

Moths of Western North America

1. Distribution of Saturniidae of Western North America



Contributions of the
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Moths of Western North America

1. Distribution of Saturniidae of Western North America

by

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1993

Cover: *Hemileuca nuttalli*. Transparent watercolor painting by
R. S. Peigler, based on a photograph of a living specimen by Kirby Wolfe.
The original painting is 34 cm X 46 cm.

Introduction to Series

This is the first number of a series of atlases detailing the distributional occurrence of the moths of North America. The atlas of Saturniidae by Richard Peigler and me covers the documented distribution of a well-known group. I began gathering data for this series of atlases in 1988 when the need for such information became acute. I had been attempting to curate the collection at Colorado State University and found that there was no integrated series of sources where I could reliably determine which species of moths should occur in the state. The distributional statements in the then-published Moths of North America series were usually vague. The then recently published Field Guide to the Moths of Eastern North America by C. V. Covell, Jr. did not detail the occurrence of moths much beyond the limits of their eastern ranges; there was usually no way to know if any particular moth occurred in the West, and if so, where.

Knowledge about western moths has accumulated rapidly, but is not generally available. Such knowledge exists in the form of collected specimens in curated institutional and private collections, and has not usually been synthesized except in the form of sporadic papers and a few monographs on specific species groups, genera, and subfamilies. Familial treatments are rare.

The purpose of this series is to provide in an expedient manner at least a draft synthesis of the distributional status of as many moth families as possible. For the families already covered by fascicles in the Moths of North America, these atlases may be considered an appendix or update. In some cases North American species additional to those treated in MONA are included. In other cases, authors of an atlas may decide to include moths that occur in northern Mexico, but not north of the U.S.-Mexico boundary.

It is anticipated that these atlases might be used for many purposes. These include, but are probably not limited to (1) compiling state or regional lists of moths, (2) curating a collection of western species, and (3) initial inventory of species that may be of conservation concern.

Persons interested in organizing or authoring atlases for specific moth groups should contact Dr. Paul A. Opler, U.S. Fish and Wildlife Service, 1201 Oak Ridge Drive, Fort Collins, CO 80525, for instructions and further information.

Background

The geographical distributions of the Saturniidae of North America are comparatively well known, among all insects second only to butterflies. The species occurring in the western half of the continent are less well-documented than those in the East. This atlas is an attempt to summarize what is known of these distributions, thereby encouraging entomologists in the future to fill in gaps by reporting additional locality data. Several amateurs in Arizona and California have been making collecting trips to northwestern and north-central Mexico during recent years, so our knowledge is finally growing for saturniids for that vast, poorly understood region.

Records have been gleaned from historical and recent literature and also from several private and institutional collections. There is always some danger of accepting undocumented records in literature or from individuals, as some of these may represent misidentifications. For the scope of this project, it is not possible to sort out all of these misidentifications, even where voucher material exists. Fortunately, most Saturniidae are identified correctly.

Although some are included on the maps, records (some published, some hearsay) known to us but which we reject as erroneous are as follows: Samia cynthia in Weld County, Colorado and Los Angeles, California; Callosamia promethea in Kimble County, Texas; Hyalophora euryalis in Logan, Utah; Hemileuca juno in Idaho; Actias luna in California; and Syssphinx bicolor in Colorado. Some of these records may have resulted from reared or released specimens, and others from misidentifications. Saturniidae do not stray great distances, but can conceivably be moved by storms.

The senior author does not consider the subspecies concept to be useful and therefore avoids using trinomials. Certain species such as Automeris io and Antheraea polyphemus do appear to have weakly-defined regional populations that fit the traditional concept of subspecies, but it seems that forcing trinomials onto most of the saturniids results in more confusion than clarity. Taxonomic works by Ferguson (1971-1972), Lemaire (1978, 1988), Riotte and Peigler (1981), and Peigler and Stone (1989) are followed here except for usage of trinomials. Pinratana and Lampe (1990: 32) also rejected trinomial nomenclature in their recent book on Thai saturniids; see also Oberprieler (1988).

Comments pertaining to the distributions or taxonomic treatment of each species are offered below to avoid misinterpretation of our data as far as possible. The numbers refer to the respective species.

1. The spread of Hyalophora cecropia westward through the Great Plains occurred over several decades early in this century. The moth occurs mainly in suburban areas along the Front Range of the Rockies in Colorado. The urban ecology in Colorado coincides very closely to that in Illinois reported by Sternburg et al. (1981).

2. Some readers will expect the names Hyalophora gloveri and H. g. nokomis to be used here. The pattern of phenotypes ranging from New England across to Alberta and south through the Rocky Mountains is clinal, and probably only a single geographically variable species is involved. Other plants and animals have parallel distribution patterns where altitude compensates for latitude. Lemaire (1978) treated nokomis, gloveri, and columbia as three subspecies of a single species.

6. The records of Rothschildia orizaba in the lower Rio Grande Valley have been discounted by some recent authors. We believe that the species has probably expanded its range into that area on occasion from the nearby mountains near Monterrey, Nuevo León, and possibly coastal areas in Tamaulipas.

7. Rothschildia lebeau, referred to as forbesi by some authors, does not differ from nominotypical lebeau from Central America (see Janzen 1984). It appears to be "killed back" by the periodic cold weather in southern Texas, but eventually expands its range northward after each severe freeze. Historically, it has been present in the lower Rio Grande Valley of extreme southern Texas; it was common there in the late 1970's and early 1980's, but absent in the late 1980's.

13. It has been speculated that Agapema solita may be extinct, at least north of the Rio Grande River (=Río Bravo). The most plausible explanation is that its range expands and then recedes back into Mexico, but there are no records of the moth in Mexico. Periodic population fluctuations over time have been documented in the lower Rio Grande Valley. Field studies in Tamaulipas would be valuable in documenting the status of this moth.

22, 23. Automeris randa and A. iris (also Adeloneivaia isara) probably have expanding and receding ranges across the Mexican-United States border in southeastern Arizona comparable to those species that range likewise in Texas. This would account for the discovery of new saturniids in southeastern Arizona in recent years, as well as for the skepticism of historical records of certain species such as Hylesia alinda Druce.

20, 31, 32, 46, 47. These five species were described since Ferguson's 1971 revision of Nearctic Hemileucinae, so the citations to the original descriptions are given in the references below.

43, 44. Earlier published records of Hemileuca eglanterina and H. nuttalli are more likely than any others to include misidentifications. Until Ferguson (1971) resolved the taxonomy of this complex (including synonyms such as pica), nobody understood the correct application of the various names.

52, 57, 58. A few of the records for these three species in Texas and northern Mexico may be confounded based on earlier misidentifications.

55, 56. The identities of Syssphinx albolineata and S. raspa have been clarified by Lemaire (1988). Lemaire also synonymized the generic name Sphingicampa under Syssphinx.

Acknowledgments

The following individuals generously provided locality records at our request and we wish to thank them for their invaluable contributions: Ray Albright, Donald E. Bowman, Clifford D. Ferris, Roy O. Kendall, Edward C. Knudson, Boris C. Kondratieff, Robert L. Langston, Claude Lemaire, David V. McCorkle, Noel McFarland, Stephanie McKown, Raymond W. Neck, John M. Nelson, Harold Rice, Richard C. Rosche, Patrick J. Savage, Jon H. Shepard, Michael J. Smith, Ray E. Stanford, Stephen E. Stone, Andrew D. Warren, Michael J. Weissmann, and Kirby L. Wolfe.

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Jon H. Shepard recorded data from collections in the Pacific Northwest and graciously provided them for our use in this atlas.

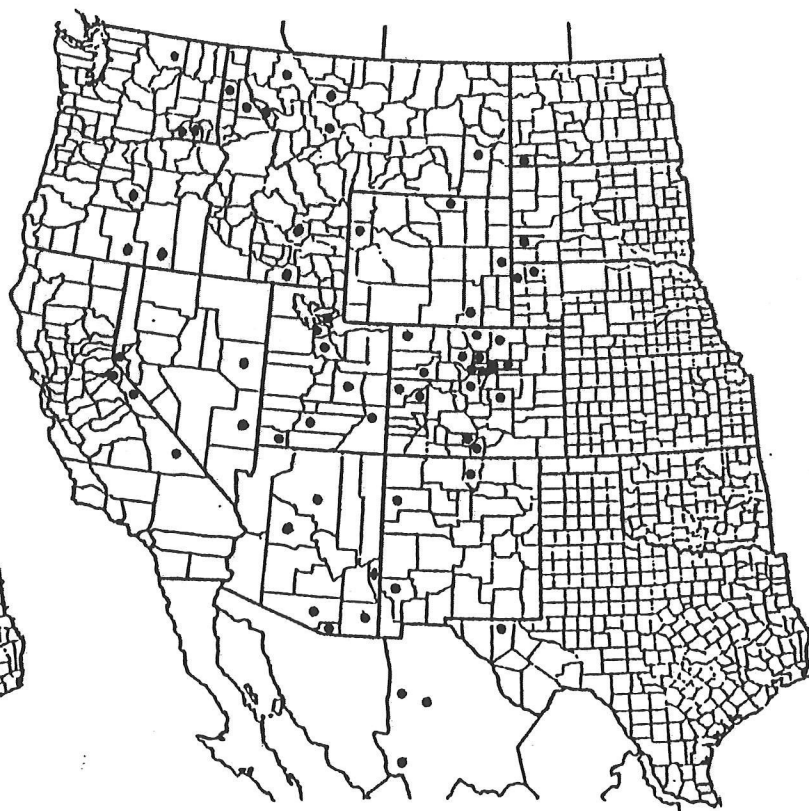
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1. *Hyalophora cecropia* (Linnaeus)



