PHILOTES OF NORTH AMERICA: SYNONYMIC LIST AND DISTRIBUTION ( LYCAENIDAE )

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INTRODUCTION

The genus Philotes Scudder has received more than the ordinary amount of attention in the last two decades, particularly from lepidopterists in the western United States. During this period several papers dealing with Philotes have been published, and I have amassed considerable information by examination of museum specimens, correspondence, and exchange with numerous collectors. In the present list, this material is brought together for the genus as a whole, including the known distributions—both by regions and by counties within each state where sufficient records are available to warrant their inclusion. As an addendum to the synonymic list, additional notes are given on intermediate forms, questionable records, allopatry, sympatry, and type localities for each name listed.

Four new subspecies of Philotes have been described since the dos Passos list (1964). According to my concepts, these newer subspecies, along with those described earlier, fall into "phylogenetic-geographic" sequences, which are parallel in two of the species.

In the arrangement given below species are indicated by numbers, and follow the arrangement as listed by dos Passos (1964), with the known distributions added.

Synonyms and aberrant forms are also listed as they appear in dos Passos, with only the localities published in the original descriptions added. No new names have been described for the more recent aberrations.

Subspecies are indicated by letters. The subspecies of Philotes battoicles and P. enoptes are arranged in a geographical "ring" by allopatric populations in the following order:

a The nominal subspecies in the Sierra Nevada of California;
b Adjacent or contiguous subspecies on the west and east slopes of the Sierra Nevada; thence
c East and north through the Great Basin; thence
d North through the Rocky Mountains; thence
e West into the Pacific Northwest; thence
f South along the Pacific Coast; thence
g East and southeast into the Mojave and Colorado Deserts.
The subspecies of *Philotes rita* are arranged in the order given by Mattoni (1966), which also indicates a geographical "ring" and a similarity of wing-pattern sequence:

- **a** The nominal subspecies in Arizona and southwestern New Mexico; thence
- **b** Northeast into the prairie grassland of eastern Colorado; thence
- **c** Northwest across the Rocky Mountains into the Great Basin of Utah; thence
- **d** West into the mountains of Nevada; thence
- **e** Southwest into the east slope areas and Mojave Desert of California.

**SYNONYMIC LIST AND GEOGRAPHICAL DISTRIBUTION**

*PHILOTES* Scudder, 1876

*Type:* *Lycaena regia* Boisduval, 1869 (="Lycaena sonorensis* Felder & Felder, 1865)

471 *battoides* (Behr), 1867

- **a.** *battoides* (Behr), 1867
  - **California:** Sierra Nevada; Arctic Alpine.
    - County records: Alpine, eastern Fresno, northwestern Inyo, Mariposa, Mono, eastern Tulare, Tuolumne.

- **b.** *intermedia* Barnes & McDunnough, 1917
  - **California:** Northern ranges; Cascades; Sierra Nevada, west slopes.
    - Counties: Calaveras, Del Norte, El Dorado, Nevada, Placer, western Shasta, Sierra, Siskiyou, Tehama, Trinity.
    - **ab.** *malcolmi* Gunder, 1927
      - **California:** American River, Placer Co. (*Type*).

- **c.** *glaucom* (Edwards), 1871
  - **California:** Cascades, east slopes; Great Basin; Sierra Nevada, east slopes.
    - Counties: Inyo, Lassen, Modoc, Mono, eastern Shasta.
  - **Idaho:** Western; Great Basin.
    - Counties: Adams, Elmore, Owyhee.
  - **Nevada:** Western & northwestern; Sierra Nevada region.
  - **Oregon:** South-central & southeastern; East of Cascade divide.
    - Counties: Grant, Harney, Klamath, Lake.

- **d.** *centralis* Barnes & McDunnough, 1917
  - Rocky Mountain areas of **Arizona, Colorado, New Mexico, Utah and Wyoming.**

- **e.** *oregonensis* Barnes & McDunnough, 1916
  - **Oregon:** North-central & northeastern; Central & southern Cascades. (Limited to higher elevations in Cascades and other mountains in the southern and southeastern regions.)

