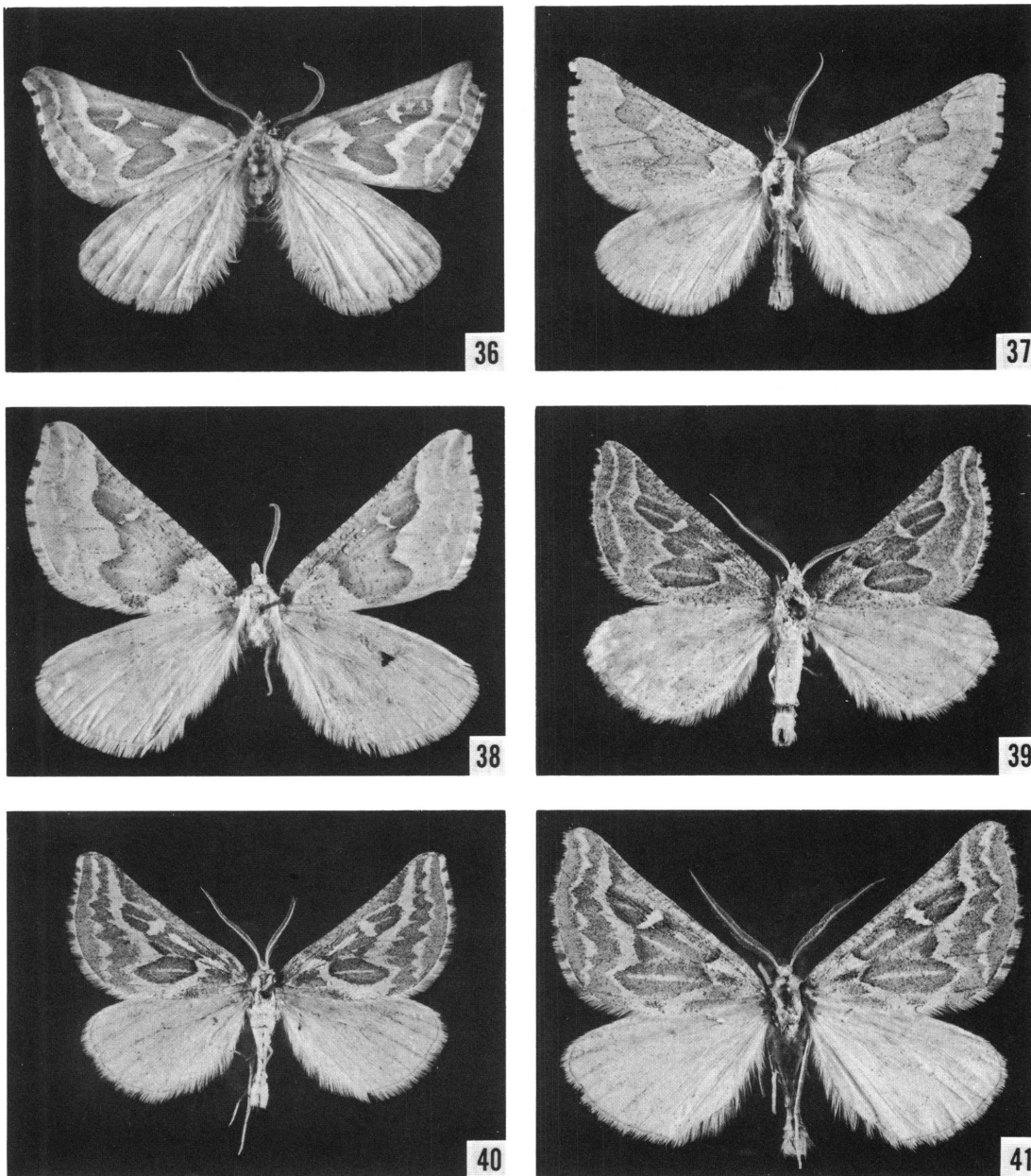


FIG. 35. Distribution of *Plataea californiaria* Herrich-Schäffer (triangles) and *P. diva* Hulst (circles).