2. *Hyalophora columbia* (S.I. Smith)



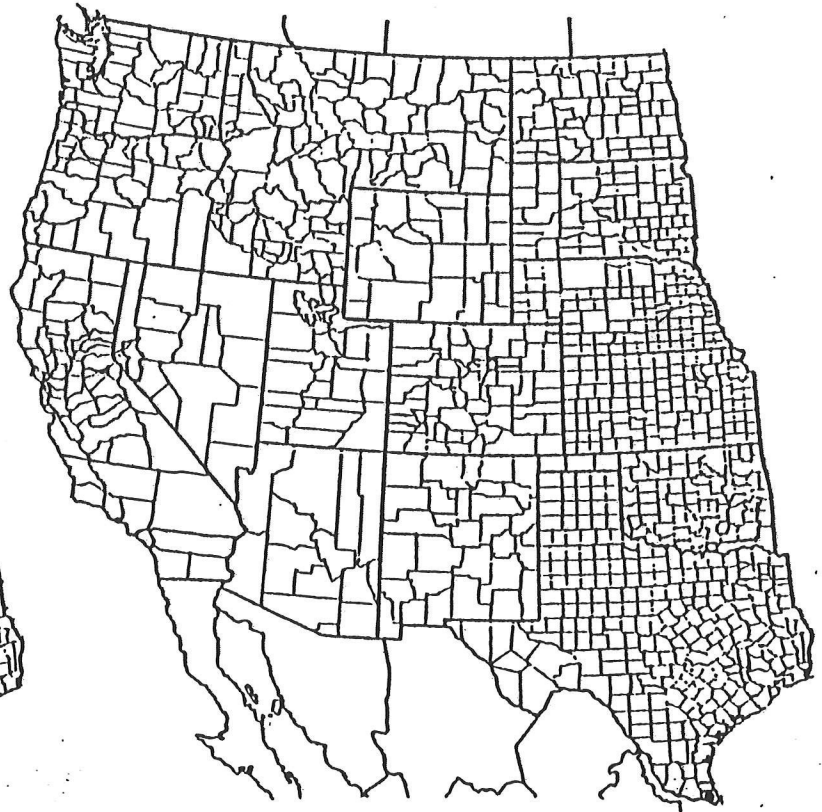
3. *Hyalophora euryalus* (Boisduval)



4. *Callosamia promethea* (Drury)



5. *Eupackardia calleta* (Westwood)



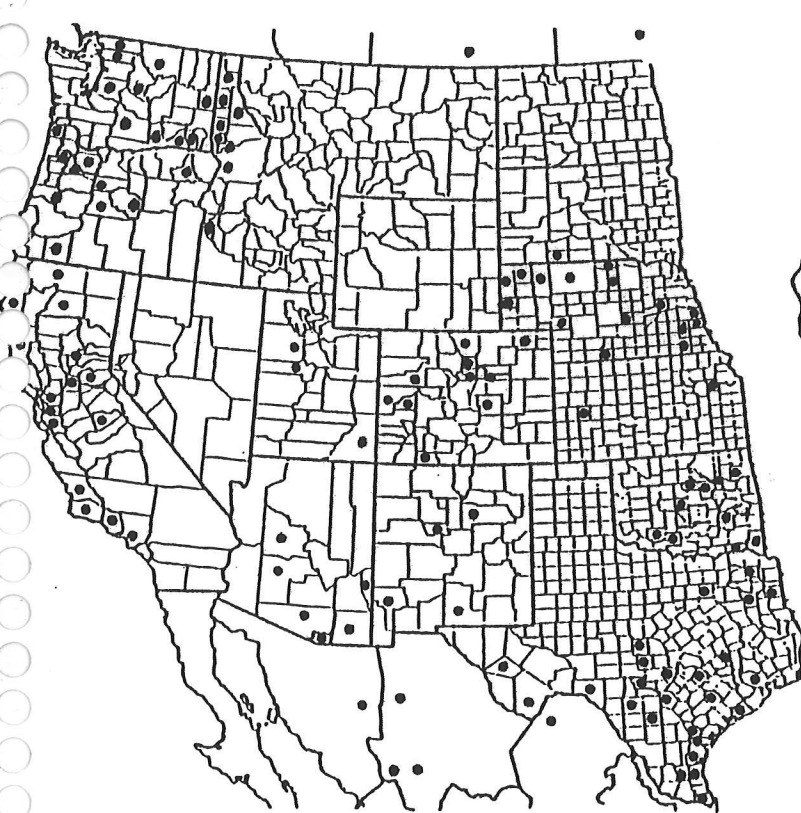
6. *Rothschildia orizaba* (Westwood)



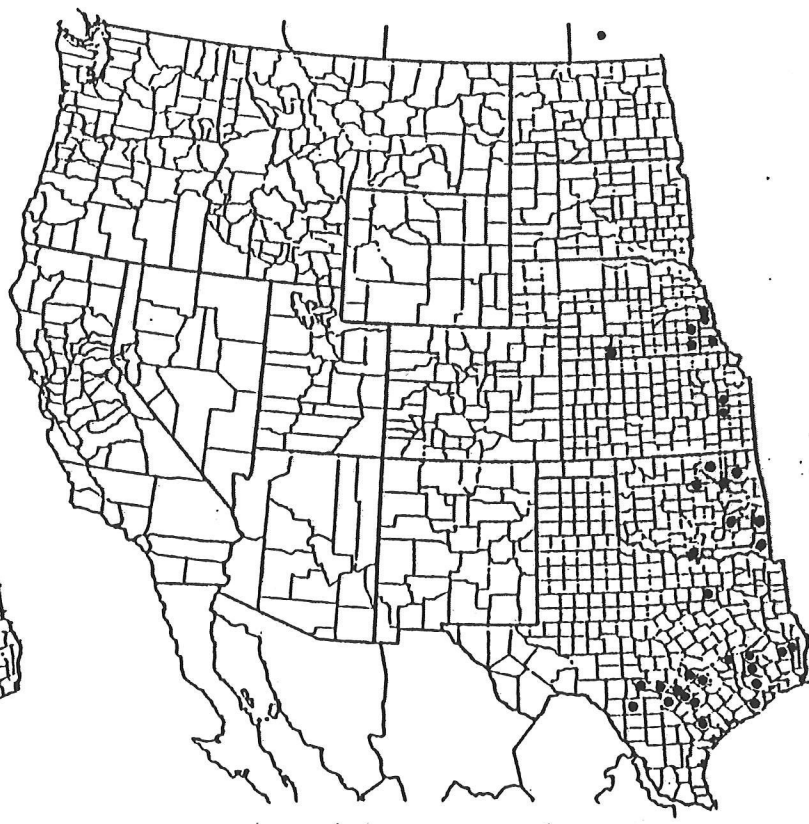
7. *Rothschildia cincta* (Tepper)



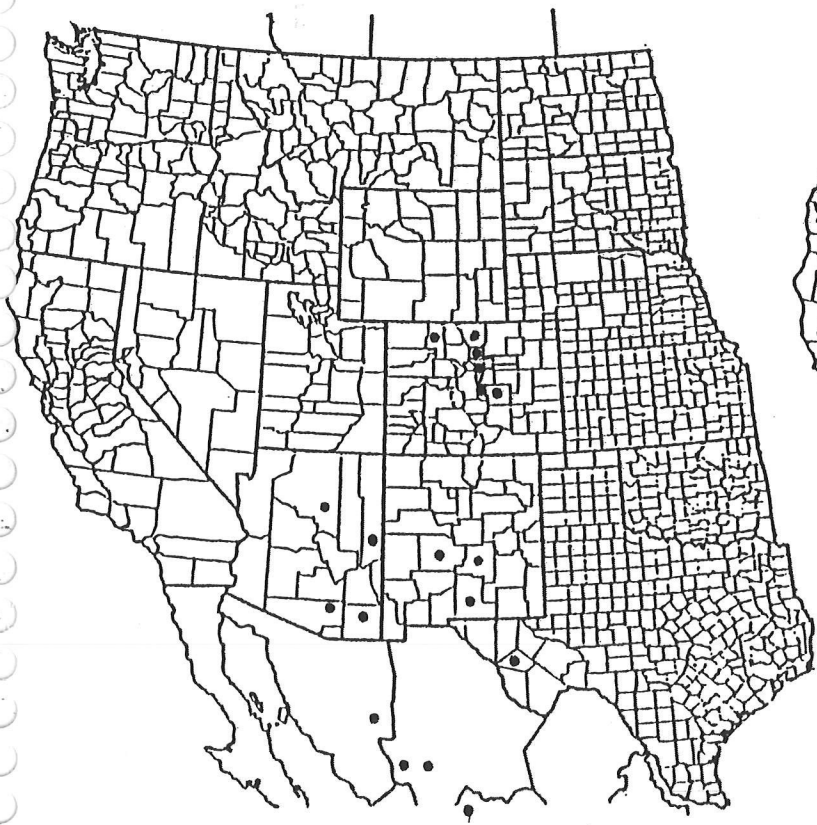
8. *Rothschildia lebeau* (Guerin-Ménéville)