BRITISH COLUMBIA: Southern interior; Kootenays.

f. b. bernardino Barnes & McDunnough, 1916

CALIFORNIA: Coast ranges, central Calif. to Mexican Border; Southern Sierra Nevada; Tehachapi Mtns.; Western Mojave and Colorado Deserts to Pacific Coast.


BAJA CALIFORNIA NORTE: U. S. Border south to Cedros Island; Sierra San Pedro Martir.

   ab. baldyensis Gunder, 1925

   CALIFORNIA: Camp Baldy, San Bernardino County (Type).

g. b. martini Mattoni, 1955

ARIZONA: Deserts, west to central; Desert mountains (Ajo, Hualapai Mtns., Prescott Nat. For.).

   Counties: Maricopa, Mohave, Pima, Yavapai.

CALIFORNIA: Mojave Desert, eastern & northern; Desert mountains (Ivanpah, Old Woman, Panamint, Providence, Sheep Hole Mtns.).

   Counties: Inyo, Kern, eastern San Bernardino.

472 enoptes (Boisduval), 1852

a. e. enoptes (Boisduval), 1852

CALIFORNIA: Northern ranges; Cascades; Sierra Nevada, east & west slopes.

   Counties: Alpine, Amador, Calaveras, Eldorado, Fresno, northeast Humboldt, Inyo, Kern, Lassen, Modoc, Mono, Nevada, Placer, Plumas, Shasta, Sierra, Siskiyou, Tuolumne, Trinity, Tulare, Yuba.

NEVADA: Western; Sierra Nevada region.

   Counties: Douglas, Ormsby, Washoe.

b. e. ancilla Barnes & McDunnough, 1918

COLORADO: Rocky Mountains.

IDAHO: Southern, southeastern.

MONTANA: Southern; Bitterroot Range, Crazy Mtns.

NEVADA: Eastern, northeastern.

NEW MEXICO: Northern.

UTAH: Northern, northeastern.

   Counties: Davis, Duchesne, Juab, Salt Lake, Summit, Tooele.

   WYOMING: Rocky Mountains; Grand Tetons.

c. e. columbae Mattoni, 1955

OREGON: Eastern; Cascades, north-central & east slopes.


WASHINGTON: Columbia River Basin; Cascades, central & east slopes.

   Counties: Chelan, Kittitas, Klickitat, Okanogan, Yakima.

d. e. bayensis Langston, 1964

CALIFORNIA: North Coastal; San Francisco Bay, North Coast Range.

   Counties: Contra Costa, Humboldt, Marin, Mendocino, Solano, Sonoma.

e. e. smithi Mattoni, 1955

CALIFORNIA: Central Coastal; Seashore dunes, Santa Lucia Range.

   County: coastal Monterey.
f. *e. tilden* Langston, 1964
   CALIFORNIA: Central Inner Coastal; Mt. Hamilton & Diablo Ranges.
   Counties: western Kern, eastern Monterey, San Benito, eastern San
   Luis Obispo, eastern Santa Clara, western Stanislaus.

   g. *e. dammersi* J. A. Comstock & Henne, 1933
   ARIZONA: Deserts, west to central; Mountains, central (Prescott Nat. For.,
   Tonto Basin).
   Counties: Coconino, Gila, Yavapai.
   CALIFORNIA: Colorado & Mojave Deserts; Central & desert slopes of
   Laguna, San Bernardino, San Gabriel & San Jacinto Mtns.
   Counties: Los Angeles, Riverside, San Bernardino, San Diego.

473 *mojave* Watson & W. P. Comstock, 1920
   *mohave Auctorum*
   CALIFORNIA: Colorado & Mojave Deserts; Desert slopes of San Bernardi­
   no, San Gabriel, San Jacinto & southern Sierra Nevada Mtns.
   Counties: Inyo, Kern, Los Angeles, Riverside, San Bernardino.