FIGS. 36-41. Males of *Plataea trilinearia* (Packard). 36. *Gorytodes trilinearia* Packard, lectotype, Nevada (H. Edwards; AMNH). 37. *P. trilinearia astrigaria* Barnes and McDunnough, lectotype, Olancho, California, June 8-15 (USNM). 38. Cajon Pass, California, April 20, 1939 (AMNH). 39. Phelan, California, April 18, 1950 (G. H. and J. L. Sperry; AMNH). 40. Uncompahgre Plateau, Colorado, June 26, 1957 (F. and P. Rindge; AMNH). 41. Wheeler Spring, Nevada, May 13, 1934 (G. H. and J. L. Sperry; AMNH). All $\times 1.5$.

elongate, white discal dash, and an irregularly curved, not incised, t. p. line.

Male. Head with vertex white, some specimens with brown scaling at base of antennae; front white, or with faint brownish hue or with a few brown scales; palpi with variable mixture of white and brown scales; antennae with from about 46 to 54 segments, with longest pectinations 0.8 to 0.9 mm. in length. Thorax white above, with some pale brown scaling on collar and darker brown scaling posteriorly; below grayish white or pale brownish white; legs with mixture of white, grayish brown, and brown scales; fore tibia with process arising three-fifths distance from origin of segment. Abdomen above and below white, with variable number of scattered brown scales.

Upper Surface of Wings: Forewings white, with gray or grayish brown scaling; basal area gray or grayish brown, extending outwardly along inner margin to middle of wing; maculation similar to that of *personaria* but with posterior, elliptical lobe of median area tending to be larger, and with t. p. line irregular in course, not inwardly dentate; median area outlined by prominent white band; discal dash white, elongate, prominent; subterminal and terminal areas concolorous; terminal line varying from absent to complete, narrow, dark brown; fringe white, brown opposite vein endings. Hind wings white, with variable number of pale grayish brown scales; maculation absent in most specimens, some with small discal dot and trace of dark subterminal area; terminal line as on forewings; fringe white, some specimens with small amount of brown scaling opposite veins.

Under Surface of Wings: Forewings grayish white, with white discal dash, area distad of t. p. line, and s. t. line; terminal line and fringe similar to those of upper surface. Hind wings white, with variable amount of ochreous brown and dark brown scaling; maculation similar to that of upper surface.

Length of Forewing: 15 to 23 mm.

Female. Similar to male, with upper surface of forewings tending to be slightly darker; antennae with longest pectinations 0.3 to 0.4 mm. in length.

Length of Forewing: 15 to 22 mm.

Male Genitalia. Of type (d): uncus short, broad, hoodlike, rounded medially, without projecting point; gnathos bifid, upper arms elongate, extending posteriorly along tegumen to uncus, each arm apically with posterior margin swollen, inner surface finely dentate, tapering to elongate, sharp point; lower arms of gnathos more slender, well separated medially by posterior projection of transtilla, and having group of posteriorly directed spines at each end of arm; valves short, extending laterally, of more or less equal width up to tapered, rounded apex, costal area broadly sclerotized, distal and inner margins, in valvula, spinose, sacculus thick, sclerotized; transtilla with prominent pair of anteriorly directed projections, and with large, densely spinose, median posterior projection; juxta broad, rounded anteriorly, truncate posteriorly; aedeagus very slender, 1.25 to 1.55 mm. in length; vesica unarmed.

Female Genitalia. Sterigma with large sclerotized lamella postvaginalis, at least twice as wide as long, lamella antevaginalis including most of ventral portion of segment 9, broadly sclerotized; ductus bursae slightly longer than wide, lightly sclerotized, tubelike; corpus bursae with relatively short, sclerotized posterior neck having deep longitudinal striations, then enlarging into elliptical, membranous sac. Apophyses posteriores 1.0 to 1.2 mm. in length. Segments 7 and 8 with posterior margins of dorsums membranous, unmodified.

Early Stages. Undescribed, except for the eggs; these were figured and described by Peterson (1968, p. 91, fig. 39).

Food Plant. Unknown.