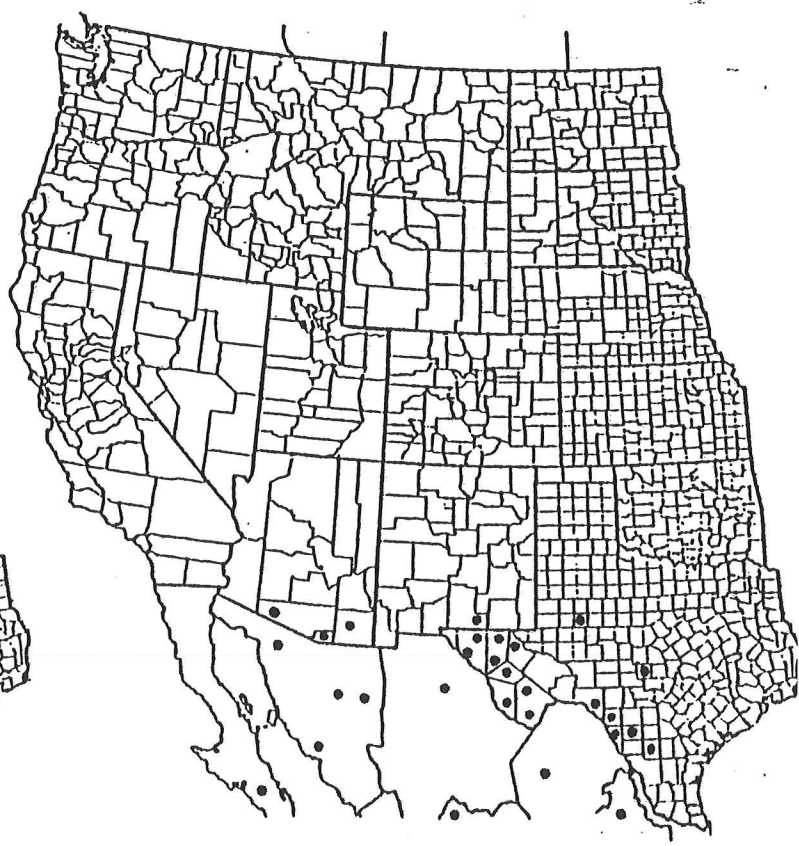
9. *Antheraea polyphemus* (Cramer)



10. *Actias luna* (Linnaeus)



11. *Agapema homogena* Dyar



12. *Agapema galbina* (Clemens)



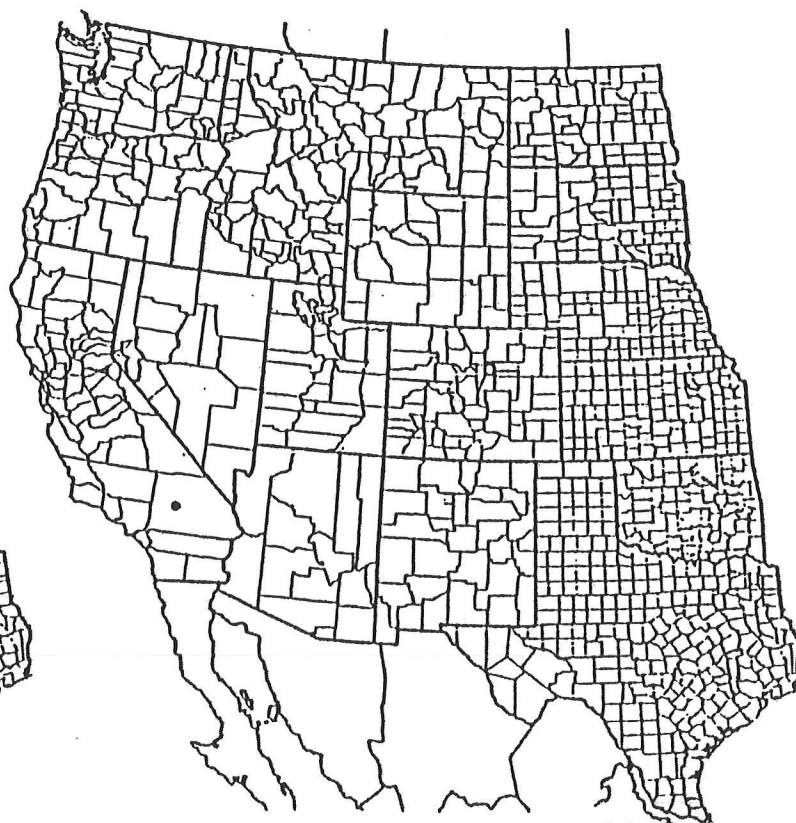
17. *Coloradia pandora* Blake



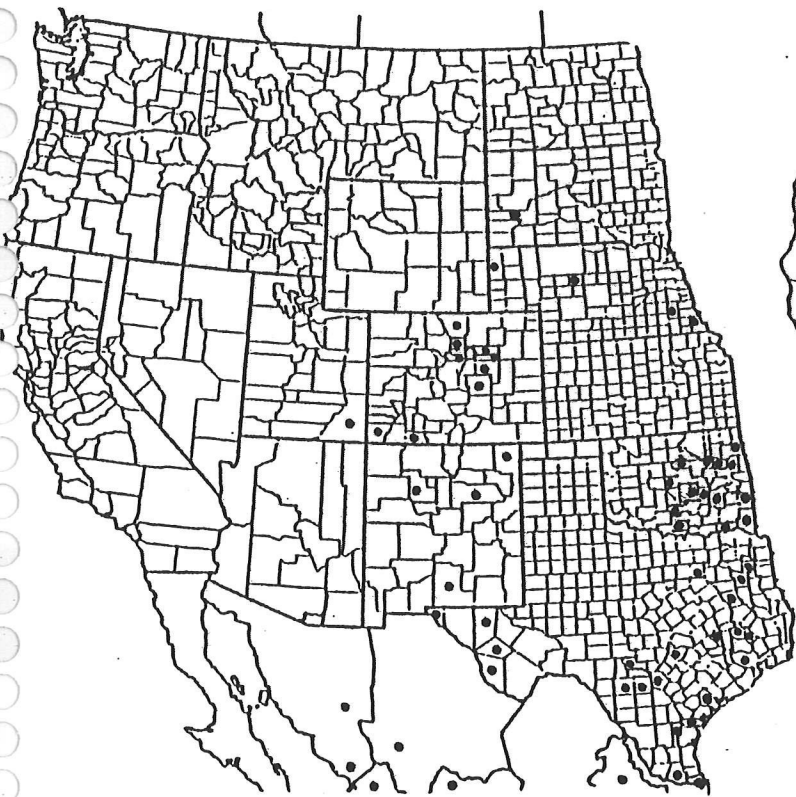
18. *Coloradia luski* Barnes and Benjamin



19. *Coloradia doris* Barnes



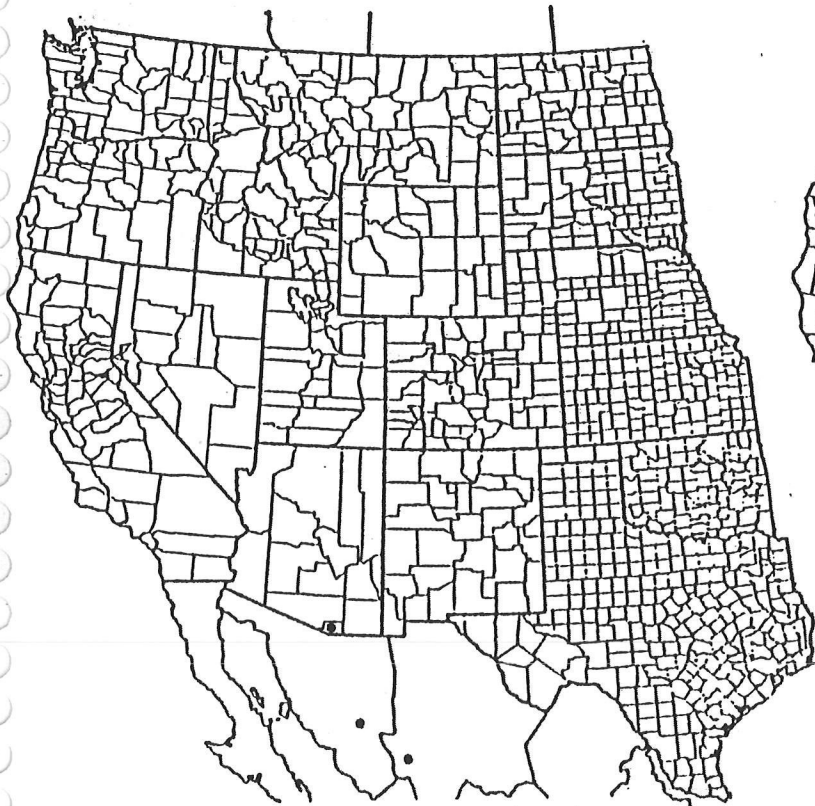
20. *Coloradia velda* Johnson and Walter