474 *rita* (Barnes & McDunnough), 1916
   a. *r. rita* (Barnes & McDunnough), 1916
      ARIZONA: Mountains, central & southeastern.
      Counties: Coconino, Cochise, Pima, Santa Cruz, Yavapai.
      NEW MEXICO: Southwestern.
      County: Grant.
   b. *r. coloradensis* Mattoni, 1966
      COLORADO: East of Front Range, prairie grassland.
      Counties: Chaffee, Cheyenne, Custer, El Paso, Fremont, Lincoln,
      Prowers, Saguache.
   c. *r. pallescens* Tilden & Downey, 1955
      UTAH: Northwestern, Stansbury Mtns.
      County: Tooele.
      NEVADA: Northeastern, Montello Wells.
      County: Elko.
   e. *r. elvirae* Mattoni, 1966
      CALIFORNIA: Western Mojave Desert; Desert slopes of San Gabriel Mtns.
      & Sierra Nevada.
      Counties: Inyo, Kern, Los Angeles, Mono.

475 *spaldingi* Barnes & McDunnough, 1917
   ARIZONA: Northern; Kaibab Plateau, North Rim.
   COLORADO: Rocky Mtns.; San Juan Mtns.; Mesa Verde.
   NEW MEXICO: Northern; Northwestern; Zuni Mtns.
   UTAH: Central & eastern Rocky Mtns.

476 *speciosa* (Henry Edwards), 1876
   CALIFORNIA: Western Colorado & Mojave Deserts; Southern San Joaquin
   Valley; West slope of Sierra Nevada.
   Counties: Imperial, Inyo, Kern, Los Angeles, Mariposa, San Bernardi­
   no, San Diego, Ventura.
477 sonorensis (Felder & Felder), 1865


BAJA CALIFORNIA NORTE: U. S. Border south to vicinity of Punta Prieta; Ensenada; Sierra Juarez.

Syn. regia (Boisduval), 1869

CALIFORNIA: Los Angeles (Type).

Genetic form comstocki Gunther, 1925

CALIFORNIA: Los Angeles County—several localities, San Gabriel River, Duarte (Type).

ab. sonoralba Watson & W. P. Comstock, 1920

CALIFORNIA: Los Angeles County; San Diego (Type).

Distribution, Intermediate Forms, Hosts, and Type Localities

Distribution.—The known distribution of the genus Philotes confirms that given in previous lists (Martin & Truxal, 1955; Mattoni, 1955). In addition, more recent data increases the known ranges of most of the species and subspecies. This is partly due to more interest in Lycaenidae in the last two decades, and many more Lepidopterists collecting at unlikely localities and at unusual times of year, even in some well-known areas.

Intermediate Forms.—Within the species that have been broken up into subspecies, by definition it may be assumed that the subspecies are allopatric to each other. However, this is not completely true. In general, each subspecies appears “typical” and different from the others when sampled well within its range or center of distribution. However, in some instances the subspecies become “atypical” on the peripheries of their ranges. Where one meets another this gives rise to intermediate forms and the geographical area can be considered a “blend zone.”

Sympatry.—In the context of the following notes, the sympatric species are in association either on an ecological or a purely geographical basis.

Ecologically sympatric refers to instances where flight periods of two or more species coincide and the opportunity for interspecific matings occurs. This is a broad definition, and even though the two or more species may be in the same general vicinity, usually one or more ecological barriers exist. For example: a) All of the Philotes are relatively weak fliers, and tend to stay close to their specific food-plant; b) The foodplants are almost always different species for the sympatric Philotes (foodplants for those proven in recent literature are all different species); c) The adult flight periods may overlap only slightly; and d) The adult flight periods may not coincide at all in some seasons.
Geographically sympatric refers to situations where the adult flight periods of two or more species occur at different times of the year. In many instances the flight periods are separated by several months. Feb.–Mar. & June–July, or May–June & Sept.–Oct. are common patterns in many of the sympatric areas. The greatest spacing in season in sympatric species appears to be Feb.–Mar. for Philotes sonorensis as opposed to Aug.–Sept.–Oct. for three subspecies of P. enoptes. In many areas, the enoptes adults can be collected in October at the exact spot where sonorensis was taken the previous February. The adult flight periods for most Philotes are correlated with the blooming season of the foodplants—some species and groups of Eriogonum flowering in the spring, others in mid-summer, and still others in late summer and autumn.