Types. Packard described *trilineararia* from two male specimens; they were from "Nevada (Edwards). Arizona (Dr. Palmer, from the Museum of the Department of Agriculture at Washington)" (Packard, 1873, p. 25). The type specimen in the Museum of Comparative Zoology is the one from Arizona, and is labeled as type in Packard's handwriting. The moth is in poor condition, as it was apparently immersed in liquid (probably water) at one time; the antennae and abdomen are missing. The Nevada male is in the American Museum of Natural History, and it is in excellent condition except for the tip of the right forewing and the missing abdomen; this specimen was

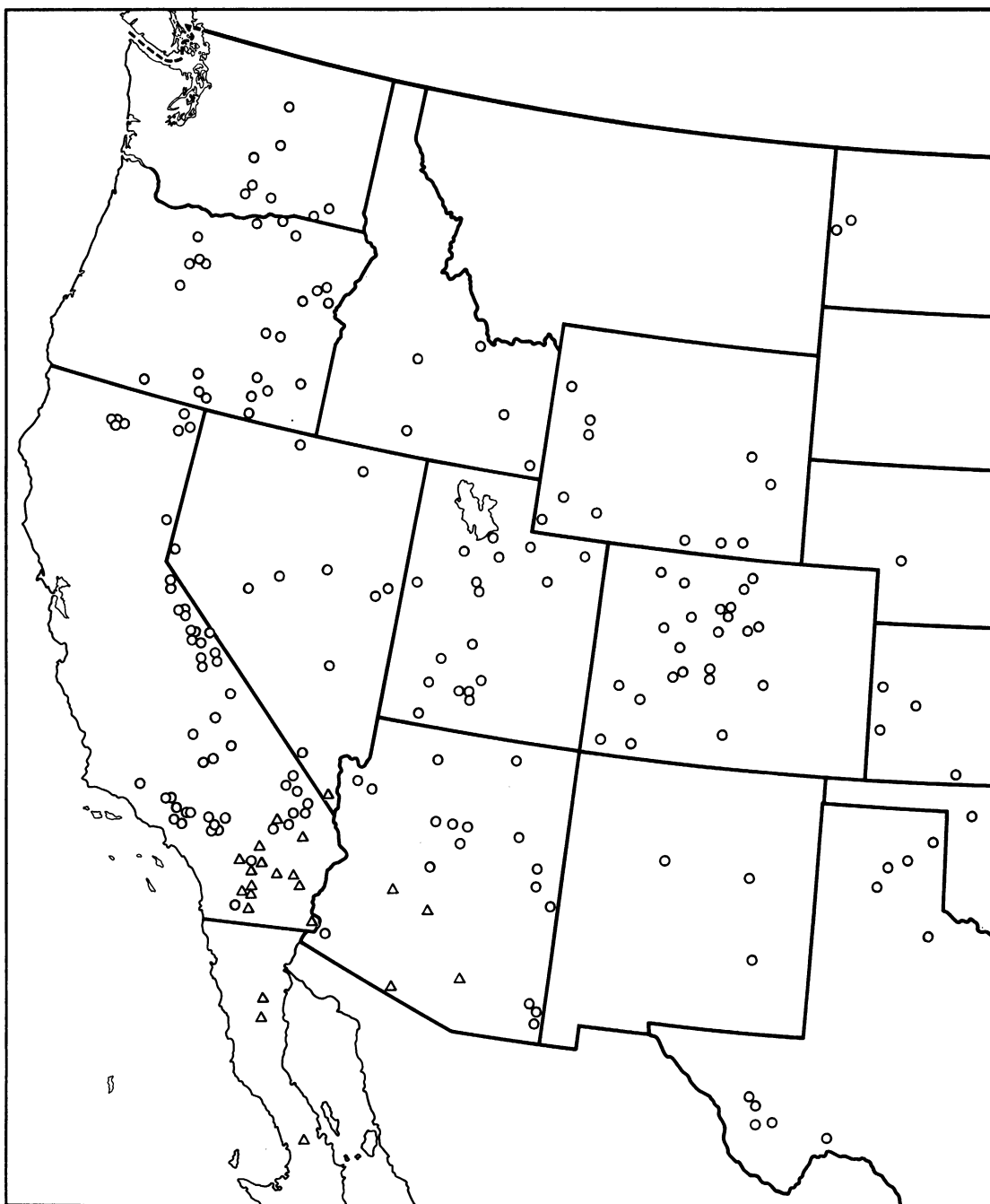


FIG. 42. Distribution of *Plataea calcaria* (Pearsall) (triangles), and *P. trilinearia* (Packard) (circles) in the United States.