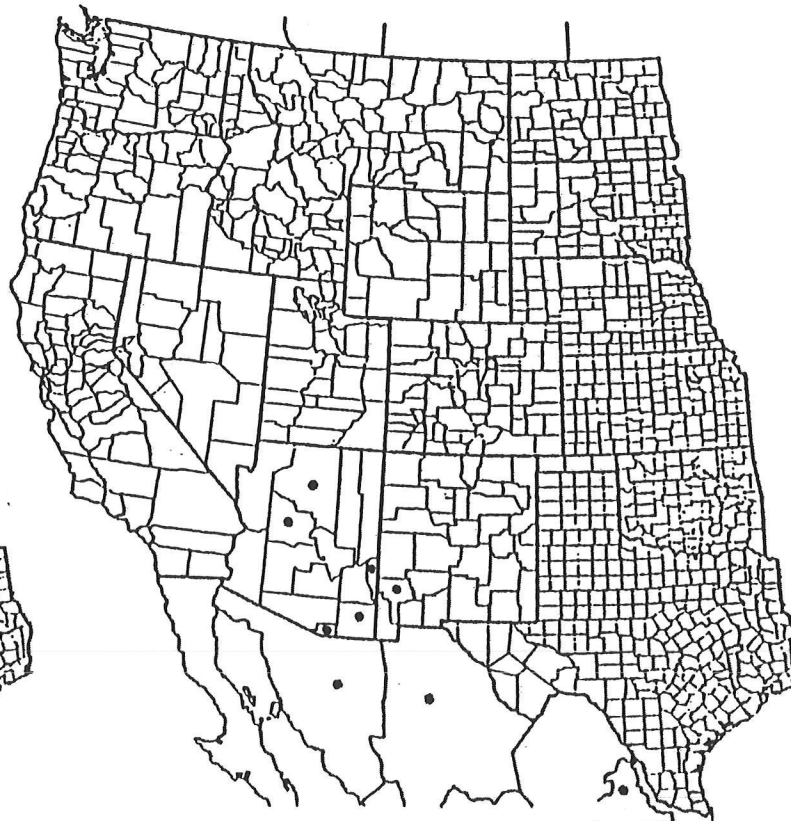
21. *Automeris io* (Fabricius)



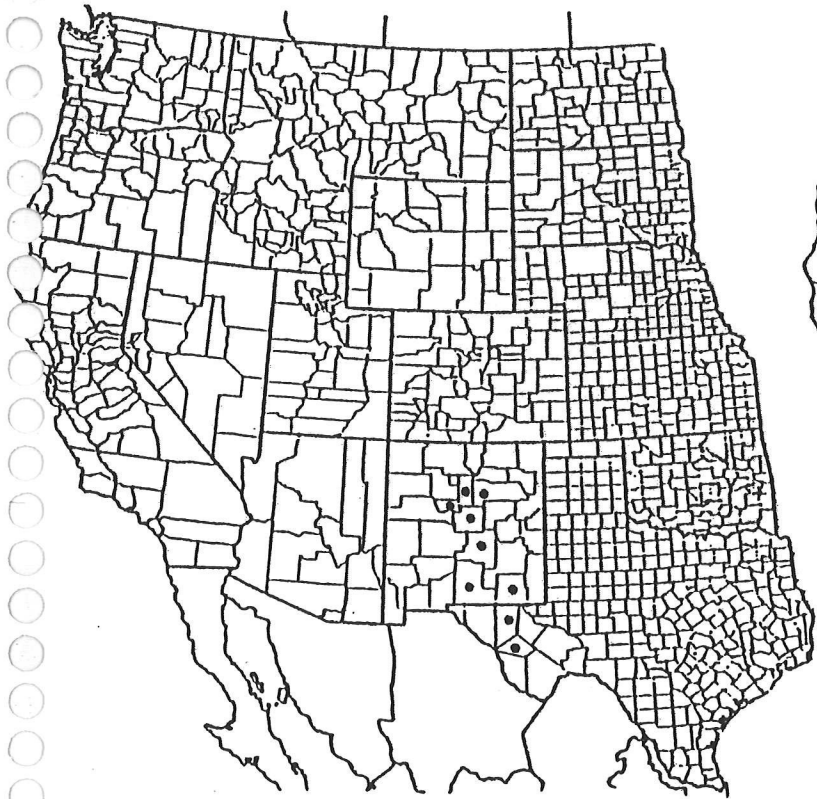
22. *Automeris randa* Druce



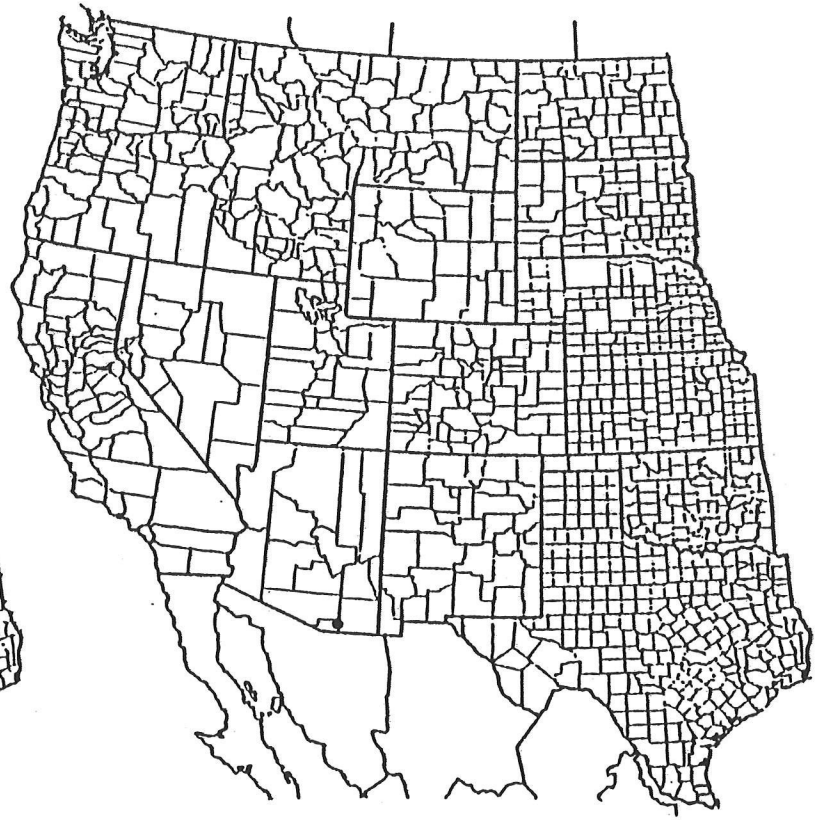
23. *Automeris iris* (Walker)



24. *Automeris cecrops* (Boisduval)



25. *Automeris zephyria* Grote



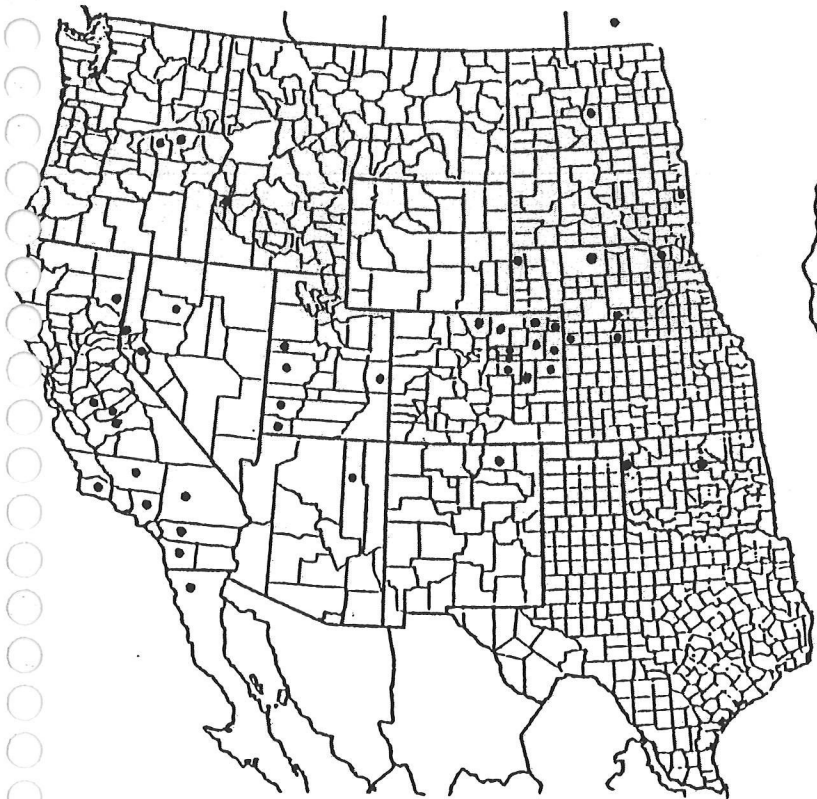
26. *Hylesia coinopus* Dyar



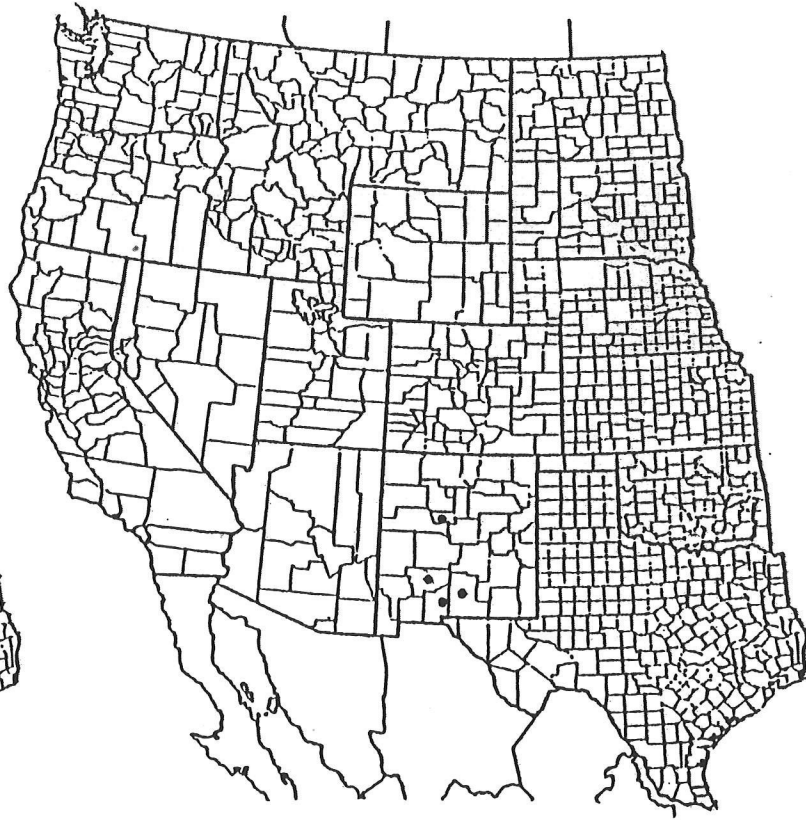
27. *Hemileuca juno* Packard



28. *Hemileuca maia* (Drury)