Foodplants.—Most Philotes species and subspecies have a narrow host plant preference. If the life history and/or the exact host has been recorded, it is also listed in the following notes, giving the literature source. In some of the older literature there may be general foodplants recorded, such as “buckwheat,” “Eriogonum sp.,” “stonecrop,” or “Sedum.” In most instances, these are not repeated, and the literature is not cited.

Type Localities.—The type localities of all of the species and subspecies are given. For the earlier described entities the reader is referred to Comstock & Huntington (1958–1964) where each name is listed alphabetically giving the type locality, location of type in museums, original description, additional references and synonyms. For these I have listed the locality essentially verbatim as given by Comstock & Huntington, adding only the county where appropriate.

Philotes battoides (Behr)

Philotes battoides battoides is the high elevation subspecies in the Sierra Nevada of California. Some specimens from mid-elevations on the east slopes show integration into glaucon, whereas no tendencies toward intermedia on the west slopes have been observed. In much of its range, battoides is ecologically sympatric with P. enoptes enoptes. Type: Mineral King, Tulare Co., Calif., elev. 11,000 ft.

P. b. intermedia is primarily in the northern California mountains and the west slopes of the Sierra Nevada. However, there are a few specimens labeled with localities in Kern and Los Angeles counties that are on deposit in some museums. These are old specimens (30 to 60 years old) and although they are intermedia more recent specimens from the same areas have been bernardino which is very common in southern California (Tehachapis, Mt. Baldy, etc.). Throughout most of its range, intermedia is ecologically sympatric with the much commoner P. enoptes enoptes. Type: “Shasta County, Calif.”
**P. b. glaucon** is the subspecies represented in the Great Basin, with a wide range in several states. Some specimens show integration into *oregonensis* at higher elevations, particularly in southeast Oregon and along the east slopes of the Cascades. In various parts of its range, *glaucon* is ecologically sympatric with *P. enoptes enoptes* and *columbiae*, and is usually geographically sympatric with *P. rita elvira*.

Foodplant: *Eriogonum umbellatum* (sens. lat.)—Calif., O. Shields; Ore., C. Crowe; Idaho, R. Langston. Type: “Nevada.”

**P. b. centralis** is the subspecies represented in the Rocky Mountains, and appears to show a clinal variation from north to south. Although recorded from the “Rocky Mountain States,” the actual localities of specimens examined were so scattered that county listings would be superfluous. If additional specimens along with more distributional data had been available, the variation in *centralis* might seem more logical. In parts of its range, *centralis* is ecologically sympatric with *P. enoptes ancilla* and *P. spaldingi*.

Foodplant: *Eriogonum umbellatum* (Scott et al., 1968). Type: Salida, Chaffee Co., Colo.

**P. b. oregonensis** is the high elevation subspecies in southern Oregon, but the elevation at which it occurs decreases with increased latitude as it ranges north through Washington into British Columbia. Some specimens show integration into *glaucon* at lower elevations, particularly in southeast Oregon and along the east slopes of the Cascades. In a considerable portion of its range, *oregonensis* is ecologically sympatric with *P. enoptes columbiae*. At some of the localities for *oregonensis* cited by Leighton (1946), *columbiae* has been taken commonly. Since *columbiae* was described later (Mattoni, 1955), there is a probable mixture of the two in older collections. Type: Crater Lake, Klamath Co., Ore.

**P. b. bernardino** is the common spring and early summer subspecies in cismontane southern California, but ranges both north and south of this locus as noted in the synonymic list. With little variation, it occurs from the immediate coast to the tops of the higher mountains in certain counties (e.g., Los Angeles, San Diego). Although their flight periods are usually earlier, *P. mojave*, *P. speciosa*, and *P. sonorense* are sympatric with *bernardino* in portions of its range. It is also geographically sympatric with the late-season flying *P. enoptes tilden* & *dammersi*, and *P. rita elvira*.