labeled as *trilinearia* by Edwards, but not as a syntype of that name. However, I am certain that this was the Nevada specimen that Packard had when naming *trilinearia*. Based on the condition

of the two specimens today, it is obvious that Packard based his description largely on the Nevada specimen; the maculation of the under surface of the hind wings agrees with the description

of Edwards's specimen only, as the Arizona one does not have any "distinct and broad bands of ochreous with black scales" (Packard, *op. cit.*). Packard also said in his original description that "the specimen from Arizona is in bad condition. . . ." As the description of *trilinearia* was largely based on the Nevada male, and as it is in much better condition than the syntype from Arizona, I hereby designate, and have labeled, the former as the lectotype. (See fig. 36.)

Grote described *dulciaria* from the male; apparently he had only a single specimen. The holotype is in the collection of the British Museum (Natural History).

Barnes and McDunnough described *astrigaria* from one male and one female; both specimens are now in the collection of the National Museum of Natural History. I hereby designate, and have labeled, the male as the lectotype. (See fig. 37.)

Type Localities. Nevada (*trilinearia*); Colorado (*dulciaria*); Olancha, Inyo County, California (*astrigaria*).

Distribution. Western North America, west of approximately longitude 100°W, to the Sierra Nevada and Cascade ranges, extending from about the Mexican border north into southwestern Saskatchewan, southern Alberta, and southeastern British Columbia (see fig. 42).

Flight Period. February through September.

Notwithstanding the lengthy flight period, *trilinearia* appears to be single brooded in most localities.

Remarks. One thousand thirty-two specimens (515 males, 517 females) and 25 genitalic dissections (15 males, 10 females) have been studied.

Grote's *dulciaria*, from Colorado, cannot be distinguished from other Rocky Mountain and Great Basin specimens and so it is placed in synonymy.

Barnes and McDunnough's *astrigaria* represents a pale-colored population, having wide silvery white margins around the median area of the forewing. It is known from a narrow strip along the western edge of the Mojave Desert in Inyo and San Bernardino counties, California. This variation grades imperceptibly into the normal *trilinearia* maculation and color in the adjacent mountains of Mono County and on the Mojave Desert in Los Angeles County. As the population is not clearly defined by color, pattern, or distribution, this former subspecific name is placed in the synonymy of *trilinearia*.

There appears to be less variation in pattern and color in *trilinearia* than is found in both *californiaria* and *diva*. The one geographic area that has variation is along the interface of the Mojave Desert and the adjacent mountains to the west; see the preceding paragraph for a discussion of this.

LIST OF SPECIES WITH THEIR KNOWN DISTRIBUTION

GENUS *PLATAEA* HERRICH-SCHÄFFER, "1850-1858" [1856]

ORYTODES GUENÉE, 1857

APICRENA PEARSALL, 1911

- | | |
|---|--|
| 1. <i>pausaniasi</i> , new species | Coahuila |
| 2. <i>aristidesi</i> , new species | México |
| 3. <i>calcaria</i> (Pearsall), 1911 | Arizona, California, Nevada, Baja California |
| <i>triangularia</i> Barnes and McDunnough, 1916 | |
| <i>dulcinia</i> Dyar, 1923 | |
| 4. <i>personaria</i> (H. Edwards), 1881 | California, Baja California |
| <i>lessaria</i> Pearsall, 1907 | |
| <i>pasadenaria</i> Wright, 1917 | |
| 5. <i>ursaria</i> Cassino and Swett, 1922 | California, Nevada, Baja California |
| 6. <i>californiaria</i> Herrich-Schäffer, | California |
| "1850-1858" [1856] | |
| <i>uncanaria</i> (Guenée), 1857 | |
| 7. <i>diva</i> Hulst, 1896 | California, Nevada, Oregon, Baja California |
| 8. <i>trilinearia</i> (Packard), 1873 | Western North America |
| <i>dulciaria</i> (Grote), 1880 | |
| <i>astrigaria</i> Barnes and McDunnough, 1918 | |

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