29. *Hemileuca nevadensis* Stretch



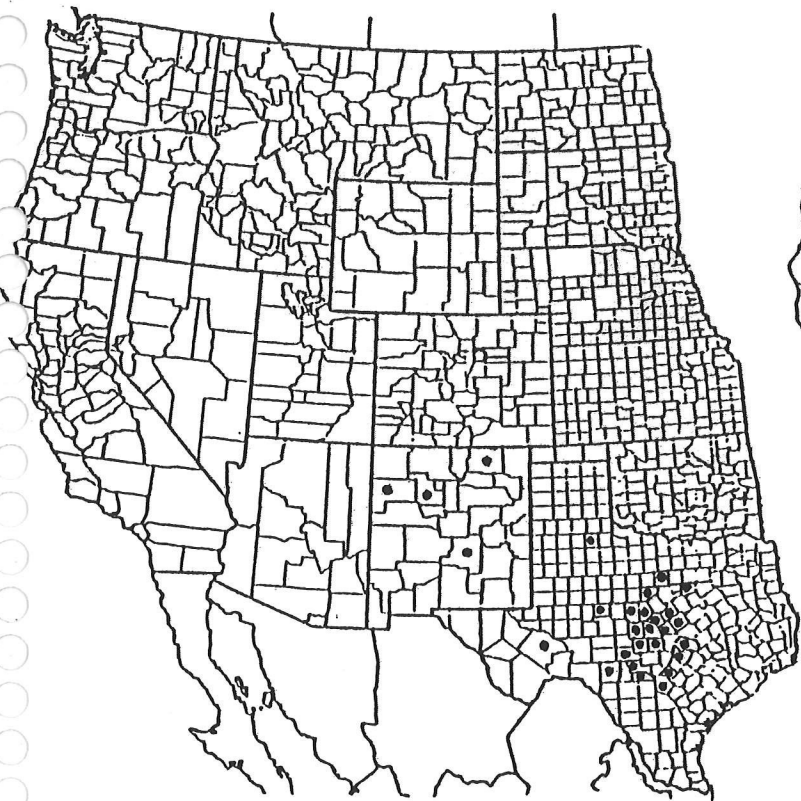
30. *Hemileuca artemis* Packard



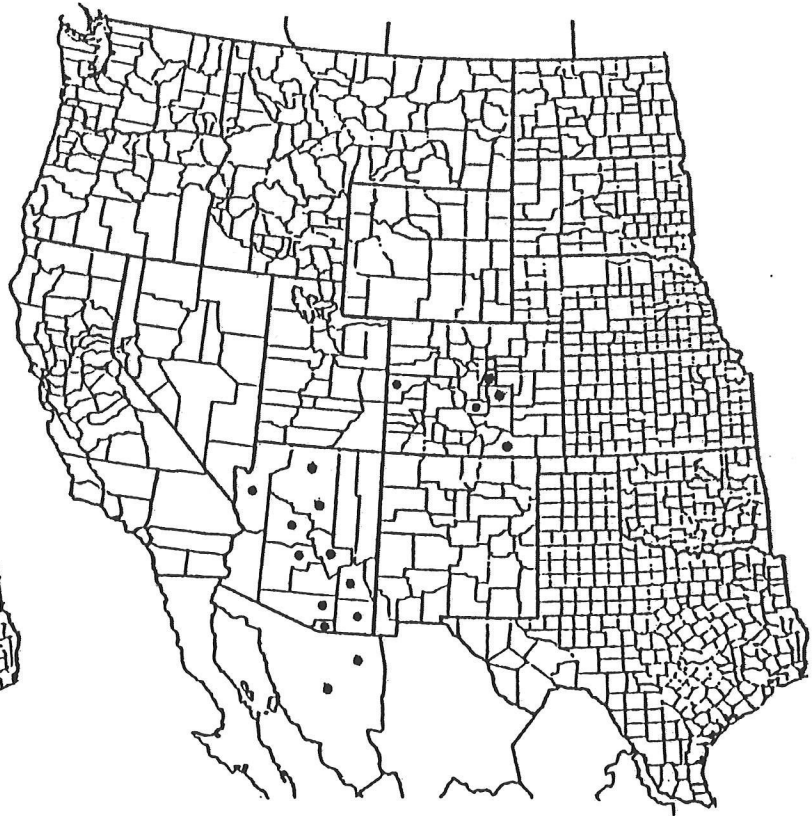
31. *Hemileuca slosseri* Peigler and Stone