Foodplants: *Eriogonum fasciculatum fasciculatum* in coastal southern California; *E. f. foliolosum* throughout most of its range; and *E. f. polifolium* & *flavoviride* in the deserts and east slope areas (Langston, 1965).
Type: Camp Baldy, San Bernardino Mts., Calif.

*P. b. martini* is a desert subspecies. Although the typical insect is quite distinct, intermediates to *bernardino* have been taken in the western parts of its range. In the western part of its range, *martini* is ecologically sympatric with *P. mojave*, and it is geographically sympatric with the later-flying *P. enoptes dammersi* in California and Arizona, and with *P. rita rita* in Arizona.

Foodplant: *Eriogonum fasciculatum polifolium*; and the earlier known distribution are given by Mattoni (1955). Description and Type: Oatman, Mohave Co., Arizona (Mattoni, 1955).

**PHILOTES ENOPTES (Boisduval)**

*Philotes enoptes enoptes* occurs in California and Nevada in the Cascades and Sierra Nevada, from Siskiyou to Kern County. However, there are a few specimens labeled with localities from Los Angeles and Riverside counties that are on deposit in the museums. These are old specimens (undated, or more than 40 years old—Dodge, Friday collrs.). The late-season specimens are *dammersi* (before its description), and early season (May–June) specimens of *enoptes* have not been collected in southern California in recent years. *P. enoptes enoptes* is quite distinct from all of its subspecies throughout most of its range, although integration into *bayensis* has been noted in northeastern Humboldt County.

Foodplant: Adults have been associated with *E. latifolium nudum & saxicola*—Calif., Nev. (R. Langston). Type: “California. May in dry sections.”

*P. e. ancilla* is the subspecies represented in the Rocky Mountains. Except for Utah, the actual localities of specimens examined from the other states were so scattered that county listings would be superfluous. Further collecting may show a blend into *columbiae* along the western periphery of its range. In portions of its range, *ancilla* is ecologically sympatric with *P. battoides centralis* and *P. spaldingi*. In northwestern Utah it is geographically sympatric with the later flying *P. rita pallescens*. Type: Eureka, Juab Co., Utah.

*P. e. columbiae* is the subspecies represented in the Pacific Northwest. Although there may be a blend into *ancilla* along the eastern parts of its range, at present it appears to be distinctly allopatric to *enoptes enoptes* to the south. In many parts of its range, *columbiae* is ecologically sympatric with *P. battoides glaucon & oregonensis*. The description and earlier known distribution are given by Mattoni (1955). Type: Columbia River near Brewster, Okanogan Co., Wash. (Mattoni, 1955).
P. e. bayensis is the subspecies represented around San Francisco Bay and the North Coast Range of California. It is allopatric to all other Philotes species and subspecies, except for a possible blend into enoptes enoptes in the northeastern corner of Humboldt County.


P. e. smithi is known only from the immediate coast of Monterey County, California, and is allopatric to all other subspecies of enoptes. It is geographically sympatric with the spring-flying P. sonorensis.


P. e. tildeni is found along the Inner Coast Range of central California, and is allopatric to all other subspecies of enoptes. Normally a late-season flier, it is geographically sympatric with the earlier P. battoides bernardino and P. sonorensis.


P. e. dammersi is the subspecies represented in the desert and adjacent mountain areas of southern California and Arizona. At present it appears to be completely allopatric to all other subspecies of enoptes. As a fall flier it may be ecologically sympatric with P. rita rita in Arizona. In various parts of its range it is geographically sympatric with the earlier flying P. battoides bernardino & martini, P. mojave, P. speciosa, and P. sonorensis.


Philotes mojave Wats. & Comst.

Philotes mojave is found in the Colorado and Mojave Deserts of California, and the bordering mountain slopes to the west. As a spring flier, it is ecologically sympatric in various parts of its range with P. battoides bernardino & martini, P. speciosa, and P. sonorensis. It is also found in the same geographical areas as its closest ally (on the basis of similarity of genitalia) P. enoptes dammersi, and with P. rita elvirae, but these are both late-season fliers.
Foodplant: *Eriogonum pusillum*, detailed distribution and life history are given by Comstock (1966). Type: "Mojave Desert, California."

**Philotes rita** (B. & McD.)

*Philotes rita rita* is found in Arizona and southwestern New Mexico. It is allopatric to all of its other subspecies. Mattoni (1966), speculates that its range may extend into Mexico, the lack of records being an artifact of poor collecting. As a fall flier it may be ecologically sympatric with *P. enoptes dammersi*, and it is geographically sympatric to the spring-flying *P. battoides martini* in the eastern portions of the latter's range.

Foodplant: "Close to *Eriogonum wrightii*"; and some of the classic localities are given by Mattoni (1966). Type: "So. Arizona."

*P. r. coloradensis* is found in eastern Colorado, and is allopatric to all other *rita* subspecies. The types and other specimens were taken in gently rolling prairie grassland, further east than any other known *Philotes* in North America. Mattoni (1966) speculates that this new subspecies probably ranges "east into Kansas, north into Nebraska, and south into New Mexico."


*P. r. pallescens* is found in northwestern Utah, and is allopatric to all other *rita* subspecies. Although atypical populations have been found in Duchesne Co., Utah, and other areas (i.e., Nevada) the typical insect is known only from the general vicinity of the type series. It is geographically sympatric with the earlier-flying *P. enoptes ancilla*.


"*Philotes rita* subspecies" is based on a single male specimen from Elko County, Nevada. Clench (1967) states that "In the sum of its characters it is closest to *pallescens*, . . . ." It is further stated that one "character suggests a relationship to *elvirae*." Although I have not seen the specimen, it is no doubt an intermediate between the two. Further late summer collecting in Nevada, will probably reveal *rita* populations across the state, connecting with the California colonies of *elvirae* in Inyo and Mono counties.

*P. r. elvirae* is found in the east slope and Mojave Desert areas of California, and is allopatric to all other named *rita* subspecies. In the northern
part of its range it has occasionally been taken with *P. battoides glaucon* if flying late due to higher elevation or a retarded season. In the southern areas it comes almost into the range of *P. enoptes dammersi*, which is also a late-season flier. In various portions of its range, *elvirae* is geographically sympatric with the earlier-flying *P. enoptes enoptes, P. battoides bernardino, P. speciosa, and P. sonorensis*. The life history is recorded by Comstock & Henne (1967).

Foodplants: *Eriogonum plumatella* and detailed distribution are given by Mattoni (1966). Type: 3.5 mi. SW. of Pearblossom, Los Angeles Co., Calif. (Mattoni, 1966).

**Philotes spaldingi** B. & McD.

*Philotes spaldingi* is generally distributed in the central and southern Rocky Mountain States. Localities of specimens examined were so scattered that county listings would be superfluous. Morphologically, *spaldingi* is distinct from all other species of *Philotes*, but superficially resembles *Plebejus melissa*, especially on the underside. In portions of its range, *spaldingi* is ecologically sympatric with *P. battoides centralis* and *P. enoptes ancilla*.


**Philotes speciosa** (Hy. Edw.)

*Philotes speciosa* is found most commonly in the western Colorado and Mojave Deserts of California. Morphologically, *speciosa* is distinct from all other species of Lycaenidae. As a spring flier, it is ecologically sympatric in portions of its range with *P. mojave, P. sonorensis* and *P. battoides bernardino*, although the latter is usually on the wing later in the season. It is geographically sympatric with the late-season fliers *P. enoptes dammersi* and *P. rita elvirae*. The life history is recorded by Comstock & Dammers (1932).

Foodplants: *Oxytheca perfoliata, O. trilobata & Eriogonum reniforme*; and detailed distribution are given by Thorne (1961). Mature larvae have also been found on flowers of *Eriogonum pusillum* (Thorne, 1967). Type: Havilah, Kern Co., Calif.