32. *Hemileuca peigleri* Lemaire



33. *Hemileuca grotei* Grote and Robinson



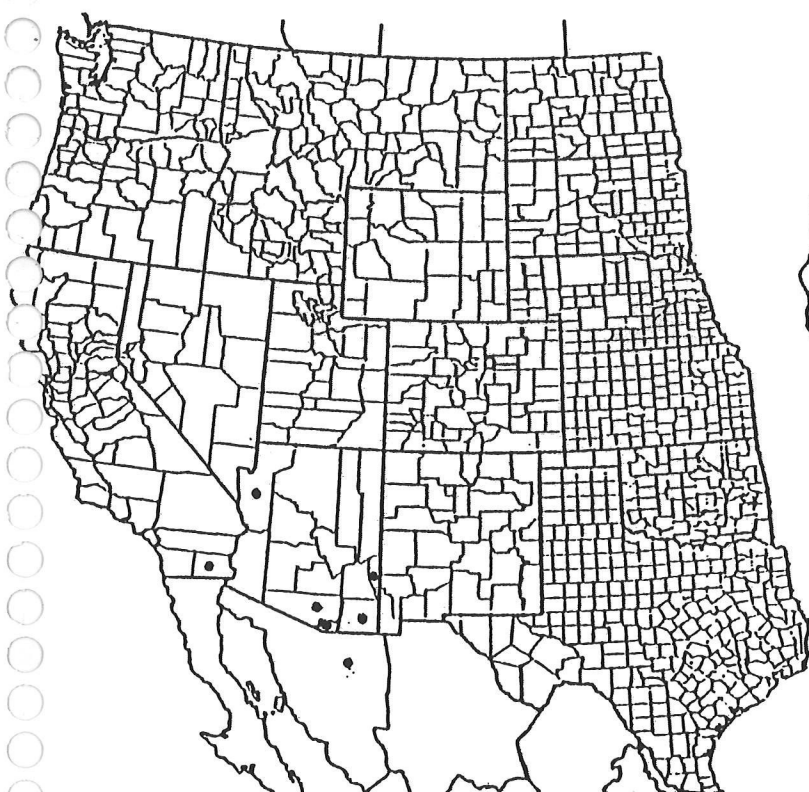
34. *Hemileuca diana* Packard



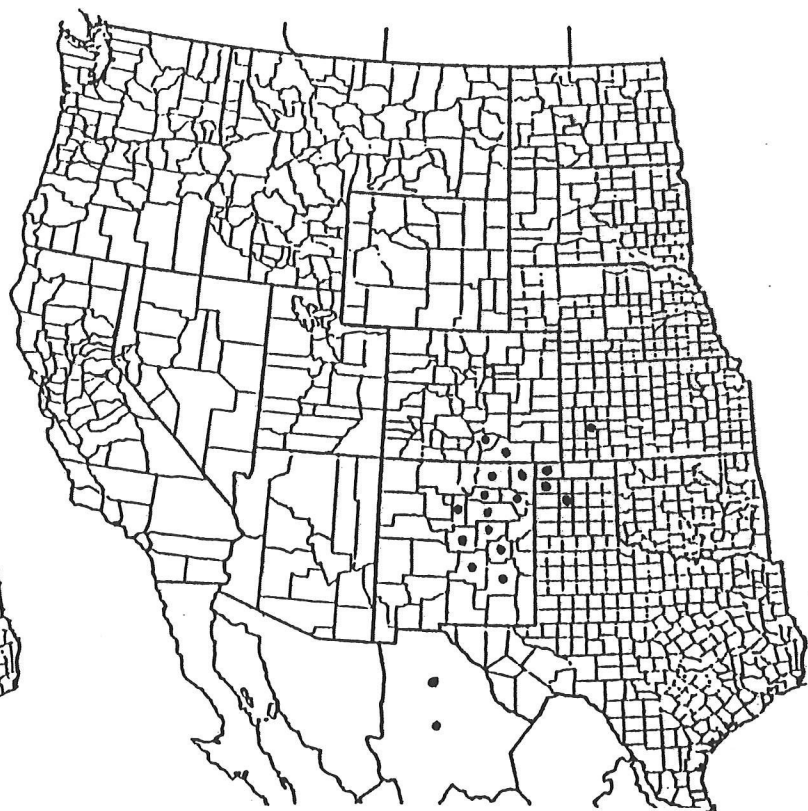
35. *Hemileuca electra* W.G. Wright



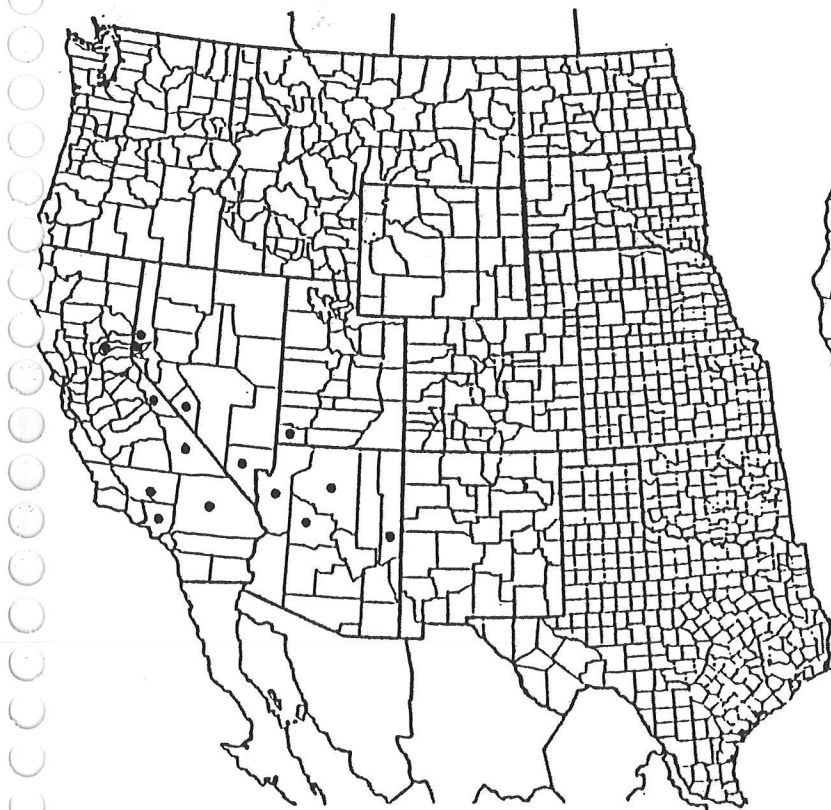
36. *Hemileuca tricolor* (Packard)



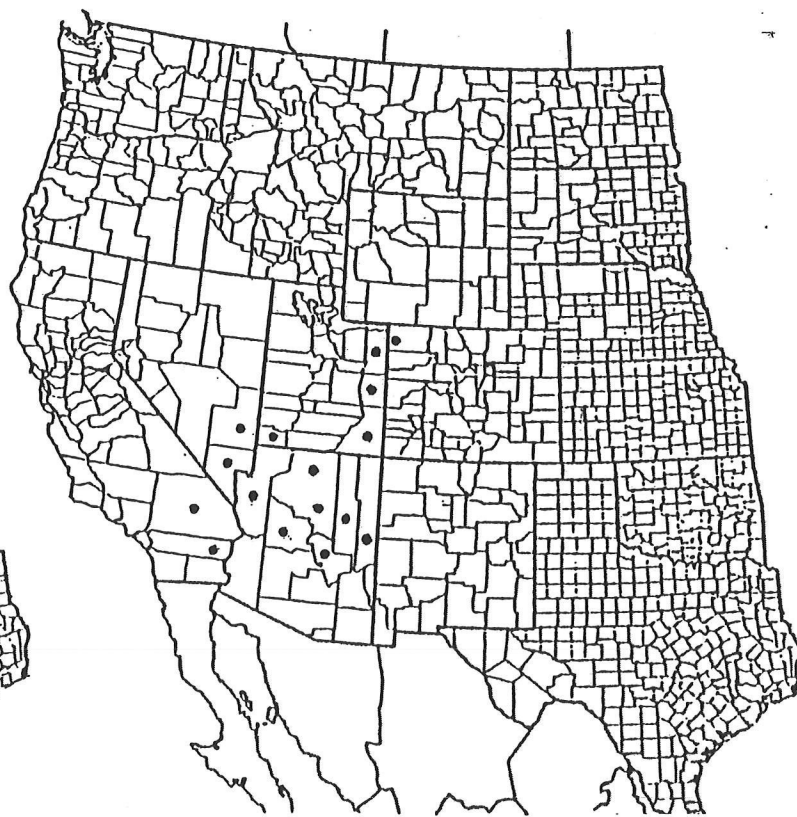
37. *Hemileuca hualapai* (Neumoegen)



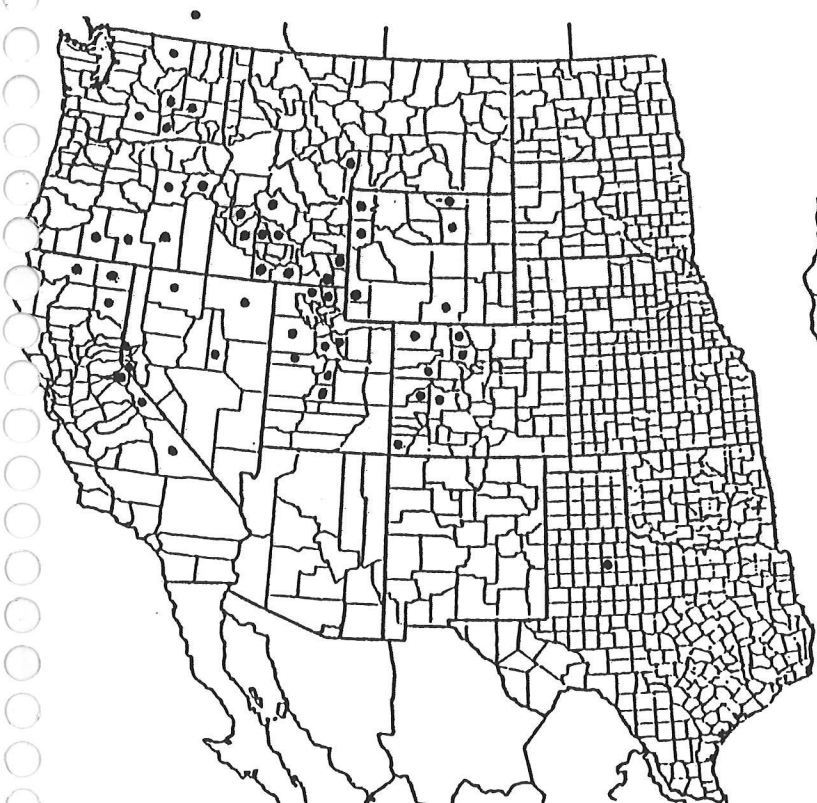
38. *Hemileuca oliviae* Cockerell



39. *Hemileuca burnsi* J.H. Watson



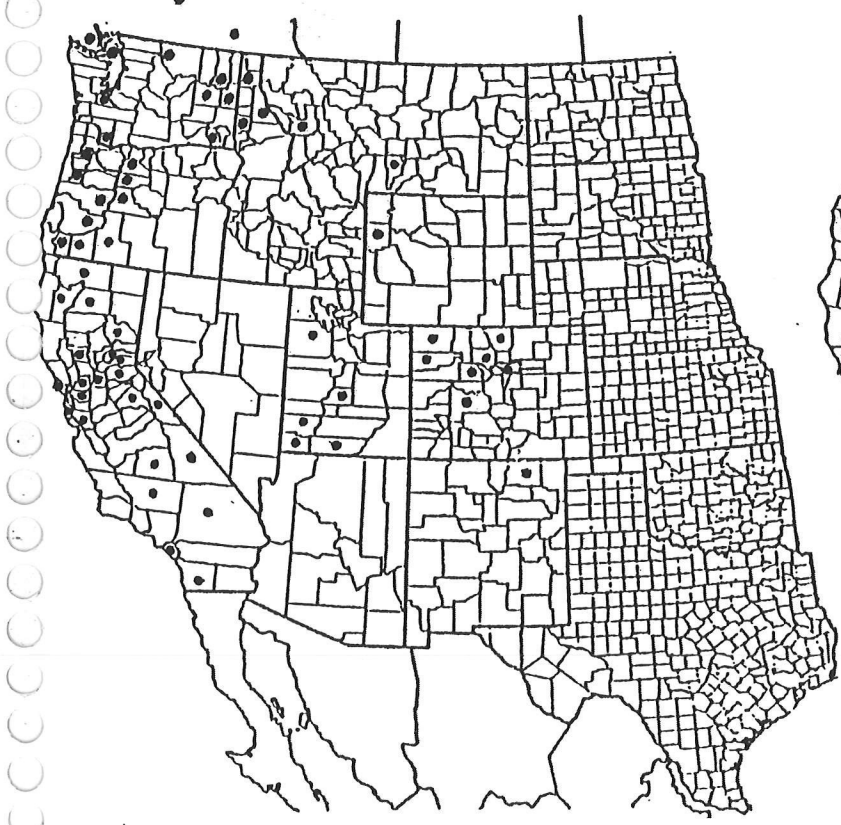
40. *Hemileuca neumoegeni* (Henry Edwards)