**Philotes sonorensis** (F. & F.)

*Philotes sonorensis* is found most commonly in cismontane southern California, but ranges both north and south. Except for different numbers of spots and their locations, plus other variability (*comstocki, sonoralba*, etc.), that seems to occur in varying percentages within the populations, there appears to be no other clinal or consistent variation in
this species throughout its extensive range. Morphologically, *sonorensis* is very distinct from all other species of Lycaenidae.

In most seasons its major adult flight is in February and March (both in the north and south), but may extend into May or June at higher elevations, or if the season is retarded by long periods of rain or snow. Its flight period is essentially over before the appearance of the other *Philotes*. Although it may overlap in time of adult flight with *P. mojave* and *P. speciosa*, *sonorensis* can be considered only geographically sympatric with *P. battoides intermedia & bernardino, P. enoptes, smithi, tildeni & dammersi*, and *P. rita elvirae*. The life history is recorded by Comstock and Coolidge (1930).

**Food plants:** The larvae are known to feed on various types of stonecrop (Family Crassulaceae). In older literature it was recorded generally from *Sedum* (e.g., Comstock, 1927; Comstock & Coolidge, 1930). In the northerly parts of its range it has been associated with *Dudleya cymosa cymosa, setchellii*, and *minor* (Langston, 1965), and in southern California with *Dudleya lanceolata*, and probably other sedums and stonecrops.

**Type:** "Sonora, Mexico." There are no records of *P. sonorensis* from the state of Sonora, Mexico as known by its present boundaries. According to Brown (1967), butterflies named by the Felders all are found within the present limits of California and their true type localities must lie somewhere from Los Angeles southward into extreme northern Baja California.

**Acknowledgments**

I am greatly appreciative for the free access to museum and institutional material made available for this study. The museums have been cited in my previous papers, particularly for specific records and deposition of types. A high percentage of the records and specimens were sent on loan or exchange by individual collectors, which greatly enhanced the data available for this study. Rather than list the institutions and/or home addresses of the contributors (most of which are included in the "Membership List of the Lepidopterists’ Society"), I wish to take this opportunity to list the individuals, and add the states or areas from which most of their material originated.

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<th>Contributors</th>
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Numerous specimens were examined which have been deposited in museums, many of those listed above being major contributors. In addition, the museums contain specimens that were already on deposit before the inception of this study. Some of the contributors, many now deceased, were as follows: C. W. Anderson, W. J. Barnes, G. & R. Bohart, V. L. Clemence, J. A. Comstock, H. E. Cott, T. Craig, C. M. Dammers, E. A. Dodge, M. Doudoroff, W. A. Evans, D. Frechin, F. W. Friday, J. D. Gunder, T. R. Haig, G. H. Heid, L. I. Hewes, J. C. Hopfinger, W. Hovanitz, A. Koebele, J. A. Kusche, C. I. Smith, J. Strohbeen, E. P. Van Duzee, E. C. Van Dyke, F. X. Williams and W. G. Wright.

LITERATURE CITED


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A SEARCH FOR THE TYPE LOCALITY OF SPEYERIA NOKOMIS APACHEANA¹

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The first specimens of Speyeria nokomis apacheana (Skinner) were brought back by the Wheeler Expedition of 1871, and were collected by Ferdinand Bischoff, a naturalist attached to the Expedition as a hospital orderly. The section of the Survey containing Bischoff spent much of the field season of 1871 in Nevada and east-central California. A careful analysis of Bischoff’s itinerary (Brown, 1957) during this period shows that the collector’s residence at Fort Independence in the Owens Valley of California from the 18th of July to the 10th of August corresponds to the flight period of apacheana in present-day Inyo County. Since Bischoff probably was limited in his explorations by a combination of the summer heat and the limited transportation at his disposal—walking or horseback, and the fact that Bischoff did not encounter the Round Valley colonies of apacheana further north, it has been assumed by Brown (1957).

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