41. *Hemileuca hera* (Harris)



42. *Hemileuca magnifica* (Rotger)



43. *Hemileuca eglanterina* (Boisduval)



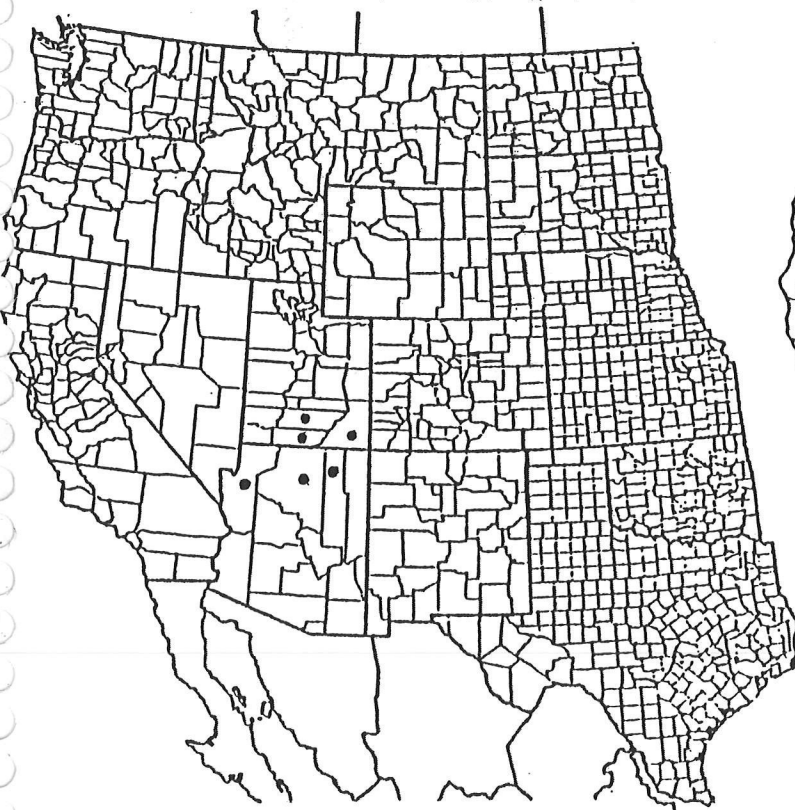
44. *Hemileuca nuttalli* (Strecker)



45. *Hemileuca chinatiensis* (Tinkham)



46. *Hemileuca conwayae* Peigler



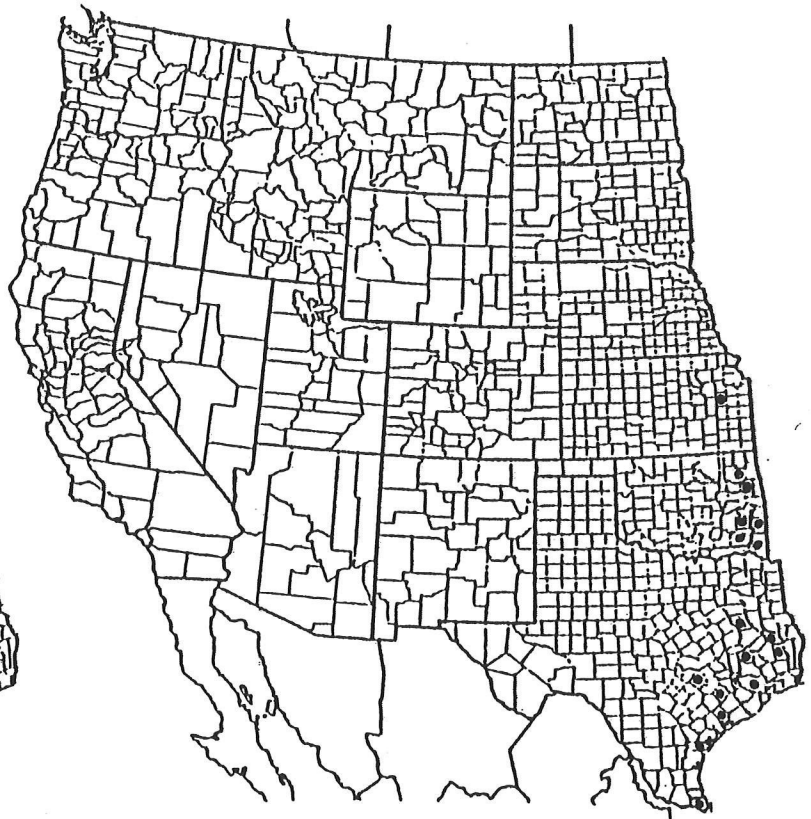
47. *Hemileuca griffini* Tuskes



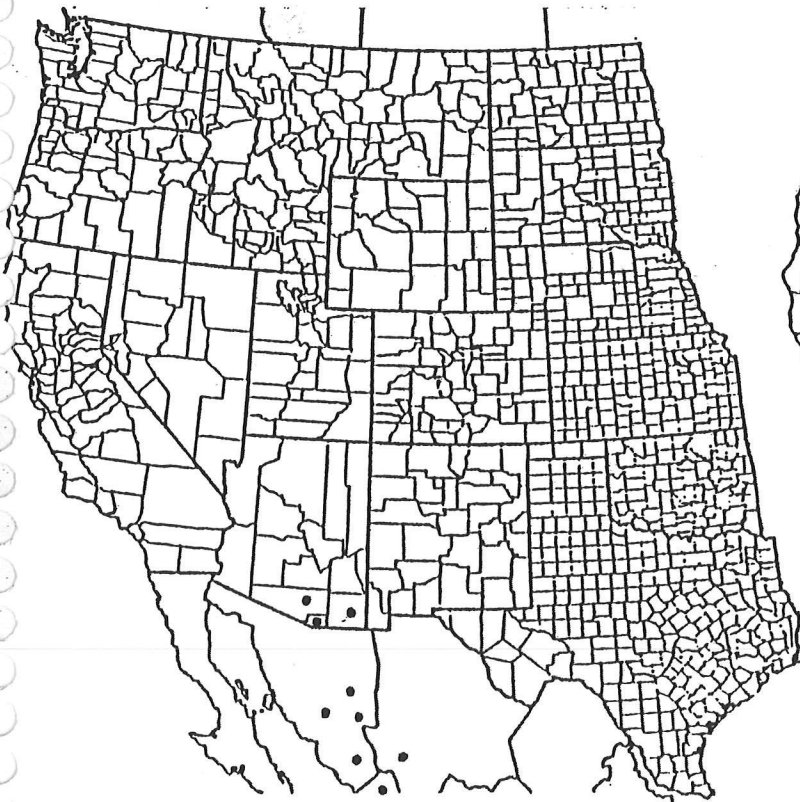
48. *Citheronia regalis* (Fabricius)



49. *Citheronia splendens* (Druce)



50. *Eacles imperialis* (Drury)



51. *Eacles oslari* W. Rothschild



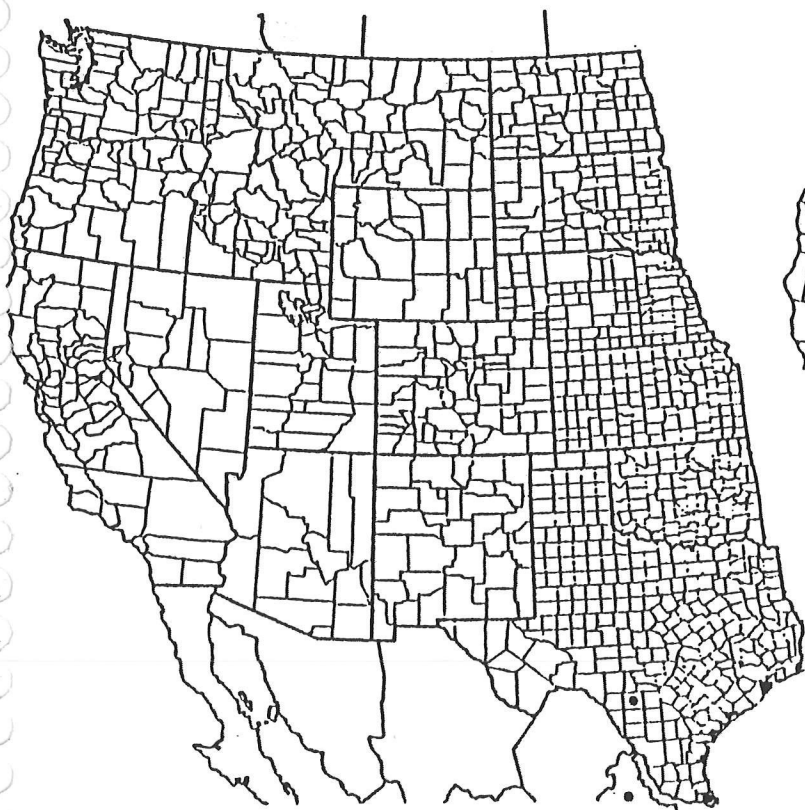
52. *Syssphinx bicolor* (Harris)



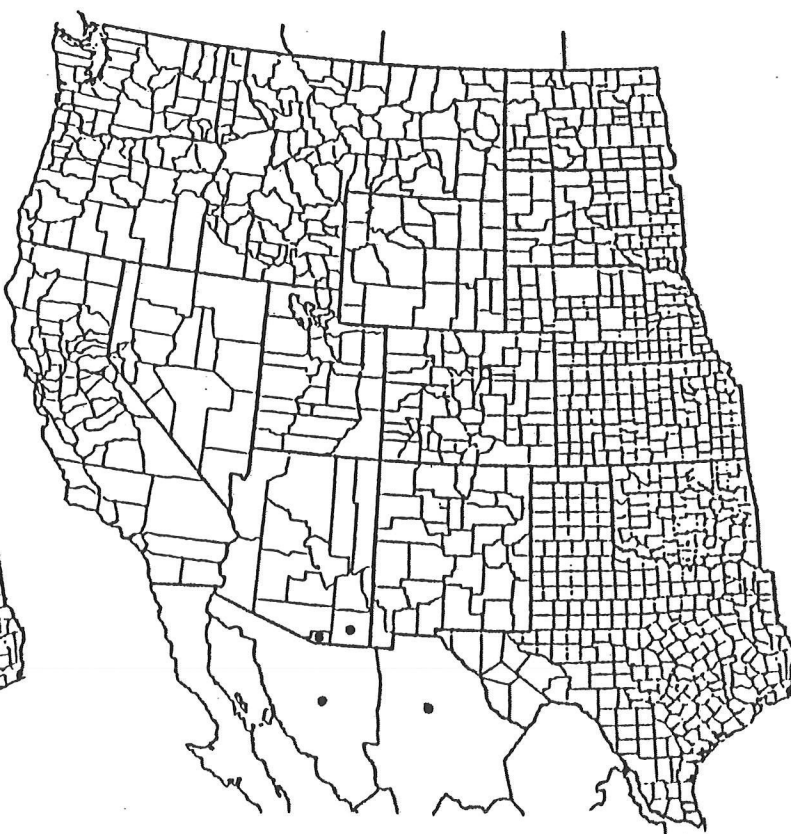
53. *Syssphinx bisecta* (Lintner)



54. *Syssphinx blanchardi* (Ferguson)



55. *Syssphinx albolineata* (Grote and Robinson)



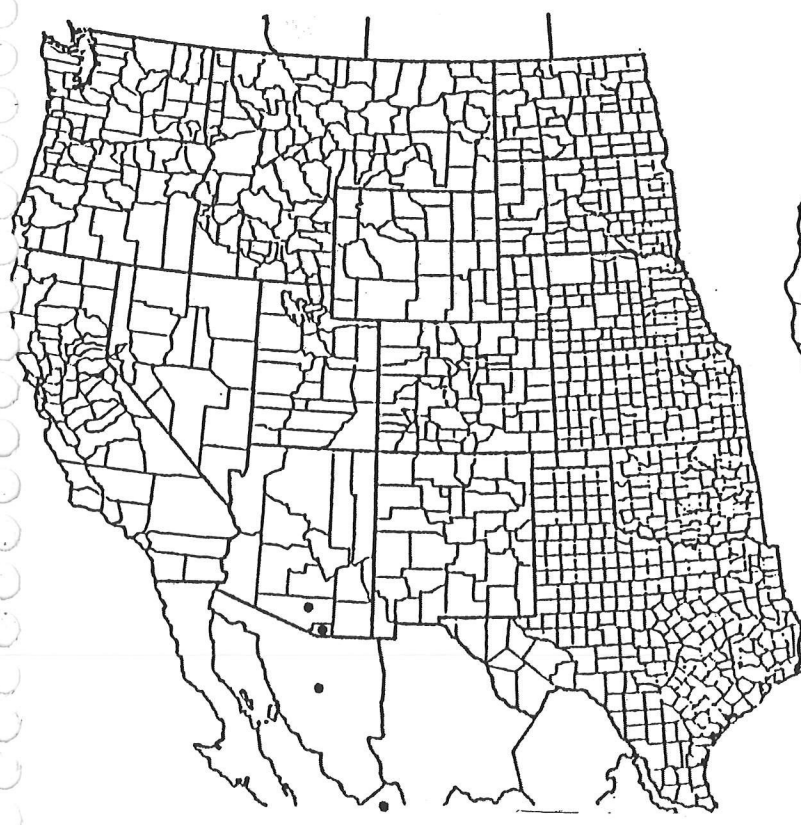
56. *Syssphinx raspa* (Boisduval)



57. *Syssphinx heiligbrodti* (Harvey)



58. *Syssphinx hubbardi* Dyar



59. *Syssphinx montana* (Packard)



60. *Anisota stigma* (Fabricius)



61. *Anisota fuscosa* Ferguson



62. *Anisota senatoria* (J.E. Smith)



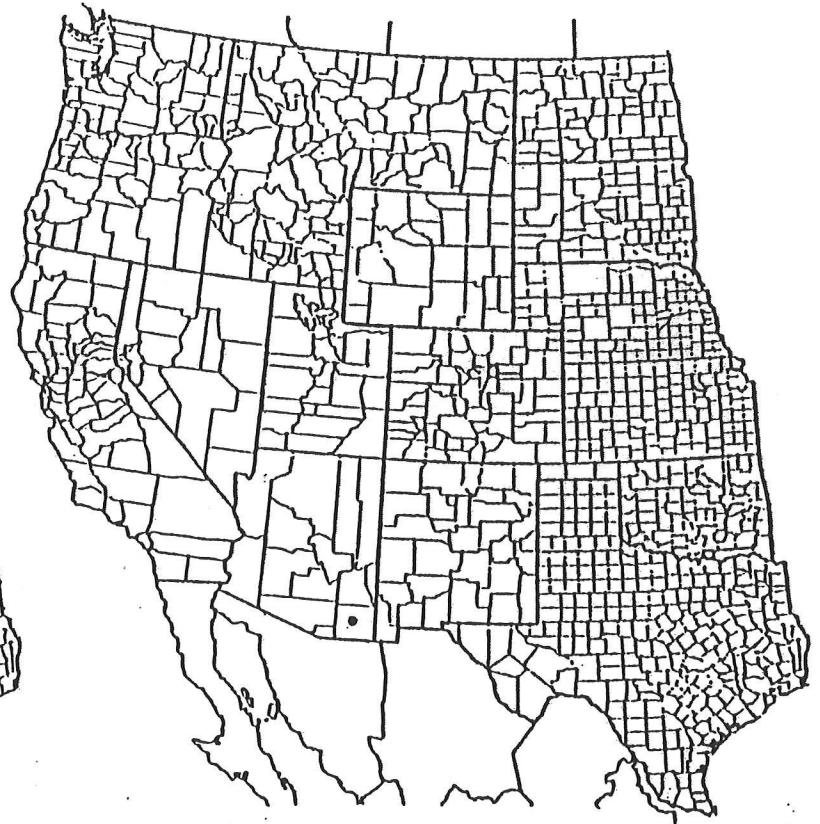
63. *Anisota oslari* W. Rothschild



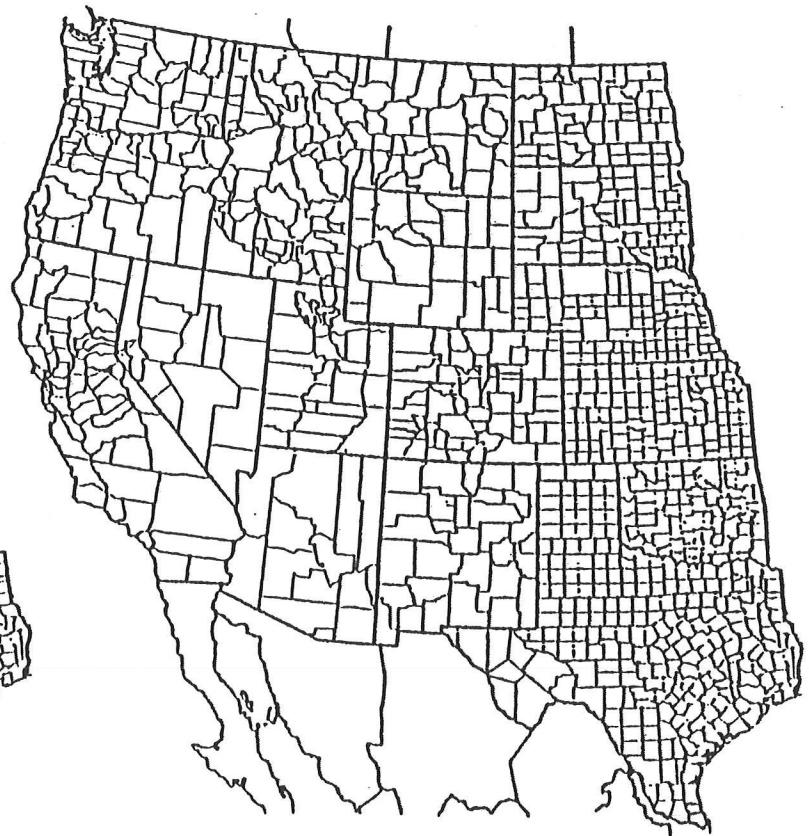
64. *Anisota discolor* Ferguson



65. *Dryocampa rubicunda* (Fabricius)



66. *Adeloneivaia isara* (Dognin)





13. *Agapema solita* Ferguson



14. *Saturnia mendocino* Behrens



15. *Saturnia walterorum* Hogue and Johnson



16. *Saturnia albofasciata* (Johnson)